

AIR EMISSIONS GUIDE FOR AIR FORCE MOBILE SOURCES

METHODS FOR ESTIMATING EMISSIONS OF AIR POLLUTANTS FOR MOBILE SOURCES AT UNITED STATES AIR FORCE INSTALLATIONS



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After this Guide was written, AFMAN 32-7002, *Environmental Compliance and Pollution Prevention*, was revised and reissued as DAFMAN 32-7002, *Environmental Compliance and Pollution Prevention*. As of 13 June 2025, DAFMAN 32-7002 supersedes AFMAN 32-7002 and references to AFMAN 32-7002 within this Guide may not equate to a corresponding reference in DAFMAN 32-7002. The next version of this Guide will be updated to incorporate the appropriate DAFMAN 32-7002 references.

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D.H. Eric Choe, Solutio Environmental, Inc.

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*Based on information and belief formed after reasonable inquiry, the statements and
information in this document are true, accurate, and complete.*

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ACRONYMS

(Words formed from the initial letters of a name or parts of a series of words.)

AAFES	Army & Air Force Exchange Service
ACAM	Air Conformity Applicability Model
AFCEC	Air Force Civil Engineer Center
AFMAN	Air Force Manual
AGE	Aerospace Ground Equipment
ALAPCO	Association of Local Air Pollutant Control Officials
AMX	Aircraft Maintenance Squadron
APIMS	Air Program Information Management System
ARAR	Applicable or Relevant and Appropriate Requirements
BEE	Bioenvironmental Engineer
BOOS	Burners Out of Service
CAIR	Clean Air Interstate Rule
CALMIM	California Landfill Methane Inventory Model
CARB	California Air Resource Board
CAS	Chemical Abstracts Service
CERCLA	Comprehensive Environmental Response, Compensation, and Liability Act
CONUS	Continental United States
DAC	Defense Ammunition Center
DAF	Department of the Air Force
DODIC	Department of Defense Identification Codes
ECOM	External Combustion Engine
EESOH-MIS	Enterprise Environmental, Safety and Occupational Health Management Information System
EIAP	Environmental Impact Analysis Process
EPAct	Energy Policy Act
EPCRA	Emergency Planning and Community Right-to-Know Act
FESOP	Federally Enforceable State Operating Permit
FIRE	Factor Information Retrieval System
HAP	Hazardous Air Pollutant
HAZMART	Hazardous Materials Pharmacy
HEPA	High Efficiency Particulate Air
HVAC	Heating, Ventilating, and Air Conditioning
ICAO	International Civil Aviation Organization
ICOM	Internal Combustion Engine
LAER	Lowest Achievable Emissions Rate
LandGEM	Landfill Gas Emissions Model
MAJCOM	Major Command

MEM	Mass of Energetic Material
MIDAS	Munitions Items Disposition Action System
NAAQS	National Ambient Air Quality Standards
NAICS	North American Industry Classification System
NASA	National Aeronautics and Space Administration
NEPA	National Environmental Policy Act
NESHAP	National Emission Standards for Hazardous Air Pollutants
NEW	Net Explosive Weight
OCONUS	Outside Continental United States
OTAQ	Office of Transportation and Air Quality
PEMS	Predictive Emissions Monitoring System
RCRA	Resource Conservation and Recovery Act
SAR	Second Assessment Report
SAW	Submerged Arc Welding
SIC	Standard Industrial Classification
SIP	State Implementation Plan
SMAW	Shielded Metal Arc Welding
SME	Subject Matter Expert
STAPPA	State and Territorial Air Pollution Program Administrators
TIM	Time in Mode
TIP	Time in Phase
VIN	Vehicle Identification Number

BREVITY CODES

(Shortened form of a frequently used group of words, phrase, or sentence consisting of entirely upper-case letters. Each letter is spoken individually.)

AB	Afterburner
AEI	Air Emissions Inventory
AERR	Air Emissions Reporting Requirements
AFB	Air Force Base
AFI	Air Force Instruction
AFPMB	Armed Forces Post Management Board
AFRL	Air Force Research Laboratory
APU	Auxiliary Power Unit
BFB	Bubbling Fluidized Bed
BMP	Best Management Practices
BSFC	Brake-Specific Fuel Consumption
CAA	Clean Air Act
CAAA	Clean Air Act Amendments (of 1990)
CE	Civil Engineering
CEMS	Continuous Emission Monitoring System
CEV	Civil Engineering Environmental
CFB	Circulating Fluidized Bed
CFC	Chlorofluorocarbon
CFR	Code of Federal Regulations
CI	Compression Ignition
CNG	Compressed Natural Gas
DLA	Defense Logistics Agency
DoD	Department of Defense
DOE	Department of Energy
EA	Environmental Assessment
EDMS	Emissions and Dispersion Modeling System
EF	Emission Factor
EGBE	Ethylene Glycol Butyl Ether
EIIP	Emissions Inventory Improvement Program
EIP	Emissions Inventory Plan
EIR	Emissions Inventory Report
EIS	Environmental Impact Statement
EOD	Explosive Ordnance Disposal
EPA	Environmental Protection Agency
ERP	Environmental Restoration Program
ESP	Electrostatic Precipitator

ESTCP	Environmental Security Technology Certification Program
FAA	Federal Aviation Administration
FBC	Fluidized Bed Combustor
FCAW	Flux-Cored Arc Welding
FF	Fabric Filter
FFR	Fuel Flow Rate
FFV	Flexible Fuel Vehicles
FGD	Flue Gas Desulphurization
FGR	Flue Gas Recirculation
GHG	Greenhouse Gas
GMAW	Gas Metal Arc Welding
GOV	Government Owned Vehicle
GSA	General Services Administration
GSE	Ground Support Equipment
GVW	Gross Vehicle Weight
GWP	Global Warming Potential
HBFC	Hydrobromofluorocarbon
HC	Hydrocarbon
HCFC	Hydrochlorofluorocarbon
HCP	Hard Chrome Plating
HEI	High Explosive Incendiary
HEV	Hybrid Electric Vehicle
HHV	High Heat Value
HMA	Hot Mix Asphalt
HVLP	High Volume Low Pressure
HVOF	High Velocity Oxy-Fuel
IC	Internal Combustion
IPCT	Industrial Process Cooling Towers
IRP	Installation Restoration Program
LDF	Liquid Drift Factors
LEL	Lower Explosive Limit
LFP	Low Flight Pattern
LGRVM	Vehicle Management Flight Vehicle Maintenance
LNB	Low NOx Burner
LPG	Liquified Petroleum Gas
LTO	Landing and Takeoff
MEK	Methyl Ethyl Ketone
MM	Minutemen Missiles
MPF	Military Personnel Flight
MPO	Metropolitan Planning Office

MSDS	Material Safety Data Sheet
MSW	Municipal Solid Waste
NACAA	National Association of Clean Air Agencies
NC	Nameplate Capacity
NDI	Non-destructive Inspection
NEI	National Emission Inventory
NMHC	Non-Methane Hydrocarbon
NMOC	Non-Methane Organic Compound
NMTOC	Non-Methane Total Organic Compound
NSCR	Nonselective Catalytic Reduction
NSPS	New Source Performance Standards
NSR	New Source Review
OBOD	Open Burning/Open Detonation
OBODM	Open Burning/Open Detonation Model
OCA	Off-Site Consequences Analysis
ODC	Ozone Depleting Chemical
ODP	Ozone Depletion Potential
ODS	Ozone Depleting Substances
OIAI	Once In Always In
OLVIMS	On-line Vehicle Interactive Management System
P2	Pollution Prevention
PAH	Polycyclic Aromatic Hydrocarbon
PBT	Persistent Bioaccumulative and Toxic
PM	Particulate Matter – Aerodynamic diameter unspecified
PM10	Particulate Matter – Aerodynamic diameter < 10 micrometers
PM2.5	Particulate Matter – Aerodynamic diameter < 2.5 micrometers
POL	Petroleum, Oil, and Lubricant
POTW	Publicly Owned Treatment Works
POV	Privately Owned Vehicles
PSD	Prevention of Significant Deterioration
PTE	Potential to Emit
RMP	Risk Management Plan
RVP	Reid Vapor Pressure
SCC	Source Classification Code
SDS	Safety Data Sheet
SCR	Selective Catalytic Reduction
SF	Spillage Factor
SI	Spark Ignition
SNCR	Selective Non-Catalytic Reduction
TCLP	Toxicity Characteristic Leaching Procedure

TDS	Total Dissolved Solids
TGO	Touch-and-Go
THC	Total Hydrocarbons
TLG	Total Landfill Gas
TNMOC	Total Non-Methane Organic Compounds
TO	Technical Order
TOC	Total Organic Compounds
TOG	Total Organic Gases
TRI	Toxic Release Inventory
TSD	Treatment, Storage, & Disposal
TSP	Total Suspended Particulate
ULSD	Ultra-Low Sulfur Diesel
US	United States
USDA	United States Department of Agriculture
UST	Underground Storage Tanks
UV	Ultraviolet
VKT	Vehicle Kilometers Traveled
VMIF	Vehicle Maintenance Index File
VMT	Vehicle Miles Traveled
VOC	Volatile Organic Compound

ABBREVIATIONS

(Shortened form of a word or phrase)

µg	Microgram(s)
A-hr	Ampere-hours
A/ft ²	Ampere per square foot
Btu	British Thermal Unit
°C	Degrees Celsius
CH ₄	Methane
CO	Carbon Monoxide
CO ₂	Carbon Dioxide
Co	Cobalt
Cr	Chromium
Cr ⁺⁶	Hexavalent Chromium
Cr ₂ O ₃	Chromium Oxide
EtO	Ethylene Oxide
°F	Degrees Fahrenheit
ft	Foot (Feet)
g	Grams
g/L	Grams per Liter
gal	Gallon(s)
HCl	Hydrochloric Acid
hp	Horsepower
hr	Hour(s)
kg	Kilogram(s)
kW	Kilowatt(s)
L	Liter
lb	Pound(s)
Mg	Megagram(s) [i.e., metric ton]
mg	Milligram(s)
MMBtu	Million British Thermal Units
Mn	Manganese
NH ₃	Ammonia
Ni	Nickel
N ₂ O	Nitrous Oxide
NO ₂	Nitrogen Dioxide
NO _x	Nitrogen Oxides
O ₃	Ozone
Pb	Lead
PERC	Perchloroethylene

PFC	Perfluorocarbon
ppm	Parts per Million
ppmv	Parts per Million by Volume
ppmw	Parts per Million by Weight
psi	Pounds per Square Inch
psia	Pounds per Square Inch Absolute
°R	Degrees Rankin
scf	Standard Cubic Foot
SF ₆	Sulfur Hexafluoride
SO ₂	Sulfur Dioxide
SO _x	Sulfur Oxides
TNT	Trinitrotoluene
tpy	Tons per Year
yr	Year(s)

1.0 INTRODUCTION

1.1 Background and Purpose

The Clean Air Act (CAA) established the requirements to quantify and report air pollutant emissions from mobile and stationary sources. The purpose of the CAA is to protect public health by addressing the risks posed by certain air pollutants. The United States Environmental Protection Agency (EPA) has established National Ambient Air Quality Standards (NAAQS) which require facility managers to always know if they comply with air regulations. The EPA regulates most mobile sources of air pollution (e.g., automobiles at 40 Code of Federal Regulations (CFR) 85-86, and airplanes at 40 CFR 87, etc.) under Title II of the CAA. Performance standards issued by the EPA limit the emission of certain pollutants from these sources. Fuel-related requirements under Title II at 40 CFR 79-80 are designed to further reduce emissions from mobile sources.

For an installation, such as an Air Force base, the total air pollutant emissions are determined by conducting an Air Emissions Inventory (AEI). An air emissions inventory is the sum of all air pollutant emissions from each source over a stated period of time, typically one year. Air quality regulations vary from region to region, and the local regulatory agency should be consulted prior to conducting an AEI since some local agencies have specific data reporting requirements and/or protocols that the installation must obey. An AEI must be periodically updated as required by federal, state, and local regulations. **Each installation must calculate and record all collected data in the Air Program Information Management System (APIMS).** AEIs must be updated any time there is a change in mission, equipment, and/or operating procedures that result in a substantial change (approximately 5%) in air emissions.

The purpose of this guide is to provide DAF-wide standard documentation for National Environmental Policy Act (NEPA) and General Conformity analyses, *not* for conducting AEIs comprised solely of mobile emissions sources (Mobile AEIs). Mobile source AEIs are primarily conducted to provide data during the development of State Implementation Plan (SIP) budgets. However, since the SIP only accounts for criteria and precursor pollutants, it is unnecessary to calculate emissions for other pollutants though emission factors (EFs) may be provided in this guide. It is still imperative that the Department of the Air Force (DAF) adopts a uniform approach to calculating air pollutant emissions for the most common mobile sources found at DAF installations. This guide serves this purpose by being the DAF's single resource for mobile source emission estimating algorithms and EFs; no other algorithms or EFs shall be used unless mandated by a legally enforceable regulatory requirement (e.g., permit stipulates) or approved by Air Force Civil Engineer Center/Environmental Quality Technical Support Branch (AFCEC/CZTQ) that is reviewed on a case-by-case basis.

Any questions concerning this guide, or requests for additional information pertaining to Air Force AEIs, should be directed to the Air Quality Subject Matter Expert; AFCEC Compliance Technical Support Branch located at, 2261 Hughes Ave., Ste 155, JBSA Lackland, Texas 78236-9853.

1.2 Mobile Sources

This guide only addresses mobile emission sources typically found on DAF installations. A mobile source is defined as any type of non-stationary equipment that may emit an air pollutant subject to regulation by the CAA. These mobile sources include aircraft and aircraft support equipment, on-road vehicles, and non-road engines. The description of stationary sources contributing to air emissions and the methods for calculating these emissions may be found in the *Air Emissions Guide for Air Force Stationary Sources*. It should be noted that certain districts may classify non-road engines as a stationary source rather than a mobile source, therefore it is important to consult with the local air quality district for clarification as needed.

1.3 Air Emissions Inventories (AEIs)

AFMAN 32-7002 (to be replaced with DAFMAN 32-7002), Environmental Compliance and Pollution Prevention, states the following regarding AEIs:

“4.5.1. Air Emissions Inventory (AEI). The Installation Environmental Element must prepare and periodically update an AEI, using APIMS, for all installation stationary air emission sources in accordance with applicable state or local requirements promulgated per 40 CFR Part 51, Subpart A and current AF AEI guidance from AFCEC/CZ.”

“4.5.1.1. Regulatory-required stationary AEIs are completed at the frequency specified by federal, state, and local regulations.”

“4.5.1.2. Comprehensive stationary AEIs (applicable to all installations, including overseas) include all emissions sources (i.e., both permitted and non permitted sources). The Installation Environmental Element will annually review/validate APIMS to ensure currency of the AEI (i.e., sources and consumption data is representative of the current base conditions). A comprehensive review of all sources and associated consumption data for the AEI will be conducted at least every three years (five years for overseas and remotely located facilities) to accurately reflect current emissions.”

“4.5.1.3. Stationary source AEIs include all criteria pollutants, Hazardous Air Pollutants, and greenhouse gases and reflect the installation’s current actual and PTE emissions. Annual regulatory emissions reports, a subset of the comprehensive AEI, are provided to federal, state and local (including Metropolitan Planning Organization or other regional) regulatory agencies as required.”

“4.5.1.4. For installations that exceed the greenhouse gas reporting threshold, the Installation Environmental Element shall accomplish greenhouse gas reporting mandated by 40 CFR Part 98. (T-0). Recommend other installations within 10% of the greenhouse gas reporting threshold accomplish greenhouse gas estimates in accordance with the nondirective Guide to the Mandatory Greenhouse Gas Reporting Rule and Greenhouse Gas Tailoring Rule, issued by AFCEC/CZ. Results will be reported to AFCEC/CZ via APIMS.”

This guide describes the recommended methodologies for calculating actual emissions (i.e., from existing sources) and projected emissions (i.e., from projected federal actions). AEIs of these emissions may be required in order to fulfill a requirement for reporting for a certain period and frequency (e.g., reported for the previous calendar year on an annual basis). AEIs are usually accomplished to meet one or more regulatory requirement(s). The most common regulatory requirements for conducting a mobile source AEI are summarized below.

1.3.1 Title II – Emission Standards for Moving Sources

The EPA regulates most mobile sources of air pollution under Title II of the CAA which sets the standards for motor vehicle and aircraft emissions. Under Title II, the standards are set to control emissions that may endanger public health and welfare. Title II goes on to state that for motor vehicles, it is the manufacturer’s responsibility to establish and perform tests which evaluate the emissions from the device. All testing results are to be maintained/documented and must be made available to any agent of the enforcement authority when requested. Similarly, Title II of the CAA states that the Secretary of Transportation will work to ensure that all aircraft emissions comply with the established air pollution standards.

1.3.2 Implementation Plans

As specified under Section 110 of the Clean Air Act, all States are required to submit a SIP to the EPA which provides for the protection and enhancement of air quality to promote public health and welfare. The SIP provides details for implementation, maintenance, and enforcement of the NAAQS. For areas in the State that are classified as nonattainment with any NAAQS, the SIP must provide strategies for obtaining attainment. For areas in the State that are already classified

as being in attainment, the SIP must provide strategies for maintaining attainment status. All SIPs and SIP revisions must be reviewed and approved by the EPA. If the EPA considers a SIP to be incomplete or inadequate, they may issue their own plan called a Federal Implementation Plan (FIP).

Historically, most control strategies incorporated into implementation plans have targeted stationary sources. However, due to the constant increase in the number of air pollution sources, the issuance of new ambient air quality standards, and the fact that mobile sources emit most of the overall emissions, more control strategies targeting mobile sources are now being incorporated into implementation plans. Since AEIs are typically used to assess the effect of control strategies, an increase in the number of control strategies pertaining to mobile sources will result in an increase in requirements to conduct mobile source AEIs.

1.3.3 General Conformity

Section 176(c) of the CAA prohibits federal activities from taking various actions in nonattainment or maintenance areas unless they first demonstrate conformance with their respective SIP. “A Federal Agency must make a determination that a Federal action conforms to the applicable implementation plan in accordance with the requirements of this Subpart **before the action is taken**” (40 CFR 93.150(b)). A conformity review is a multi-step process used to determine and document whether a proposed action meets the conformity rule. There are two main components to this process: an **applicability analysis** first establishes if a full-scale conformity determination is required and, if it is, a **conformity determination** assesses whether the action conforms to the SIP. The general conformity program requires all federal actions in nonattainment and maintenance areas to comply with the appropriate SIP. An emissions inventory is usually required as part of the conformity determination to identify/quantify air emissions from the proposed federal actions.

1.3.4 National Environmental Policy Act (NEPA)

NEPA requires Federal agencies to evaluate the environmental impacts associated with major actions that they either fund, support, permit, or implement. There are as many as three levels of analysis:

- **Categorical Exclusion Determination** – A proposed action may be categorically excluded from a detailed environmental analysis if the action meets certain criteria which a previous agency has determined to have no significant environmental impact.
- **Environmental Assessment (EA)** – An EA is an evaluation to determine if a proposed action that was not categorically excluded would significantly affect the environment. If the effects are not significant, the agency issues a Finding of No Significant Impact

(FONSI). If the EA concludes the action results in a significant environmental impact, an Environmental Impact Statement must be prepared.

- **Environmental Impact Statement (EIS)** – An EIS is a detailed evaluation of the proposed action, and its alternatives. A draft EIS is filed with the EPA and the EPA publishes a “Notice of Availability” in the Federal Register. Publication of the “Notice of Availability” begins a 45-day public comment period and mandatory 30-day waiting period before the agency can decide on the proposed action.

1.3.5 Other Inventory Uses

Complying with environmental regulations is not the only reason AEIs are conducted. An AEI can be a useful tool in helping industrial facilities implement various environmental programs. The most common program that may involve mobile source emission inventories is summarized below.

1.3.5.1 Pollution Prevention (P2) Opportunities

An AEI can be a useful tool in identifying air related P2 opportunities on military installations. The inventory identifies the types of air pollution sources on base and their accompanying emissions. Due to the large amount of emissions produced from mobile sources, as well as emerging technologies/strategies for reducing mobile source emissions, implementing P2 opportunities for mobile sources is becoming more commonplace.

1.4 Emissions Inventory Methodologies

When conducting an AEI, the quantity of regulated pollutants emitted from all emission sources located on an Air Force installation (except those sources that are specifically exempt) must be determined. Several methods can be used to quantify air pollutants from emission sources. Data from source-specific emission tests or continuous emission monitoring systems (CEMS) are usually preferred for estimating a source’s emissions. The CEMS data provides the best representation of the tested source’s emissions. However, source-specific emission tests or continuous emission monitoring of mobile sources at a large installation, such as an Air Force base, may be impractical. Therefore, EFs and/or mass balance calculations are frequently the best or only method available for estimating emissions, despite their limitations.

An EF is a representative value that attempts to relate the quantity of a pollutant emitted with an activity. These factors are usually expressed as the mass of pollutant released per a unit weight, volume, distance, or duration of the activity emitting the pollutant (e.g., pounds of a pollutant emitted per 1,000 pounds of fuel burned). In most cases, these factors are simply an average of

all available data of acceptable quality and are generally assumed to be representative of long-term averages for all processes in the source category (i.e., a population average).

The general equation for emission estimation using an EF is:

$$E = A \times EF \times N$$

Equation 1-1

Where,

- E = Total emissions
- A = Activity rate
- EF = Emission factor
- N = Number of engines/aircraft/equipment

For some sources, a mass balance approach may provide a better, more accurate estimate of emissions than emission tests would. In general, mass balances are appropriate for use in situations where a high percentage of material is lost to the atmosphere (e.g., sulfur in fuel). As the term implies, all the materials going into and coming out of the process must be considered to allow an emission estimation to be credible.

1.5 Pollutants

Although there are several types (groups/classes) of federal and state regulated pollutants which may be addressed in an AEI, this guide focuses on criteria pollutants, Hazardous Air Pollutants (HAPs), Volatile Organic Compounds (VOCs), and Greenhouse Gases (GHGs).

1.5.1 Criteria Pollutants

In 1971, the EPA established NAAQS for six pollutants which are termed criteria pollutants. These include particulate matter (PM), ozone (O₃), carbon monoxide (CO), sulfur oxides (SO_x), nitrogen oxides (NO_x), and lead (Pb). The NAAQS were established to regulate the emissions of the criteria pollutants using human health-based and/or environmentally based criteria for setting permissible levels. The criteria pollutants are described in more detail below:

Particle Pollution – often referred to as Particulate Matter (PM):

- PM includes the very-fine dust, soot, smoke, and droplets formed from chemical reactions and incomplete burning of fuels.
- The fine particles of PM can get deep into the lungs, causing increased respiratory illnesses and tens of thousands of deaths each year.

- PM is defined as any particle with an equivalent aerodynamic diameter of less than or equal to 10 microns (**PM₁₀**) and is further subdivided to include a separate standard for particles with an equivalent aerodynamic diameter of less than or equal to 2.5 microns (**PM_{2.5}**).

Ground-Level Ozone (O₃):

- O₃ is a primary component of smog that causes human health problems and damage to forests and agricultural crops.
- Repeated exposure to O₃ can make people more susceptible to respiratory infections and lung inflammation.
- Though there is a NAAQS, **O₃ is not emitted directly into the air.**
- Two types of compounds that are the main ingredients (precursors) in forming ground-level O₃ in the presence of ultraviolet (UV) light include:
 - **Volatile Organic Compounds (VOCs):** Defined as “any compound of carbon, excluding carbon monoxide (CO), carbon dioxide (CO₂), carbonic acid, metallic carbides or carbonates, and ammonium carbonate, which participates in atmospheric photochemical reactions” (40 CFR 51.100). Note that 40 CFR 51.100 also exempts compounds based on their negligible photochemical reactivity. Examples of these exempt compounds include methane, ethane, acetone, et al. Common sources of VOCs include gas and diesel-fueled automobiles, fuel storage containers, and solvents used in paints and degreasers.
 - **Nitrogen oxides (NO_x):** Provides the reddish-brown tint in smog. These are produced from the burning of fossil fuels (e.g., gasoline, coal, or oil).

Carbon Monoxide (CO):

- CO is produced when fossil fuel burns incompletely because of insufficient oxygen (O₂).
- Wood, coal, and charcoal fires and gasoline/diesel engines always produce CO.
- In the United States, particularly in urban areas, most CO air emissions are from mobile sources.
- CO can cause harmful health effects by reducing O₂ delivery to the body’s organs (like the heart and brain) and tissues.

Sulfur Oxides (SO_x):

- Sulfur Oxides are a group of molecules made of sulfur and oxygen atoms, such as Sulfur Dioxide (SO₂), and Sulfur Trioxide (SO₃).
- Since SO₂ is the most common form of the sulfur oxides, the EPA uses it as an indicator for the larger group of SO_x.
- SO₂ in the ambient air is just one of several sulfur oxides that contribute to air quality issues.

- SO_x emissions are produced from fossil fuel combustion at power plants (73 percent) and other industrial facilities (20 percent)
- SO_x is linked to several adverse effects on the respiratory system.

Nitrogen Oxides (NO_x):

- Nitric Oxide (NO), Nitrogen Dioxide (NO₂), and nitrate radicals (NO₃) are collectively called Nitrogen Oxides (NO_x)
- NO₂ is a subgroup of nitrogen oxides and is the most environmentally concerning component. It also acts as an indicator for the presence of the larger group of NO_x.
- NO_x forms quickly from vehicle, power plant, and off-road equipment emissions.
- NO_x contributes to the formation of ground-level O₃ and fine particle pollution.
- NO_x causes airway inflammation and can increase breathing problems for people with compromised respiratory systems (e.g., asthma).

Lead (Pb):

- Pb is a metal found naturally in the environment as well as in manufactured products.
- Prior to 1980, the major sources of Pb were on-road vehicles. As a result, the EPA removed Pb from motor vehicle gasoline, resulting in a 95% decline in Pb emissions between 1980 and 1999.
- Today, the major sources of Pb are ore and metals processing (e.g., lead smelters).
- Depending on the level of exposure, Pb can adversely affect the nervous system, kidney function, immune system, reproductive and developmental systems, and the cardiovascular system.

1.5.2 Hazardous Air Pollutants (HAPs)

According to the EPA (USEPA 2016), “Hazardous air pollutants, also known as toxic air pollutants or air toxics, are those pollutants that are known or suspected to cause cancer or other serious health effects, such as reproductive effects or birth defects, or adverse environmental effects.” HAPs include the toxic compounds regulated under Section 112(b) of the CAA. The EPA has been charged with continually analyzing available data on HAPs and revising the regulated list of HAPs. The EPA has also established procedures for both “listing” and “delisting” HAPs. A total of 189 compounds were on the original HAP list, though four compounds have since been removed from this list. These compounds include hydrogen sulfide, in December 1991, caprolactam in June 1996 (61FR30816), ethylene glycol monobutyl ether (EGBE) in November 2004 (69FR69320), and methyl ethyl ketone (MEK) in December 2005 (70FR75047). Changes to the HAPs list are found in 40 CFR Part 63, Subpart C. Since the

information contained within this document is for NEPA and General Conformity, the inclusion of HAP emissions is purely informational.

1.5.3 Greenhouse Gases (GHGs)

The emissions of GHGs have garnered more attention in recent years as their potential impact on global climate change has been explored in greater detail. Consequently, the world population's contribution to GHG emission has been under increased scrutiny. Some GHGs, such as CO₂, occur naturally and are emitted into the atmosphere through natural processes as well as human activities. Other GHGs (e.g., fluorinated gases) are created and emitted solely through human activities. The principal GHGs that enter the atmosphere because of human activities are CO₂, methane (CH₄), nitrous oxide (N₂O), and fluorinated gases.

- CO₂ enters the atmosphere through the burning of fossil fuels, (which include oil, natural gas, and coal), solid waste, trees and wood products, and through other chemical reactions (e.g., cement manufacturing). CO₂ is removed (or sequestered) from the atmosphere when it is absorbed by plants and the ocean as part of the global carbon cycle.
- CH₄ is emitted during the production and transport of coal, natural gas, and oil. CH₄ emissions also result from livestock and other agricultural practices and by the decay of organic waste in municipal solid waste landfills.
- N₂O is emitted during agricultural and industrial activities, as well as during combustion of fossil fuels and solid waste.
- Hydrofluorocarbons, perfluorocarbons, and sulfur hexafluoride are powerful, synthetic GHGs that are emitted from a variety of industrial processes. Fluorinated gases are sometimes used as substitutes for ozone-depleting chemicals (i.e., CFCs, HCFCs, and halons).

GHGs are assigned a Global Warming Potential (GWP), a measurement of how much heat the gas traps in the atmosphere calculated over a specific time interval, typically 100 years. The higher the GWP, the greater the potential for the gas to trap heat, and the more harmful the gas is regarded. CO₂ is used as the baseline gas and is assigned a GWP of 1. GHG emissions are converted into equivalent CO₂ (CO₂e) by taking the product of the emissions of each GHG and its respective GWP. Table A-1 of 40 CFR 98 provides the GWPs for several GHGs and is shown in Table 1-1. The GWP values used to calculate GHG emissions throughout this document are subject to change due to new data becoming available but are considered current as of May 2021. The total GHG emissions are calculated by summing all emissions from each gas and are generally derived using the following equation:

$$E(CO_2e) = \sum_{i=1}^n [E(GHG)_i \times GWP(GHG)_i]$$

Equation 1-2

Where,

E(CO₂e)	=	Greenhouse gas emissions expressed as CO ₂ equivalent (CO ₂ e)
E(GHG)_i	=	Emissions of individual GHG species i
GWP(GHG)_i	=	Global warming potential for GHG species i
i	=	GHG species, most commonly CO ₂ , CH ₄ , and N ₂ O

Table 1-1. Global Warming Potentials

Name	Chemical Formula	Global Warming Potential (100 yr.)	Name	Chemical Formula	Global Warming Potential (100 yr.)
Carbon dioxide	CO ₂	1	HFE-43-10pccc (H-Galden 1040x, HG-11)	CHF ₂ OCF ₂ OC ₂ F ₄ OCHF ₂	2,820
Methane	CH ₄	28	HFE-125	CHF ₂ OCF ₃	12,400
Nitrous oxide	N ₂ O	265	HFE-134 (HG-00)	CHF ₂ OCHF ₂	5,560
HFC-23	CHF ₃	12,400	HFE-143a	CH ₃ OCF ₃	523
HFC-32	CH ₂ F ₂	677	HFE-227ea	CF ₃ CHFOCF ₃	6,450
HFC-41	CH ₃ F	116	HFE-236ca12 (HG-10)	CHF ₂ OCF ₂ OCHF ₂	5,350
HFC-125	C ₂ H ₂ F ₅	3,170	HFE-236ea2 (Desflurane)	CHF ₂ OCHF ₂ CF ₃	1,790
HFC-134	C ₂ H ₂ F ₄	1,120	HFE-236fa	CF ₃ CH ₂ OCF ₃	979
HFC-134a	CH ₂ FCF ₃	1,300	HFE-245cb2	CH ₃ OCF ₂ CF ₃	654
HFC-143	C ₂ H ₃ F ₃	328	HFE-245fa1	CHF ₂ CH ₂ OCF ₃	828
HFC-143a	C ₂ H ₃ F ₃	4,800	HFE-245fa2	CHF ₂ OCH ₂ CF ₃	812
HFC-152	CH ₂ FCH ₂ F	16	HFE-254cb1	CH ₃ OCF ₂ CHF ₂	301
HFC-152a	CH ₃ CHF ₂	138	HFE-263fb2	CF ₃ CH ₂ OCH ₃	1
HFC-161	CH ₃ CH ₂ F	4	HFE-329mcc2	CF ₃ CF ₂ OCF ₂ CHF ₂	3,070
HFC-227ea	C ₃ HF ₇	3,350	HFE-338mcf2	CF ₃ CF ₂ OCH ₂ CF ₃	929
HFC-236cb	CH ₂ FCF ₂ CF ₃	1,210	HFE-338pcc13 (HG-01)	CHF ₂ OCF ₂ CF ₂ OCHF ₂	2,910
HFC-236ea	CHF ₂ CHFCF ₃	1,330	HFE-347mcc3 (HFE-7000)	CH ₃ OCF ₂ CF ₂ CF ₃	530
HFC-236fa	C ₃ H ₂ F ₆	8,060	HFE-347mcf2	CF ₃ CF ₂ OCH ₂ CHF ₂	854
HFC-245ca	C ₃ H ₃ F ₅	716	HFE-347pcf2	CHF ₂ CF ₂ OCH ₂ CF ₃	889
HFC-245fa	CHF ₂ CH ₂ CF ₃	858	HFE-356mcc3	CH ₃ OCF ₂ CHFCF ₃	387
HFC-365mfc	CH ₃ CF ₂ CH ₂ CF ₃	804	HFE-356pcc3	CH ₃ OCF ₂ CF ₂ CHF ₂	413
HFC-43-10mee	CF ₃ CFHCFHCF ₂ CF ₃	1,650	HFE-356pcf2	CHF ₂ CH ₂ OCF ₂ CHF ₂	719
Sulfur hexafluoride	SF ₆	23,500	HFE-356pcf3	CHF ₂ OCH ₂ CF ₂ CHF ₂	446
Trifluoromethyl sulphur pentafluoride	SF ₅ CF ₃	17,400	HFE-365mcf3	CF ₃ CF ₂ CH ₂ OCH ₃	0.99
Nitrogen trifluoride	NF ₃	16,100	HFE-374pc2	CH ₃ CH ₂ OCF ₂ CHF ₂	627
PFC-14 (Perfluoromethane)	CF ₄	6,630	HFE-449s1 (HFE-7100)	C ₄ F ₉ OCH ₃	421
PFC-116 (Perfluoroethane)	C ₂ F ₆	11,100	HFE-569sf2 (HFE-7200)	C ₄ F ₉ OC ₂ H ₅	57
PFC-218 (Perfluoropropane)	C ₃ F ₈	8,900	Sevoflurane (HFE-347mmz1)	CH ₃ FOCH(CF ₃) ₂	216
Perfluorocyclopropane	C-C ₃ F ₆	9,200	HFE-356mmz1	(CF ₃) ₂ CHOCH ₃	14
PFC-3-1-10 (Perfluorobutane)	C ₄ F ₁₀	9,200	HFE-338mmz1	CHF ₂ OCH(CF ₃) ₂	2,620
PFC-318 (Perfluorocyclobutane)	C-C ₄ F ₈	9,540	2,2,3,3,4,4,5,5-Octafluorocyclopentanol	cyc (-CF ₂) ₄ CH(OH)-	13
PFC-4-1-12 (Perfluoropentane)	C ₅ F ₁₂	8,550	HFE-347mmy1	CH ₃ OCF(CF ₃) ₂	363
PFC-5-1-14 (Perfluorohexane, FC-72)	C ₆ F ₁₄	7,910	Bis(trifluoromethyl)-methanol	(CF ₃) ₂ CHOH	182
PFC-9-1-18	C ₁₀ F ₁₈	7,190	2,2,3,3,3-pentafluoropropanol	CF ₃ CF ₂ CH ₂ OH	19
HCFE-235da2 (Isoflurane)	CHF ₂ OCHClCF ₃	491	PFPMIE (HT-70)	CF ₃ OCF(CF ₃)CF ₂ OCF ₂ OCF ₃	9,710

SOURCE: Table A-1 to Subpart A of Part 98 of Title 40 in Code of Federal Regulations

1.6 Document Organization

This document is organized into chapters which are specifically related to facilities or processes typically found at Air Force installations. Chapter topics may or may not correspond directly to source types identified in EPA, state, or local guidance documents, but the intent is to consider sources usually associated with a process. This document specifically addresses mobile sources of air emissions. Guidance for addressing stationary or transitory sources of air pollutants may be found in the *Air Emissions Guide for Air Force Stationary Sources* or *Air Emissions Guide for Air Force Transitory Sources*.

1.7 References

40 CFR 63, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 63-Standards for Hazardous Air Pollutants," U.S. Environmental Protection Agency

40 CFR 98, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 98-Mandatory Greenhouse Gas Reporting," U.S. Environmental Protection Agency

40 CFR 85, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 85-Control of Air Pollution from Mobile Sources," U.S. Environmental Protection Agency

40 CFR 86, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 86-Control of Emissions from New and In-Use Highway Vehicles and Engines," U.S. Environmental Protection Agency,

40 CFR 87, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 87-Control of Air Pollution from Aircraft and Aircraft Engines," U.S. Environmental Protection Agency,

40 CFR 79, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 79-Registration of Fuel and Fuel additives," U.S. Environmental Protection Agency

40 CFR 80, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 80-Regulation of Fuel and Fuel Additives," U.S. Environmental Protection Agency

AFMAN 2020, Air Force Manual 32-7002, "Environmental Compliance and Pollution Prevention," Current 4 February 2020

CAA 1990, "List of Hazardous Air Pollutants," Clean Air Act Section 112 (b), 1990

CAA 2005, "Transformation and Conformity Regulations," Clean Air Act Section 176 (c), August 2005

E.O. 2009, "Federal Leadership in Environmental, Energy, and Economic Performance," Executive Order 13514, October 2009

FR 2004, “List of Hazardous Air Pollutants, Petition Process, Lesser Quantity Designations, Source Category List; Petition To Delist of Ethylene Glycol Monobutyl Ether: Final Rule,” 69 FR 69320, November 2004

FR 1996, “Deletion of Caprolactam From the List of Hazardous Air Pollutants: Final Rule,” 61 FR 30816, June 1996

FR 2005, “List of Hazardous Air Pollutants, Petition Process, Lesser Quantity Designations, Source Category List-methyl ethyl ketone: Final Rule,” 70 FR 75047, December 2005

USEPA 2000, “Taking Toxics Out of the Air.” United States Environmental Protection Agency, Office of Air Quality, Planning and Standards, August 2000

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2.0 AIRCRAFT FLIGHT OPERATIONS (AOPS)

2.1 Introduction

Generally speaking, there are two types of aircraft: fixed-wing or rotary. A fixed-wing aircraft, also known as planes, are heavier-than-air flying machines that are capable of flight by using wings to generate lift via the aircraft's forward airspeed and the shape of the wings. Rotary aircraft, also known as rotorcrafts, are heavier-than-air flying machines that use rotary wings or blades to generate lift. These wings or blades are mounted on a mast, known as a rotor, which they revolve around. Rotorcraft generally include aircraft, such as helicopters, where one or more motors provide lift throughout the entire flight.

Emissions from permanently assigned aircraft and transient aircraft operations typically account for the bulk of the mobile source emissions associated with an Air Force Base. Emissions from aircraft flight operations include emissions from aircraft training and mission flight operations, engine testing, and emissions from each aircraft's associated Auxiliary Power Units (APUs). Aircraft flight operations result in the release of criteria pollutants, GHGs, and HAPs to the atmosphere.

Aircraft engine emissions can be classified as either stationary or mobile in nature depending upon whether the engine is physically attached to the aircraft (mobile) or removed from the aircraft and secured to a stationary device such as a test stand (stationary). Emissions from DAF aircraft training and mission flight operations, as well as trim pad and on-wing engine testing, are considered mobile in nature because the engine is secured to the aircraft (which is considered a mobile source). Operations in which the engine is removed from the aircraft and secured to a non-mobile device (i.e., in engine test cells or on outdoor test pads) result in emissions that are considered stationary. Calculations of these stationary emissions are described in the *Air Emissions Guide for Air Force Stationary Sources*.

Additionally, some aircraft are outfitted with small turbine engines known as APUs that provide auxiliary power to the aircraft while on the ground, and occasionally through takeoff and climb out modes. APUs are sources of air pollution and, similarly to aircraft engines, are regarded as mobile sources unless operating after being removed from the aircraft and secured to a stationary stand.

Finally, it is important to note that the modelling input parameters (e.g., power settings, EFs, and fuel flow rates) are derived from engine testing on the ground and intended for aircraft engine test cells (a stationary source that is regulated) and are indirectly applied to in-flight and ground operations. Therefore, be aware of the relatively poor resulting data quality of any estimate of any aircraft flight operation.

2.2 Mixing Zone Height and Region of Influence

2.2.1 Mixing Height

Under the EPA procedures, an emissions inventory for aircraft operations focuses only on pollutants emitted in the vertical column of air referred to as the “mixing zone.” The mixing zone is the lower layer of atmosphere where air pollutant mixing occurs (and, therefore, chemical reactions occur) and above which there is a negligible effect on ground-level air pollutant concentrations. This mixing zone portion of the atmosphere begins at the earth's surface and ranges from several hundred to several thousand feet in altitude. The mixing zone is vertically bound by the mixing height. The default mixing height defined by the EPA is 3,000 feet (ft) Above Ground Level (AGL) [see 40 CFR 93.153 (c) (2) (xxii)]. However, for proposed actions in nonattainment/maintenance areas where the default mixing height results in total net emissions above the de minimis thresholds, a lower location-specific mixing height can be used. Generally, the default mixing zone height of 3,000 feet AGL should be used unless a specific height is prescribed in an applicable State Implementation Plan (SIP).

2.2.1.1 Air Impact Assessments Mixing Height for Criteria Pollutants

For air impact assessments under NEPA and General Conformity, a locally calculated mixing height may be used to demonstrate insignificant (de minimis) air quality impacts associated with a proposed action. In accordance with General Conformity, 40 CFR 93.153(c)(2)(xxii), a “Federal agency can use 3,000 feet above ground level as a default mixing height, unless the agency demonstrates that use of a different mixing height is appropriate because the change in emissions at and above that height caused by the Federal action is de minimis.” Additionally, in accordance with the 40 CFR 93 Preamble, EPA “added regulatory language to sub-paragraph (xxii) to allow federal agencies to use a different mixing height if they can demonstrate that emissions at and above that height are de minimis.” Therefore, a calculated local mixing height would only be used for air impact assessments (NEPA and General Conformity assessments) and only if it would result in a de minimis level of emissions. In other words, the default 3,000 feet mixing height will always be used initially and, if an action’s emissions are not de minimis, the calculated local average mixing height may be used if (and only if) the adjustment in emission would result in the action being de minimis. Therefore, the local average mixing height should never be used in areas where the average calculated local average mixing height is greater than 3,000 ft.

The *DAF Air Quality Environmental Impact Analysis Processes (EIAP) Guide* should be consulted for more details on the specific use of local average mixing height. Additionally, to ensure proper use and to refine emissions estimates, contact the AFCEC Air Quality Subject Matter Expert to obtain approval and location-specific data for seasonal or annual average mixing heights.

2.2.1.2 Air Impact Assessments Mixing Height for Greenhouse Gasses (GHGs)

Unlike criteria pollutants, the impact of GHGs is at a global-scale and therefore the impact of GHGs at the microscale (local area) is scientifically incalculable. Both the current EPA method for estimating aircraft flight operations emissions (EPA 420-R-92-009) and the General Conformity Rule (40 CFR 93 Subpart B) call for only including criteria pollutant emissions below the mixing height. Given, the mixing height is only associated with microscale air quality criteria pollutant modeling, use of the mixing height for GHG emissions modeling could be considered inadequate. Therefore, logically, if flight-specific fuel consumption data can be reasonably foreseeably predicted, aircraft flight operations GHG emissions used for the “relative comparison analysis” should be calculated using the flight-specific fuel consumption data.

As a result, the Air Force methodology for estimating criteria pollutants, emissions below the mixing height, should NOT be used as a standardized methodology for performing a relative comparison analysis for GHGs. GHG emissions should be estimated for the full extent of aircraft movements as part of the projected net change in GHG emissions and with no altitude restriction (not constrained by the mixing height). Therefore, flight-specific fuel consumption data will be derived from site-specific representative GHG Time-in-Modes (TIMs) or Time-in-Phases (TIPs) which must be used for all impact assessments or emission inventories (default TIMs and TIPs may only be used for planning purposes).

Note: Due to the complexity and highly technical nature of the methodology of deriving TIMs/TIPs and the need for standardization across the Air Force, only AFCEC/CZTQ may derive site-specific representative GHG TIMs or TIPs.

2.2.2 Region of Influence (ROI)

For air quality impacts assessments, a Region of Influence (ROI) for an action is a three-dimensional vertical column of air within the mixing zone (i.e., up to the mixing height) where pollutant emissions associated with a proposed action will occur. There may be more than one ROI due to the physical and spatial distribution of the emissions sources associated with the proposed action. Each non-contiguous area, nonattainment area, and maintenance area must be considered as a separate ROI. Each ROI requires a separate air quality EIAP assessment which must have a conclusion of air quality impacts for the ROI.

Note: Due to the complex nature, ROI determination must be established by AFCEC/CZTQ for all assessments involving flight operations within any nonattainment or maintenance area.

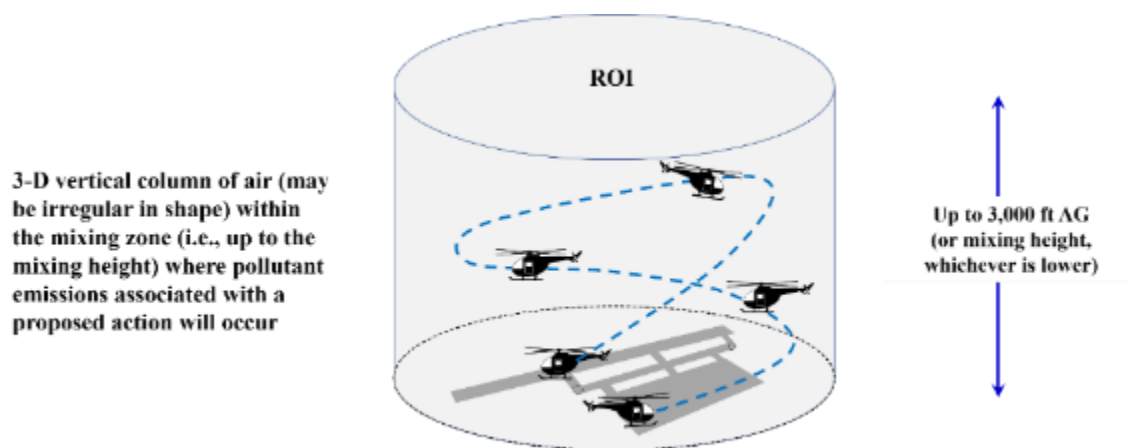


Figure 2-1. ROI

Additionally, for ROIs within areas that are classified as nonattainment or maintenance for any National Ambient Air Quality Standard (NAAQS), a separate General Conformity assessment for each nonattainment or maintenance area must be performed in tandem with the ROI's overall air quality EIAP assessment (this is generally automated in the Air Conformity Applicability Model [ACAM] if the nonattainment and maintenance areas are selected).

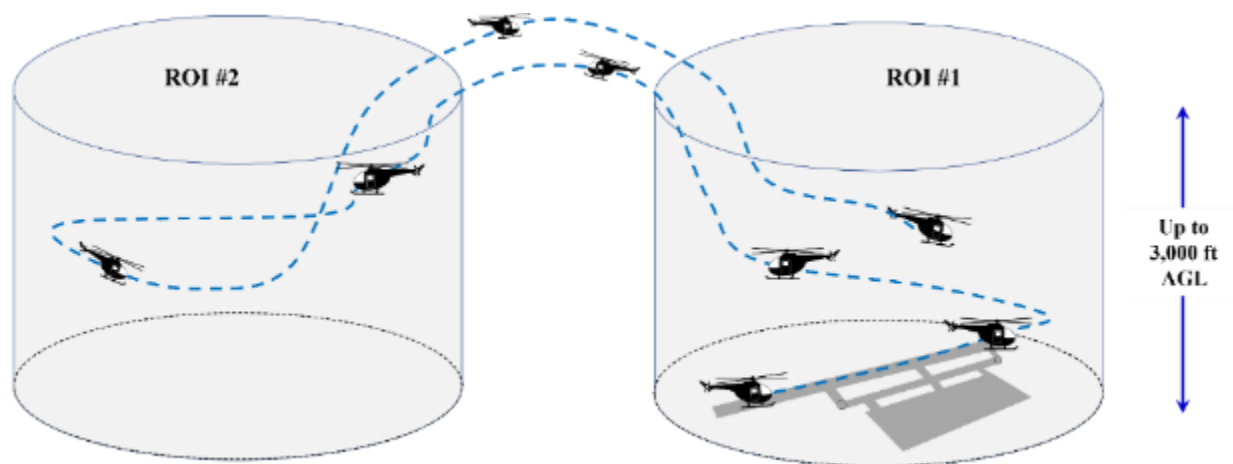


Figure 2-2. Multiple ROIs

All emissions from new aircraft operations associated with a proposed action within the mixing zone must be included in a ROI's air quality EIAP assessment. The mixing zone is the lower layer of atmosphere where air pollutant chemical reactions occur and above which there is a negligible effect on ground-level air pollutant concentrations. This mixing zone portion of the atmosphere begins at the earth's surface and ranges from several hundred to several thousand feet in altitude. The default mixing height defined by the EPA is 3,000 feet (ft) Above Ground Level (AGL) [see 40 CFR 93.153 (c) (2) (xxii)] which shall be used for air quality models except when

an applicable SIP specifies a specific mixing height. However, for proposed actions in nonattainment/maintenance areas where the default mixing height results in total net emissions above the de minimis thresholds, a lower location-specific mixing height can be used.

Therefore, initially only air emissions produced below the default 3,000 ft AGL mixing height are considered when assessing ROIs heights and air quality impacts. There are three aircraft operations that will potentially occur below the mixing height: Landing and Takeoff cycles (LTO cycles), Closed Pattern cycles (CP cycles) (Touch and Goes) and Low Flight Patterns (LFPs). For estimating the total emissions associated with each type of aircraft operation, a reasonably foreseeable typical flight pattern [in terms of Time-in-Mode (TIM) for fixed-wing or Time-in-Phase (TIP) for rotary] for a specific aircraft operation is multiplied by the reasonably foreseeable worst-case number of the specific aircraft operation per year. Additionally, any reasonably foreseeable Trim Tests and Engine Test Cell activities associated with the proposed action (preferred action and alternatives) must be included in the air quality EIAP assessment.

2.3 Aircraft Flight Operations

Fixed-wing aircraft and rotary aircraft are both heavier-than-air flying machines that are capable of flight by using mechanical powered engines. A fixed-wing aircraft (planes) fly using wings to generate lift via forward airspeed; while a rotary aircraft (helicopters) fly using rotary wings or blades to generate lift. Fixed-wing aircraft require runways to take off, while rotary-wing aircraft can take off from any level surface. Therefore, aircraft flight operations for both are quite different.

Flight operations for aircraft are broken down into “flight cycles” for estimating air emissions. A “flight cycle” is one complete repetitive sequence of flight activities which consists of various “flight modes” (and their corresponding engine “power settings”) for fixed-wing aircraft or “flight phases” (idle, taxi, takeoff, flight, and landing phases) for rotary aircraft.

There are three basic flight cycles:

- **Landing and Takeoff (LTO) Cycle:** A flight operation consisting of one complete repetitive flight cycle of arrival and departure.
- **Closed Pattern (CP) Cycle:** A flight operation consisting of one complete repetitive flight cycle that involves practice landing on a runway by briefly touching the landing gear to the runway (or coming very close) and transitioning immediately into takeoff/climb out and associated flying to maneuver into another practice landing.
- **Low Flight Pattern (LFP) Cycle:** A flight operation consisting of one complete repetitive flight cycle below the mixing height that does not include any part of a LTO or CP cycle.

2.3.1 Fixed-Wing Aircraft Flight Operations

2.3.1.1 Fixed-Wing LTO Cycle

The EPA has established formal procedures for calculating exhaust emissions associated with fixed-wing aircraft operations based on a LTO cycle (USEPA 1992). Under the EPA procedures, an emissions inventory for aircraft operations focuses only on pollutants emitted in the vertical column of air referred to as the “mixing zone.” Exhaust emissions occurring within this area are calculated for one complete LTO cycle for each aircraft type by applying aircraft engine-specific emission factors.

For air quality, a sortie includes any number of aircraft flight patterns but only one takeoff and only one return landing. Therefore, the number of sorties equates to the number of LTO cycles. Since a LTO cycle is only a fraction of a single flight which makes up a sortie (that only includes

the very short beginning and very short ending), a LTO cycle corresponds to one arrival and one departure. Therefore, one LTO cycle represents a pair of arrival and departure operations.

Each LTO cycle for fixed-wing aircraft is comprised of four flight modes: taxi/idle, takeoff, climb out, and approach. Each of these modes has a corresponding engine power setting/mode. Engine power modes are aircraft engine operational settings defined by the percent of total engine thrust. The engine power modes for a specific engine are defined by the percent of total thrust the engine was tested at as required by 40 CFR 87, *Control of Air Pollution from Aircraft and Aircraft Engines*. Engine power modes are considered interchangeable with aircraft flight modes because during each aircraft flight mode of operation, the aircraft engines operate at a standard power setting for a given aircraft category. The four flight modes and corresponding engine power settings are:

- **Idle (Taxi) Mode:** The engine idle portion of an LTO cycle includes all on-ground idling and actual taxiing. On-ground idle portions of a LTO cycle are the engine startup/warmup times before taxiing for departure and the engine cooldown/shutdown time periods. The Taxi Mode portion of an LTO cycle also includes the total time the plane spends taxiing. Taxi time includes taxiing times from the parking area to the takeoff/landing area (Taxi Out) and, upon landing, taxiing from the takeoff/landing area to the parking area (Taxi In). The Idle flight mode is performed in the “Idle” engine power setting.
- **Takeoff Mode:** Characterized by full engine thrust, starts from the end of the runway through the aircraft reaching 500 feet Above Ground Level (AGL). Equates to both the “Military” and/or “Afterburner” engine power setting, dependent on engine capability and local flight requirement.
- **Climb Out Mode:** Starts with the initial aircraft ascent from 500 ft AGL through the aircraft exiting the mixing zone (default is 3,000 ft). The Climb Out flight mode is performed in the “Climb Out” (also known as “Intermediate”) engine power settings.
- **Approach Mode:** Commences with the aircraft return and descent, starting when the aircraft enters the mixing zone to 0 ft AGL (touchdown). The Approach flight mode is performed in the “Approach” engine power setting.

A “representative Fixed-Wing LTO Cycle” is a single departure and arrival cycle that is statistically characteristic of all Fixed-Wing LTO cycles flown in an average calendar year. A representative Fixed-Wing LTO Cycle is derived through frequency weighted averaging all significant departure and arrival cycles within an average calendar year.

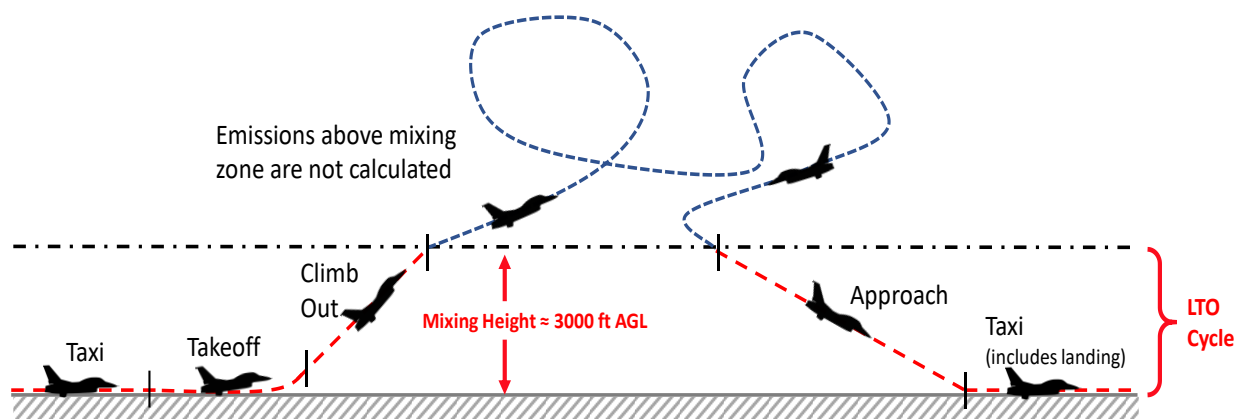


Figure 2-3. Fixed-Wing LTO Cycle

2.3.1.2 Fixed-Wing CP Cycle

A Fixed-Wing CP cycle, also known as a Touch and Go (TGO), is a flight maneuver that involves practice landing on a runway by briefly touching the landing gear to the runway, or coming very close, and transitioning immediately into takeoff/climb out and associated flying to maneuver into another practice landing (See Table 2-9). A CP cycle is effectively a combination of one LTO cycle (specific to the CP cycle) and one LFP for the portion of the return flight below the mixing height.

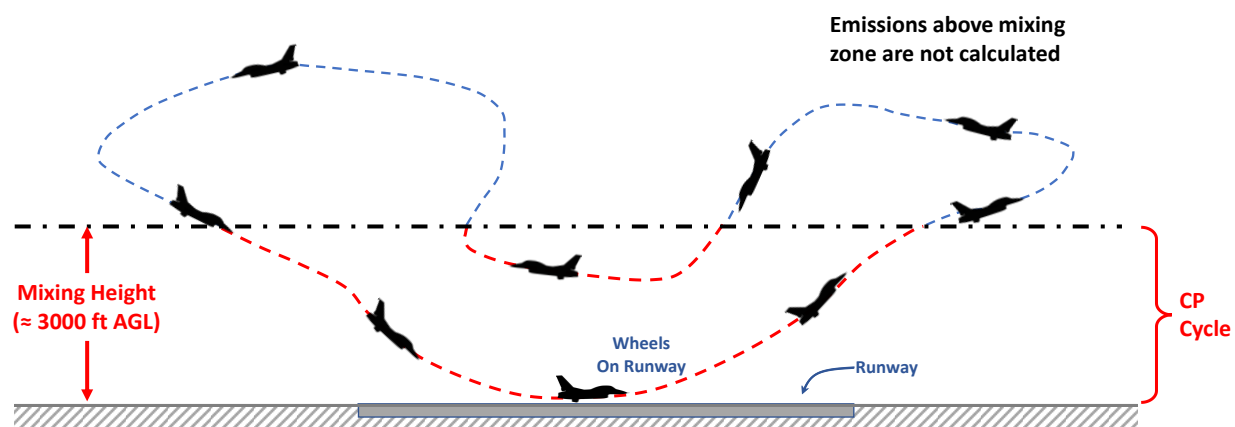


Figure 2-4. Fixed-Wing CP Cycle

2.3.1.3 Fixed-Wing LFP Cycle

A Fixed-Wing LFP cycle is a flight maneuver that occurs below the mixing height (EPA default = 3,000 ft AGL) that is not part of an LTO or CP cycle. Generally, LFPs are flown only in the “Intermediate” and/or “Approach” engine power modes. When calculating emissions for an LFP flying cycle, do not include emissions which are part of a CP cycle as this will cause a double counting of emissions.

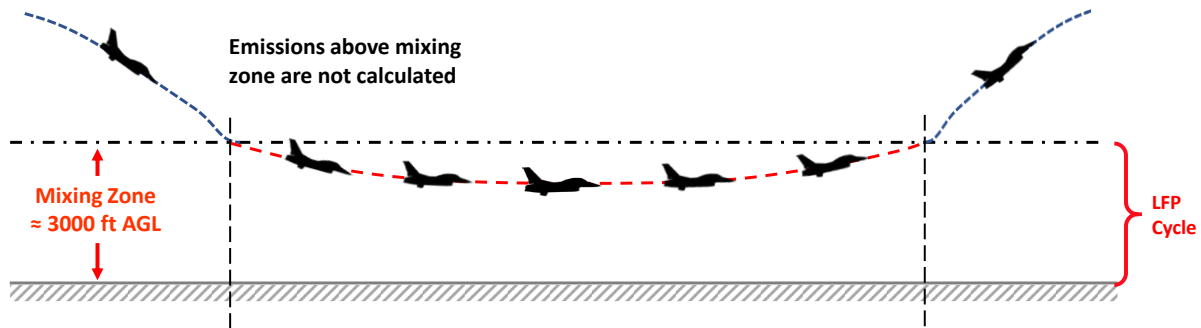


Figure 2-5. Fixed-Wing LFP Cycle

2.3.2 Rotary (Helicopter) Aircraft Flight Operations

Fixed-wing aircraft and rotary aircraft are both heavier-than-air flying machines that are capable of flight by using mechanical powered engines; however, the difference in means of flight also dictates different flight operations. A fixed-wing aircraft generally uses runways to take off and land, while rotary-wing aircraft can take off from any level surface and fly at much lower altitudes. Therefore, rotary aircraft flight patterns are described in terms of “flying phases” rather than “flight modes” (as with fixed-wing aircraft). As with flight modes, flying phases correspond to specific engine power thrust settings:

- **Idle Phase:** Is the flying phase portion of an LTO Cycle which includes all on-ground idle portions of a flight cycle. The Idle Phase is performed in the “Idle” engine power setting.
- **Taxi Phase:** Is the flying phase portion of an LTO Cycle which includes the total time the helicopter spends taxiing. The Taxi Phase is performed in the “Taxi” engine power setting.
- **Takeoff Phase:** Is the flying phase portion of an LTO Cycle which includes the vertical and horizontal ascent from a specified takeoff point. The Takeoff Phase is performed in the “Takeoff” engine power setting.
- **Landing Phase:** Is the flying phase portion of an LTO Cycle which includes the vertical and horizontal descent to a specified landing point. The Landing Phase is performed in the “Landing” engine power setting.
- **Flight Phase:** Is the flying phase portion of a LFP or CP, which includes the portions of flying between 1,000 ft AGL and the mixing height; therefore, the Flight Phase excludes all portions of an LTO Cycle. The Flight Phase is performed in the “Flight” engine power setting.

2.3.2.1 Rotary LTO Cycle

Because rotary aircraft fly at lower altitudes, the LTO cycle only accounts for engine idling, taxiing, takeoff, and landings; however, excludes flight above 1,000 ft AGL. Therefore, rotary aircraft do not follow a Fixed-Wing LTO Cycle and have an independent LTO Cycle (a Rotary LTO Cycle, which reflects only flight below 1,000 ft AGL).

A Rotary LTO Cycle is one complete takeoff and landing cycle, consisting of the time duration in four of the five flying phases (i.e., Time In Phase). “Time In Phase” or “TIP” is the time spent, during a representative flight cycle, in each of the flying phases: idle, taxi, takeoff, and landing phases:

- **Idle Phase:** Is the flying phase portion of an LTO Cycle which includes all on-ground idle portions of a flight cycle. On-ground idle includes both the engine startup/warmup time before taxiing for departure and the engine cooldown/shutdown time period.
- **Taxi Phase:** Is the flying phase portion of an LTO Cycle which includes the total time the helicopter spends taxiing. Taxi time includes taxiing times from the parking area to the takeoff area and, upon landing, taxiing from the landing area to the parking area.
- **Takeoff Phase:** Is the flying phase portion of an LTO Cycle which includes the vertical and horizontal ascent from a specified takeoff point. It is assumed the takeoff phase starts on the ground and ends at 1,000 ft AGL.
- **Landing Phase:** Is the flying phase portion of an LTO Cycle which includes the vertical and horizontal descent to a specified landing point. It is assumed the landing phase starts at 1,000 ft AGL and the time in the landing phase is generally equal to the takeoff TIP. Therefore, it is assumed the TIP for landing ($TIP_{Landing}$) is equal to the TIP for takeoff ($TIP_{Takeoff}$).

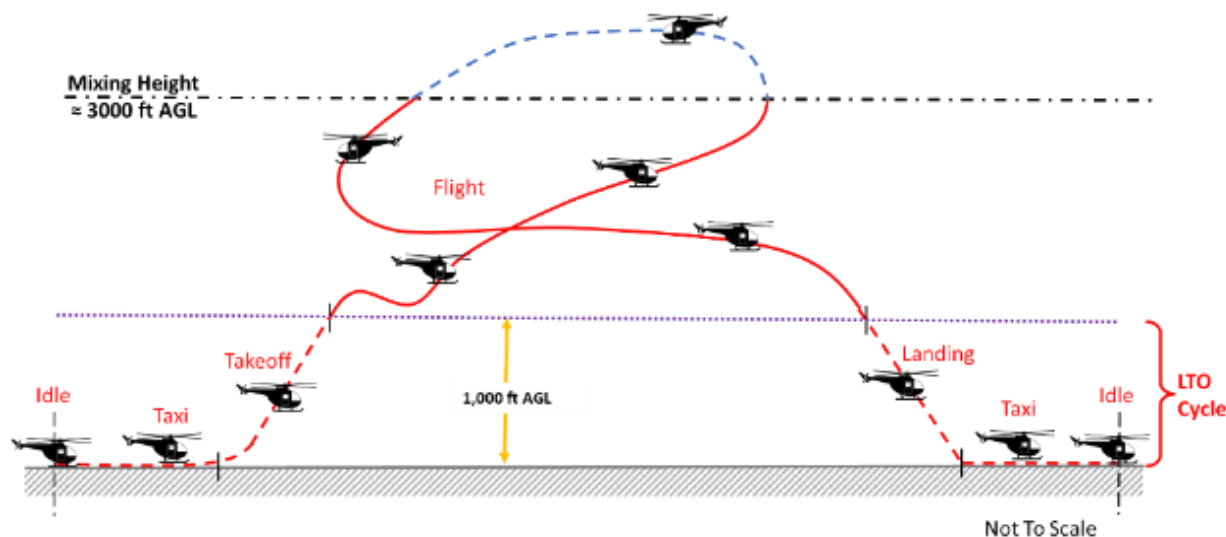


Figure 2-6. Rotary LTO Cycle

A Rotary LTO does not include any flight time above 1,000 feet AGL. A “representative Rotary LTO Cycle” is a single departure and arrival cycle that is statistically characteristic of all Rotary LTO cycles flown in an average calendar year. A representative Rotary LTO Cycle is derived through frequency weighted averaging all significant departure and arrival cycles within an average calendar year.

2.3.2.2 Rotary CP Cycle

A Rotary CP cycle (also known as a Touch and Go [TGO] cycle) is a flight maneuver that involves practice landing on a runway by briefly touching the landing gear to the runway (or coming very close) and transitioning immediately into take off and associated flying to maneuver into another practice landing (See Figure 2-7. Rotary CP Cycle). A CP cycle is simply a combination of one LTO cycle (without idle or taxi phases, specific to the CP cycle) and one LFP for the portion of the return flight below the mixing height.

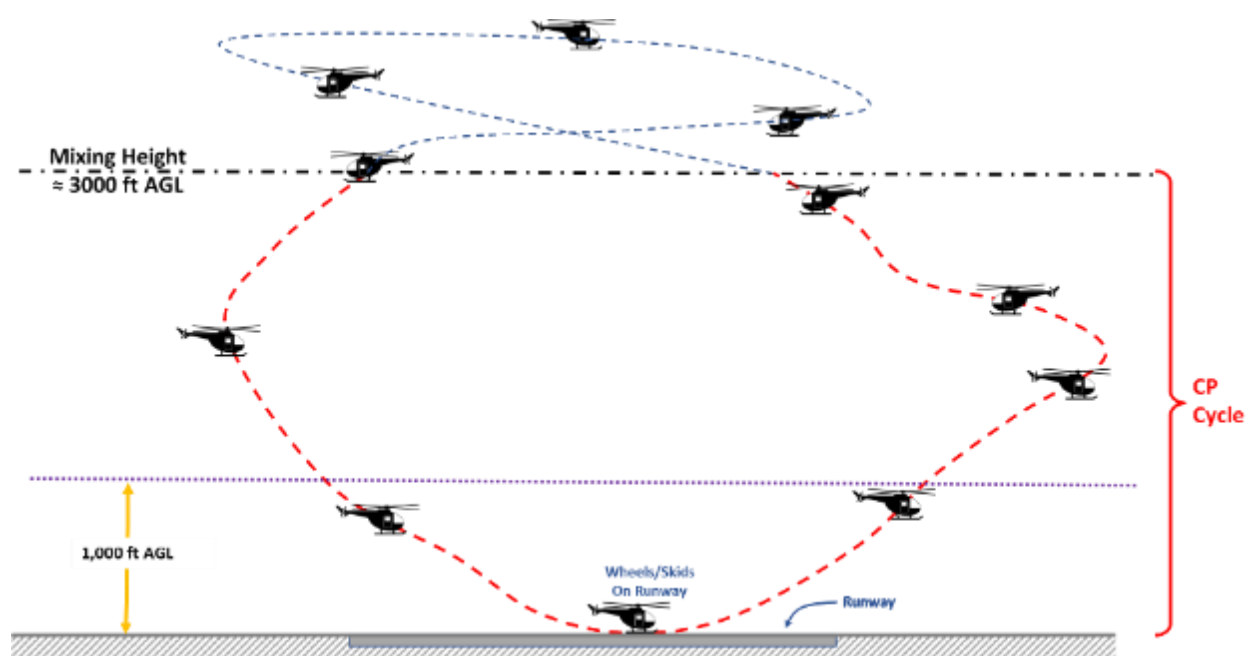


Figure 2-7. Rotary CP Cycle

2.3.2.3 Rotary LFP Cycle

A LFP flying cycle only occurs below the mixing height (EPA default = 3,000 ft AGL) and does not include any part of an LTO or CP cycles. Generally, LFPs are flown only in the flight “Flying Phase” engine power mode. Rotary LFP are often attributed to trips to and from mission destinations. When calculating emissions for an LFP flying cycle, do not include emissions which are part of a CP cycle as this will cause a double counting of emissions.

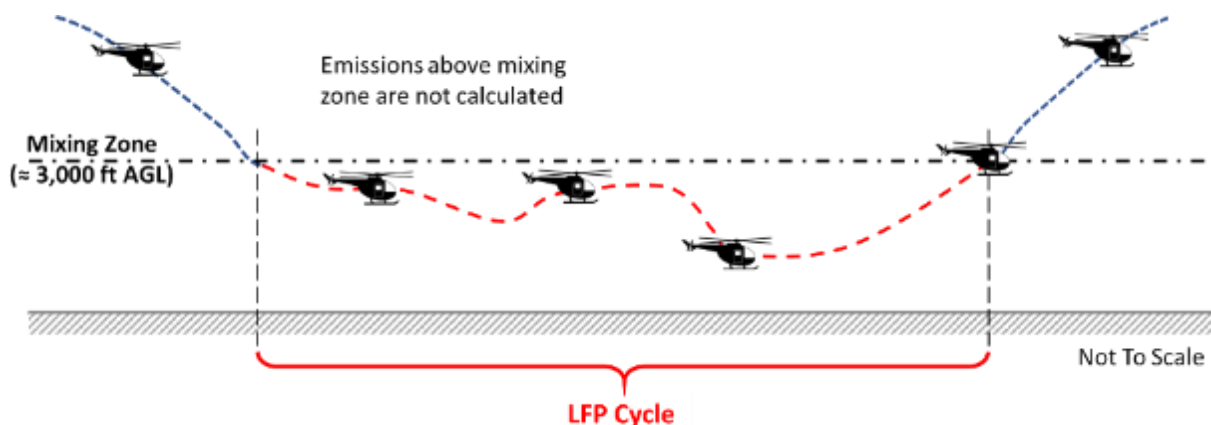


Figure 2-8. Rotary LFP Cycle

2.4 Jet Fuel

Both military aircraft engines (either fixed-wing or rotary) and APUs consume JP-8 fuel, while their commercial counterparts consume a nearly identical fuel known as Jet-A. Jet-A primarily differs from JP-8 in that there are three additives in JP-8: corrosion inhibitor/lubricant enhancer, fuel system icing inhibitor, and a static dissipater additive. While most aircraft operations involve engines that use either JP-8 or Jet-A fuel, small, piston engine-driven aircraft that consume aviation grade gasoline, or AVGAS, may periodically operate on a DAF installation. Additionally, recent Air Force and commercial initiatives are expected to result in the increased use of so-called synthetic aviation fuel or “synfuel” over the next several years. These “synfuels” are derived from either coal or natural gas using the Fischer-Tropsch (FT) process and burn much cleaner than fuels produced from crude oil. Regardless of fuel type, emissions of concern from aircraft operations and engine testing include the criteria pollutants (VOC, CO, NO₂, PM_{2.5}, PM₁₀, and SO₂), and HAPs (including, but not limited to benzene, naphthalene, and 1,3-butadiene) that are commonly associated with fuel combustion processes.

2.4.1 Synthetic Aviation Fuel

Currently, there are on-going Department of Defense (DoD) and DAF initiatives to reduce dependency on foreign petroleum sources. This includes development of battlefield fuels with essentially no sulfur and reduced aromatic content using FT gasification technology on domestic energy sources such as coal and natural gas. These “synthetic” fuels will increasingly be used to offset conventional JP-8 and diesel fuels in Air Force equipment, particularly aircraft. Testing and certification of 50-50 blends of petroleum- and FT-based JP-8 in B-52s has already been completed by the Air Force Research Laboratory (AFRL). The data indicates that the 50-50 blend reduces SO₂, CO₂, and PM emissions considerably (DAF 2007). When estimating emissions from aircraft operations in which a synthetic fuel blended with petroleum JP-8 was used, the following emission reduction factors should be applied:

Table 2-1. Fuel Emission Reduction Factors (FERFs) for JP-8/Synthetic Fuel Blends

Pollutant	Reduction Factor (%)
PM	35
SO ₂	50
CO ₂	1.8

SOURCE: DAF Alternative Fuels Program, AFRL/WS//06-0078. 22nd Annual UC Symposium on Aviation Noise and Air Quality. March 2007.

2.5 Emission Factors

Air pollutant EFs for aircraft operations include emissions from aircraft engines (either fixed-wing or rotary) and APUs used on the airframe. The EFs have been developed through testing by either the manufacturers themselves or another party. Though the EFs were developed for stationary jet engine testing and are most suited for this application, it is considered acceptable to use them for estimating emissions from aircraft flight operations. Criteria pollutant and GHG EFs for each engine are provided in Table 2-9 while speciated VOC and HAP EFs for select engines and APUs are provided in Table 2-10. Criteria pollutants for some APUs are provided in Table 2-12. The aircraft engine EFs presented in Table 2-9 are provided for each power setting which correspond to the flight operating cycle in an LTO cycle. Note that, in several instances, a surrogate engine may have been used to fill data gaps.

2.6 Emissions Calculations

Emissions calculation procedures for aircraft operations under various operational cycles are described in the following paragraphs. EFs and power settings for specific aircraft engines are provided in Table 2-9. For engine models not listed in Table 2-9, contact the Air Quality SME for assistance in selecting a representative surrogate engine.

2.6.1 Fixed-Wing Aircraft Emissions

The EFs listed have been determined through testing and may be found in a variety of sources. It is important to note that some sources, such as the Airport Air Quality Manual and International Civil Aviation Organization (ICAO), do not provide PM₁₀ and PM_{2.5} EFs directly (ICAO 2020). For those sources, the total PM was calculated and was conservatively assumed to be equal to PM₁₀. A similarly conservative estimate was made for PM_{2.5} by assuming that 90% of the total PM₁₀ value is composed of PM_{2.5}. These assumptions are noted in the appropriate tables. Additionally, there are several engines for which some EF data may have been missing. For these engines, either the EFs from a surrogate were used or the missing data was interpolated or

extrapolated. These values are clearly marked in the tables with an (S) for EFs in which a surrogate was used, or a (C) when the values were calculated. The engines used as surrogates are provided in the notes. Common airframe/engine combinations for military fixed-wing, rotary, and commercial aircraft are provided in Table 2-6, Table 2-7, and Table 2-8.

2.6.1.1 LTO Emissions

LTO emissions are calculated based on the type of aircraft, the engine model and number per airframe, the operational mode and TIM for each mode, and the power setting associated with each operational mode. The fuel flow rate associated with each power setting, engine specific EFs, the mixing zone height, and the number of LTO cycles conducted during the year are also considered in the LTO emissions calculation. As TIM and fuel flow rate for each power setting vary among aircraft engines and airframes, the calculation procedure will need to be repeated for individual aircraft types. A description of the operating modes for commercial and military aircraft and the default TIMs are provided in Table 2-4 and Table 2-5 respectively.

Aircraft engine emissions per airframe based on an LTO cycle account only for those emissions occurring below the mixing height and are calculated as follows:

$$E(\text{Pol})_{\text{Aircraft}} = \sum_{i=1}^n \left[\frac{\text{TIM}_i}{60} \times \frac{\text{FFR}_i}{1,000} \times \text{EF}(\text{Pol})_i \times \frac{\text{FERF}(\text{Pol})}{100} \right] \times N \times C \quad \text{Equation 2-1}$$

Where,

E(Pol)_{Aircraft}	=	Annual pollutant emissions per engine on airframe being evaluated (lb/yr)
N	=	Number of units (engines) per airframe being evaluated
60	=	Factor to convert minutes to hours
1000	=	Factor to convert lb fuel burned to 10 ³ lb fuel burned (lb/10 ³ lb)
i	=	Mode identifier. 1 = Idle in/out, 2 = Takeoff, 3 = Afterburner Takeoff, 4 = Climb out, and 5 = Approach
TIM_i	=	Time spent in each mode, referred as “Power Setting” in Table 2-9 and Table 2-10, in per LTO cycle (min/cycle)
FFR_i	=	Fuel flow rate during operational mode per aircraft engine (lb/hr)
EF(Pol)_i	=	Pollutant emission factor for specified mode (lb/10 ³ lb fuel burned)
FERF(Pol)	=	Fuel emission reduction factor, if applicable (%). In cases where alternative fuel is not used, then a value of 100% must be used.
100	=	Factor to convert percent to a fraction (%)
C	=	Number of annual LTO Cycles (cycle/yr)

Default TIMs may only be used for planning purposes. Site-specific TIMs must be used for all impact assessments and emissions inventories. Due to the complexity and highly technical nature of the methodology of deriving site-specific TIMs and the need for standardization across the Air Force, only AFCEC/CZTQ may derive site-specific TIMs.

Note that when calculating the emissions for each LTO, the pollutant EF for the appropriate power setting must be selected from Table 2-9. For engines equipped with afterburner and the “takeoff” TIM does not stipulate Afterburner/Military power settings, 50% of the total time in “takeoff” is assumed to be in the “military” power setting and 50% in the “afterburner” power setting. Also, some aircraft may utilize a different power setting during a flight mode than what is given in Table 2-4 (e.g., an engine may be in the “military” power setting during the “climb out” phase of the LTO). Typically, however, the engine power settings correspond to the flight modes and should be selected when calculating emissions for an LTO.

Some of the data required to calculate aircraft emissions per LTO cycle may be found in the following tables:

- FERG, if synthetic fuel blends are used, are provided in Table 2-1
- Regional sulfur content of JP-8, if required for enhanced accuracy, is provided in Table 2-2
- TIM spent in each LTO cycle mode is found in Table 2-5
- Power settings and fuel flow rates for each LTO cycle mode and associated engine specific EFs are found in Table 2-9 and Table 2-10

2.6.1.2 CP Emissions

Used primarily for NEPA/General Conformity air impact studies under EIAP assessments, CP Cycles, also known as Touch and Go (TGO), are training operations that dictate the need to conduct aircraft operations that deviate from a standard LTO cycle. A TGO cycle is a common flight maneuver that involves practice landing on a runway by briefly touching (or simulating the touching of) the landing gear to the runway and transitioning immediately into climb out. CP emissions are calculated in essentially the same manner as LTO emissions; however, only some modes of a complete LTO are considered. For CP emissions estimating, generally only the default TIMs for approach, takeoff, and climb out are used.

2.6.1.3 LFP Emissions

Another training operation primarily used for NEPA/General Conformity air impact studies under EIAP is a Low Flight Pattern (LFP), which is any aircraft maneuver below the mixing zone height and not associated with an LTO or CP. When calculating emissions in this manner, one must know both the number of LFPs per year and the average time of the LFP. Generally, for LFP emissions estimating, use only the intermediate power setting for the entire time of the LFP.

2.6.2 Auxiliary Power Unit Emissions

APU emissions are based on the APU model associated with each aircraft type, EFs, and the length of time the APU was operating during an LTO cycle. The EFs for APUs are presented in

units of lb/hr, so the operating time for each APU must be known or approximated. Common aircraft/APU combinations and typical APU operating times are found in Table 2-6, Table 2-7, and Table 2-8. Criteria pollutant and GHG EFs for APUs can be found in Table 2-12.

APU emissions are calculated using a two-step approach that consists of the following:

- 1) Calculate pollutant emissions for each APU per LTO; and
- 2) Multiply the emissions per LTO by the total number of LTO cycles per year.

These steps are simplified by the following equation:

$$E(Pol)_{APU} = L \times N \times \frac{OT}{60} \times EF(Pol) \times \frac{FERF(Pol)}{100}$$

Equation 2-2

Where,

E(Pol)_{APU}	=	Annual pollutant emissions produced by the APU for the aircraft being evaluated (lb/yr)
L	=	Number of LTO cycles per year (cycle/yr)
N	=	Number of units (APUs) per airframe being evaluated
OT	=	Operating time per LTO cycle (min/cycle)
60	=	Factor to convert minutes to hours (min/hr)
EF(Pol)	=	APU-specific emission factor for each pollutant (lb/hr)
FERF(Pol)	=	Fuel emission reduction factor, if applicable (%). In cases where alternative fuel is not used, then a value of 100% must be used.
100	=	Factor to convert percent to a fraction (%)

Some of the data required to calculate emissions from APU operations may be found in the following tables:

- Typical airframe/APU combinations and operating times are provided for military fixed-wing, rotary, and commercial aircraft in Table 2-6, Table 2-7, and Table 2-8, respectively.
- Criteria and GHG EFs are provided in Table 2-12
- Speciated VOC and HAP EFs for select APUs are provided in Table 2-10

2.6.3 Trim Pad and On-Wing Testing

Emissions associated with trim pad and on-wing testing are based on the type of aircraft, engine model, testing times, the power settings and associated fuel flow rates, and engine-specific EFs. Estimating emissions from aircraft engine testing may be challenging since the data required for

calculations may be difficult to obtain. Emissions are calculated by multiplying the fuel flow rate at the selected power setting by the amount of time the engine is operated at that power setting and applying pollutant specific EFs. After the emissions are calculated for a pollutant at each power setting, the values are summed to obtain the total annual emissions of that pollutant. Aircraft engine emissions from trim pad and on-wing testing may be calculated using a three-step approach that consists of the following:

- 1) Determine the engine operating mode based on the aircraft fuel flow rate at each test setting.
- 2) Calculating pollutant emissions using the appropriate EF and total time spent within each operating mode.
- 3) Summing emissions from each mode to obtain annual emissions for that engine.

These steps are simplified by the following equation:

$$E(Pol)_{Testing} = \sum_{i=1}^n \left[\frac{TIM_i}{60} \times \frac{FFR_i}{1000} \times EF(Pol)_i \times \frac{FERF(Pol)}{100} \right]$$

Equation 2-3

Where,

E(Pol)_{Testing}	= Annual pollutant emissions produced by the engine being evaluated (lb/yr)
60	= Factor to convert minutes to hours
1000	= Factor to convert lb fuel burned to 10 ³ lb fuel burned (lb/10 ³ lb)
i	= Mode identifier. 1 = Idle in/out, 2 = Takeoff, 3 = Afterburner Takeoff, 4 = Climb out, and 5 = Approach.
TIM_i	= Time spent in the fuel flow rate range specified for the entire year (min/yr)
FFR_i	= Fuel flow rate during operational mode (lb/hr)
EF(Pol)_i	= Pollutant emission factor for specified mode (lb/10 ³ lb fuel burned)
FERF(Pol)	= Fuel emission reduction factor, if applicable (%). In cases where alternative fuel is not used, then a value of 100% must be used.
100	= Factor to convert percent to a fraction (%)

Note that the TIM_i refers to the total time spent within the fuel flow rate range corresponding to an operating mode, and not the aircraft default TIMs as these apply to aircraft flight patterns.

The fuel flow rate and engine specific EFs required to calculate emissions using Equation 2-3 may be found in Table 2-9 and Table 2-10. The appropriate EF is determined by the engine's fuel flow rate and, ideally, the fuel flow rates and operating times for each test profile are recorded by a data logger. Since the fuel flow rate will vary from each test and operating mode, the EFs developed for each mode on each aircraft engine are deemed suitable across a range of fuel flow rates. This means that while the following tables provide an EF for a specific engine at

a precise fuel flow rate, that EF is valid for a range of fuel flow rates and should be used for emissions calculations. The tables in this guide only provide the specific fuel flow rates and corresponding EF at which the engine was tested. To find the range of fuel flow rates and appropriate EF, refer to the “Aircraft Engine Testing” section of the *Air Emissions Guide for Air Force Stationary Sources* since off-wing engine testing is more common and a stationary source of emissions (and therefore subject to more regulation).

The fuel flow rate ranges provided in the *Air Emissions Guide for Air Force Stationary Sources* for most power settings were determined by taking the midpoint of the fuel flow rates between power settings at which the engine was tested. The exception to this method is for the afterburner (AB) setting since the AB setting uses more fuel and combustion efficiency is drastically different from the other operating modes. For those engines equipped with AB, the engine is assumed to operate at 100% power when in the military setting, so any fuel flow rate greater than that of the military operating mode for which the engine was tested is assumed to be in AB and the appropriate AB EF should be selected. Refer to the tables in the *Air Emissions Guide for Air Force Stationary Sources* for additional information.

2.6.4 Rotary Aircraft Emissions

Rotary aircraft (helicopter) flight operations emissions are estimated based on multiplying the emissions from a single representative flying phase cycle with the average number of annual flight operations. The annual flight operations emissions are calculated in a three-step approach that consists of the following:

1. Calculate pollutant emissions for each flight phase of the representative flight cycle,
2. Sum the emissions for each phase to obtain the flying phase cycle emission values, and
3. Multiply the flying phase cycle emission values by the number of annual Flight Cycles.

These steps are simplified by the following equation:

$$E(Pol) = \sum_{i=1}^n \left[\frac{TIP_i}{60} \times \frac{FFR_i}{1000} \times EF(Pol)_i \right] \times N \times C$$

Equation 2-4

Where,

E(Pol)	=	Annual pollutant emissions from flight operations (ton/yr)
TIP_i	=	Time In Phase or time spent in “i” flight phase, referred as “Power Setting” in Table 2-9 and Table 2-10 (min/cycle)
i	=	Phase identifier (1 = idle, 2 = taxi, 3 = takeoff, 4 = flight, and 5 = landing)

60	=	Factor for converting minutes into hours (min/hr)
FFR_i	=	Fuel flow rate per engine for the flight phase (lb fuel/hr)
1000	=	Factor for converting lb fuel to 1,000 lb fuel
EF(Pol)_i	=	Pollutant-specific emission factor for flight phase (lb/1,000 lb fuel)
N	=	Number of engines the aircraft has
C	=	Number of annual Flight Cycles (cycle/yr)

Site-specific TIPs must always be used. Due to the complexity and highly technical nature of the methodology of deriving site-specific TIPs and the need for standardization across the Air Force, only AFCEC/CZTQ may derive site-specific TIPs.

2.6.5 Calculating SO₂ Emissions

SO₂ emissions are created when sulfur in the fuel reacts and combines with oxygen during the combustion process. Fuels with higher sulfur content will produce higher amounts of SO₂ than low-sulfur fuels. It is generally assumed that during combustion, all sulfur in the fuel reacts to form SO₂ or sulfates. The sulfur content in commercial jet fuel is limited to 0.3 weight percent (wt. %); however, the sulfur content for most in-use fuel is significantly less than this limit. For air impact assessments under NEPA and General Conformity, the use of a national average sulfur content is appropriate for estimating sulfur emissions from aircraft operations. For JP-8 fuel, the weighted national average was calculated using data obtained from the Defense Logistics Agency (DLA), Defense Energy Support Center, *Petroleum Quality Information System Fuels Data* (1997-2013). **Using this national weighted average, a national EF was derived and should be used as the default value for all aircraft engines within the continental United States when estimating SO_x emissions.** For enhanced accuracy, regional averages have also been calculated. The default national average and regional averages are provided in Table 2-2.

The sulfur content in fuel varies significantly by the region in which the fuel is obtained. For a more accurate accounting of SO_x emissions from aircraft flight operations, a base-specific SO_x EF may be estimated using the weight percent sulfur content of the fuel as provided by the fuel supplier. Assuming all the sulfur in the fuel is converted to SO₂ during the combustion process, a base-specific SO_x EF may be calculated according to the following equation:

$$EF(SO_x) = S \times 20$$

Equation 2-5

Where,

EF(SO_x)	=	SO _x emission factor (lb SO ₂ /10 ³ lb fuel burned)
S	=	Weight percent sulfur content of the fuel
20	=	Conversion factor derived by converting the weight percent of sulfur to a weight fraction, converting this into units of lb/1,000 lb, and then

multiplying by the ratio of the molecular weight of SO₂ to the molecular weight of sulfur

Table 2-2. Average Sulfur Content of JP-8

Geographic Region	States or Countries	Weighted-Average Sulfur Content (Weight %)	Emission Factor (lb/10³ lb fuel)
National Average		0.054	1.07
1. East Coast U.S.	ME, VT, NH, MA, RI, CT, NY, PA, NJ, DE, MD, VA, WV, NC, SC, GA, FL	0.110	2.19
2. East Central U.S.	ND, SD, MN, IA, NE, WI, MI, OH, KY, TN, IN, IL, MO, KS, OK	0.067	1.35
3. Gulf Coast U.S.	AL, MS, AR, LA, TX, NM	0.053	1.05
4. West Central U.S.	MT, ID, WY, UT, CO	0.028	0.56
5. West Coast U.S.	WA, OR, CA, NV, AZ	0.053	1.07
Middle East	Kuwait, Bahrain, Pakistan, United Arab Emirates	0.069	1.39
European	Europe, Israel, Turkey	0.118	2.37
Pacific	Korea, Japan, HI, AK, Australia, Russia, Singapore	0.096	1.91
Caribbean	Coastal Aruba	0.045	0.89

Source: *Petroleum Quality Information System Fuels Data*. Defense Logistics Agency, Defense Energy Support Center, 1997-2013. Values were calculated using the weight percent sulfur for years 1997 – 2013. Emission factors were calculated using Equation 2-5, though note that the values may not be exactly 20 times the weighted average due to rounding.

2.6.6 Calculating HAP Emissions

Since the information contained within this document is for NEPA and General Conformity, the inclusion of HAP emissions is purely for informational purposes. Despite the limited information available, there are aircraft engine-specific and APU-specific HAP EFs provided in Table 2-10.

2.6.7 Lead (Pb) Emissions

Prolonged exposure to high levels of Pb may result in harmful health effects, especially in young children. Though Pb is a criteria pollutant, this document does not provide any Pb EFs for aircraft and APUs because of the transition to unleaded aviation fuel.

2.6.8 Greenhouse Gas (GHG) Emissions

Since GHG emissions are becoming increasingly more important, it is common to record the carbon dioxide (CO₂), methane (CH₄), and nitrous oxide (N₂O) emissions produced when measuring emissions from mobile and stationary sources. It is also common practice to report GHG emissions in terms of equivalent CO₂ (CO₂e). This document provides a total GHG composite EF consisting of CO₂, CH₄, and N₂O presented in CO₂e for aircraft in Table 2-3 and Table 2-12 for select APUs. For more guidance on the calculation of GHG emissions, refer to the *DAF Guide to the Mandatory Greenhouse Gas Reporting Rule*.

Table 2-3. GHG Emission Factors for Aircraft Engines

Vehicle Type	Fuel Type	Emission Factors (lb/1000lb fuel)			
		Greenhouse Gas Species			
		CH ₄	N ₂ O	CO ₂	CO ₂ e ^b
Aircraft	Jet Fuel ^a	0.1347	0.02628	3203.44	3214.18
	AVGAS	0.1323	0.02572	3053.40	3063.92

Notes for Table 2-3:

Emission Factors calculated and verified 05/2023

- JP-8 emission factors were used as representative Jet Fuel.
- Equivalent CO₂ (CO₂e) emission factors are the total of the product of CO₂, CH₄, and N₂O and their respective Global Warming Potentials (GWP). GWP used are 1 for CO₂, 28 for CH₄, and 265 for N₂O. JP-8 with a density of 6.71 lb/gal was used for unit conversion. AVGAS with a density of 6 lb/gal was used for unit conversion.

2.6.9 HAP Speciation

Though HAP emissions have been speciated for some engines, there is little data available for most aircraft engines likely found at DAF installations. If speciated HAP data for an engine is unavailable, it is recommended that a surrogate engine is used. If there is no suitable surrogate data available, speciated HAP emissions may be estimated using the total VOC emissions and mass fraction of the speciated HAP. The mass fractions for several HAPs are provided in Table 2-11 and those recommended by the EPA as stated in the document *Recommended Best Practice for Quantifying Speciated Organic Gas Emissions from Aircraft Equipped with Turbofan, Turbojet, and Turboprop Engines*. Emissions of a speciated HAP are calculated by first converting the total VOC emissions to Total Organic Gases (TOG) and multiplying this by the mass fraction of the speciated HAP of interest. This calculation is shown in the following equation:

$$E(Pol) = \frac{E(VOC)}{0.99} \times MF(Pol)$$

Equation 2-6

Where,

E(Pol)	=	Emissions of speciated HAP (lb/yr)
E(VOC)	=	Emissions of total VOC (lb/yr)
0.99	=	Factor converting VOC to TOG
MF(Pol)	=	Mass fraction of the HAP of interest as provided in Table 2-11

2.6.10 International Civil Aviation Organization (ICAO) Emission Factors

The ICAO is a United Nations specialized agency that was created in 1944 with the goal of encouraging the safe and orderly development of international civil aviation. The organization develops and maintains safety standards, practices, and procedures for a safe and efficient air transport network that supports global, social, and economic priorities. As the need to develop aviation security policies and measures arose in the late 1960's, ICAO developed enhanced, uniform security measures, policies, and guidelines to address any acts of unlawful interference within the aviation system. All security initiatives placed by ICAO rely on the cooperation and commitment among member states.

To make advances in environmental stewardship, ICAO has developed additional standards, policies, and guidance material to specifically address aircraft noise and engine emissions. Most of ICAO's work within the environmental field is undertaken by the ICAO Committee on Aviation Environmental Protection (CAEP), including the collection of aircraft exhaust data from engine manufacturers for engines that have entered production. Many of these engines are used on military aircraft found at DAF bases and are often given a military designation to differentiate them from their civilian engine counterparts. Military-sponsored emissions tests have not been conducted on these engines and EFs have not been developed for them. The data

collected by CAEP may be utilized to assist in the calculation of aircraft engine emissions. This document includes EFs that have been developed from various studies as well as those provided by ICAO. This section of the document serves to briefly describe how the ICAO EFs were calculated so they may be used to calculate emissions from aircraft flight operations.

The aircraft exhaust data gathered by CAEP has been standardized per engine based on percent engine thrust. These values are used with the emission data sheets provided by ICAO to calculate aircraft engine emissions. ICAO emissions data sheets provide NO_x and CO emission indices, but do not provide VOC or PM emission indices directly. ICAO provides hydrocarbon (HC) emission indices which are multiplied by a scaling factor of 1.15 to estimate VOCs. This scaling factor is provided by a combined FAA and EPA report titled *Recommended Best Practice for Quantifying Speciated Organic Gas Emissions from Aircraft Equipped with Turbofan, Turbojet, and Turboprop Engines* (May 2009).

ICAO does not directly provide PM emissions, but describes three types of PM, and outlines a method to calculate each. The first type of PM consists mainly of black carbon and is a designated non-volatile (nvPM - EI_{nvPMmass} and EI_{nvPMnumber}) estimation based on the SCOPE11 (2019) method. The second type of PM is designated volatile sulfate (PM EI_{VPmass-FSC}) and is dependent on the sulfur content of the fuel burned in the engine. The last type of PM is designated organic volatiles (PM EI_{VPmass-FuelOrganics}) and results from the incomplete combustion of fuel. The sum of these three values is assumed to represent PM₁₀, with PM_{2.5} assumed to equal 90% of the PM₁₀ total.

When calculating the non-volatile portion of the PM emissions indices, the first step is to verify that a smoke number, which acts as a surrogate or indicator of plume opacity, has been provided for each mode (SN_k). If not, the ICAO *Airport Air Quality Manual* may be consulted to estimate those SNs that are missing using the scaling factors in Table D-1 (ICAO 2020).

$$SF = \frac{SN_k}{SN_{max}}$$

Where,

SF	=	Scaling Factor
SN_k	=	SN for one of the modes, k (take-off, climb-out, approach or idle)
SN_{max}	=	Maximum SN

Next, calculate the carbon mass concentration for an engine operating in mode k, which is a measure of the black carbon mass per standard volume of flow at the instrument location, using SN_k and a unit scale factor C_r = 1 for nvPM mass concentration.

$$C_k \left(\frac{\mu g}{m^3} \right) = \frac{648.4 e^{0.0766 \cdot SN_k}}{1 + e^{-1.098 \cdot (SN_k - 3.064)}} \cdot C_r$$

Where,

C_k	=	Estimated non-volatile particulate matter mass concentration for an engine operating in mode k ($\mu\text{g}/\text{m}^3$)
SN_k	=	SN for one of the engine modes, k (take-off, climb-out, approach or idle)
C_r	=	Unit scale factor for nvPM mass concentration of 1 ($\mu\text{g}/\text{m}^3$)

Next, the nvPM_{mass} EI ($EI_{nvPM_{mass,k}}$) is calculated by multiplying the C_k value with the specific exhaust volume (Q_k). Q_k is calculated according to the engine type reported on the ICAO data sheet, or in the database. For engines listed as turbofan (TF), $\beta = 0$. For those listed as mixed turbofan (MTF), $\beta = \text{BPR}$ correction value. The Air-Fuel Ratio (AFR_k) used in calculations is usually proprietary information, but ICAO has developed average AFR_k values that may be used, which are provided in the ICAO *Airport Air Quality Manual* (ICAO 2020) Table D-2. Finally $Q_r = 1$ is the unit scale factor for specific exhaust volume.

$$EI_{nvPM_{mass,k}} \left(\frac{g}{kg \text{ fuel}} \right) = C_k \left(\frac{\mu g}{m^3} \right) \cdot 10^{-6} \cdot Q_k \left(\frac{m^3}{kg \text{ fuel}} \right)$$

$$Q_k = (0.777 \cdot AFR_k \cdot (1 + \beta) + 0.767) \cdot Q_r$$

Where,

$EI_{nvPM_{mass,k}}$	=	Emission index for non-volatile particulate matter mass concentration at instrument level (g/kg fuel)
C_k	=	Estimated non-volatile particulate matter mass concentration for an engine operating in mode k ($\mu\text{g}/\text{m}^3$)
Q_k	=	Specific exhaust volume for an engine operating in mode k ($\text{m}^3/\text{kg fuel}$)
AFR_k	=	Representative Air-fuel ratio by ICAO power settings (mode k)
β	=	Engine configuration correction value. $\beta = 0$ for TF and $\beta = \text{BPR}$ for MTF
Q_r	=	Unit scale factor for specific exhaust volume of 1 (mg/kg fuel)
BPR	=	Bypass Ratio as provided on ICAO datasheet or in ICAO database

Finally, the nvPM_{mass} EIs for each engine mode at the engine exit plane ($EI_{nvPM_{mass,e,k}}$) are needed, and require an estimated and engine mode-dependent correction for particle losses. The particle loss characteristic of the ICAO standardized particle sampling system $k_{slm,k}$ is multiplied by the nvPM_{mass} concentration at the instrument to calculate the final nvPM_{mass} EIs for each engine mode at the engine exit plane ($EI_{nvPM_{mass,e,k}}$).

$$k_{slm,k} = \ln \left(\frac{3.219 \cdot C_k \cdot (1 + \beta) + 312.5}{C_k \cdot (1 + \beta) + 42.6} \right)$$

$$EI_{nvPMmass,e,k} \left(\frac{g}{kg \text{ fuel}} \right) = k_{slm,k} \cdot EI_{nvPMmass,k} \left(\frac{g}{kg \text{ fuel}} \right)$$

Where,

$k_{slm,k}$	= Mode-specific particle loss correction factor for nvPMmass
C_k	= Estimated non-volatile particulate matter mass concentration for an engine operating in mode k ($\mu\text{g}/\text{m}^3$)
β	= Engine configuration correction value. $\beta = 0$ for TF and $\beta = \text{BPR}$ for MTF
$EI_{nvPMmass,e,k}$	= Emission index for non-volatile particulate matter mass at engine exit ($\text{g}/\text{kg fuel}$)
$EI_{nvPMmass,k}$	= Emission index for non-volatile particulate matter mass concentration at instrument level ($\text{g}/\text{kg fuel}$)

Included in the ICAO *Airport Air Quality Manual* (ICAO 2020) is an estimation for the number of nvPM particles per kg of fuel at the engine exit ($EI_{nvPMnumber,e,k}$). This calculation for the number of particles does not affect the estimated mass concentration emission index at engine exit $EI_{nvPMmass,e,k}$.

The volatile PM sulfate portion of the PM emission index ($EI_{vPMmass-FSC}$) is a function of the fuel sulfur content and the fuel sulfur conversion efficiency. If the sulfur content is unknown, the national average weight percent as given in Table 2-2 may be used in the calculations. Similarly, if the fuel sulfur conversion efficiency is unknown, ICAO recommends that a median value of 2.4 wt.% be used. The following equation is used to determine $EI_{vPMmass-FSC}$.

$$EI_{vPMmass-FSC} = (10)^6 \left[\frac{(FSC/100)(\epsilon/100)(MW_{out})}{MW_{Sulphur}} \right] \cdot S_r$$

Where,

$EI_{vPMmass-FSC}$	= Emission index for volatile sulfate PM mass due to fuel sulfur ($\text{mg}/\text{kg fuel}$)
FSC	= Fuel sulfur content. Use Table 2-2 if unknown (%)
(10)⁶	= Factor for converting units to mg/kg
100	= Factor converting percent to a fraction (%)
ϵ	= Fuel sulfur conversion efficiency. Use 2.4 if unknown (%)
MW_{out}	= Molecular weight of sulfate as 96 (g/mol)
$MW_{Sulphur}$	= Molecular weight of elemental sulfur as 32 (g/mol)
S_r	= Unit scale factor for FSC volatile PM mass concentration of 1 ($\text{mg}/\text{kg fuel}$)

Finally, the organic volatiles ($EI_{vPMmass-FuelOrganics,k}$) portion of the PM EI is calculated by taking the product of the HC EI and the ratio of $EI_{vPMmass-FuelOrganics,k}$ to the HC EI of a reference engine.

ICAO uses the CFM56-2-C1 as the reference engine for this ratio. ICAO organized these reference engine modal values (δ_k) in the ICAO *Airport Air Quality Manual* (ICAO 2020) Table D-5. The calculation of $EI_{vPM_{mass-FuelOrganics,k}}$ is shown in the following equation:

$$EI_{vPM_{mass-FuelOrganics,k}} = (\delta_k)(EI_{HCEngine,k})$$

Where,

$EI_{vPM_{mass-FuelOrganics,k}}$	=	Emission index for PM from fuel organics in mode k (mg/kg fuel)
δ_k	=	Constant ratio of $EI_{PM_{vol-FuelOrganics}}$ to EI_{HC} for the CFM56-2-C1 engine in mode k (mg/g)
$EI_{HCEngine,k}$	=	Hydrocarbon emission index of the engine in mode k (g/kg fuel)

After $EI_{nvPM_{mass,e,k}}$, $EI_{vPM_{mass-FSC}}$, and $EI_{vPM_{mass-FuelOrganics,k}}$ are calculated, the emission index for PM_{10} is estimated by summing these values and converting into the correct units as shown:

$$EI_{tPM_{mass,k}} = \frac{[EI_{nvPM_{mass,e,k}} + EI_{vPM_{mass-FSC}} + EI_{vPM_{mass-FuelOrganics,k}}]}{1000}$$

Where,

$EI_{tPM_{mass,k}}$	=	Total PM_{10} emission index for sum of $EI_{nvPM_{mass,e,k}}$ and $EI_{vPM_{mass,k}}$ per mode k (g/kg)
$EI_{nvPM_{mass,e,k}}$	=	Emission index for non-volatile PM at engine exit per mode k (mg/kg)
$EI_{vPM_{mass-FSC}}$	=	Emission index for volatile sulfate PM (mg/kg)
$EI_{vPM_{mass-FuelOrganics,k}}$	=	Emission index for volatile fuel organic PM per mode k (mg/kg)
1000	=	Factor to convert units from mg to g (mg/g)

$PM_{2.5}$ may then be determined from PM_{10} by assuming $PM_{2.5}$ is equal to 90% of the PM_{10} value.

$$EI(PM_{2.5})_{Total} = EI(PM_{10})_{Total} \times 0.90$$

Where,

$EI(PM_{2.5})_{Total}$	=	Total emission index for $PM_{2.5}$ (g/kg)
$EI(PM_{10})_{Total}$	=	Total emission index for PM_{10} (g/kg)
0.90	=	Fraction of total $PM_{2.5}$ to total PM_{10}

EFs have been calculated using ICAO data for engines that are most likely to be found at DAF installations. These have been added to EFs that have already been developed from government-subsidized studies. For any engine without a listed EF, if ICAO emissions data is available, the EFs may be calculated as described in this section as needed.

2.7 Information Resources

The Flightline Operations Group and aircraft pilots should be contacted to obtain the information required to calculate emissions from aircraft flying operations (i.e., the number of LTOs, CPs, LFPs, TIMs, etc.). The Aircraft Maintenance Squadron (AMX) should be contacted to obtain the information needed to calculate emissions from on-wing engine testing operations. This includes the types of engines tested, the number of tests conducted during the year on each engine type, the average time spent at each power setting during a typical test, and the associated fuel flow rate at each power setting. Additionally, if needed, the base's Weather Department may be contacted to obtain the average mixing zone height for the base.

2.8 Example Calculations

The following section provides example calculations for aircraft operations.

2.8.1 Problem 1 – Fixed-Wing Landing and Takeoff Cycle Emissions

For planning purposes, a DAF installation needs to calculate the annual CO emissions from LTO operations associated with their F-15D aircraft. The following information was obtained from the base:

Aircraft Model: F-15D
 Engine Model: F100-PW-220
 Number of Engines: 2
 Number of Annual LTOs: 2,500

Given this is only for planning purposes, the TIM data from Table 2-5 and the mode-specific fuel flow rates and EFs from Table 2-9 for the F100-PW-220 engine are presented in the following table:

LTO Mode	Average TIM (min.)	Typical Power Setting	Average Fuel Flow Rate (lb/hr)	CO Emission Factor (lb/1000 lb fuel)
Taxi/Idle-out	18.50	Idle	2,084	35.32
Takeoff	0.40*	Military	9,679	0.86
		Afterburner	41,682	11.87
Climb out	0.80	Intermediate	5,770	0.86
Approach	3.50	Approach	3,837	1.92
Taxi/Idle-in	11.30	Idle	2,084	35.32

* Since this engine has afterburner capability and the “takeoff” TIM does not stipulate Afterburner/Military power settings, it is assumed that the duration of the Takeoff mode is 50% Afterburner and 50% Military.

The annual CO emissions from F-15D LTO cycles are calculated using Equation 2-1 as shown:

$$E(Pol)_{Aircraft} = \sum_{i=1}^n \left[\frac{TIM_i}{60} \times \frac{FFR_i}{1,000} \times EF(Pol)_i \times \frac{FERF(Pol)}{100} \right] \times N$$

Step 1 – Calculate CO pollutant emissions for each engine in each mode in the LTO cycle.

$$E(Pol)_{mode} = \frac{TIM_i}{60} \times \frac{FFR_i}{1,000} \times EF(Pol)_i \times \frac{FERF(Pol)}{100}$$

$$E(CO)_{Idle-Out} = \frac{18.50}{60} \frac{\text{min}/\text{cycle}}{\text{min}/\text{hr}} \times \frac{2084}{1,000} \frac{\text{lb}/\text{hr}}{\text{lb}/10^3 \text{lb}} \times 35.32 \frac{\text{lb}}{10^3 \text{lb fuel}} = 22.7 \frac{\text{lb}}{\text{cycle}}$$

$$E(CO)_{Approach} = \frac{3.50}{60} \frac{\text{min}/\text{cycle}}{\text{min}/\text{hr}} \times \frac{3837}{1,000} \frac{\text{lb}/\text{hr}}{\text{lb}/10^3 \text{lb}} \times 1.92 \frac{\text{lb}}{10^3 \text{lb fuel}} = 0.43 \frac{\text{lb}}{\text{cycle}}$$

$$E(CO)_{Takeoff(Mil)} = \frac{0.20}{60} \frac{\text{min}/\text{cycle}}{\text{min}/\text{hr}} \times \frac{9679}{1,000} \frac{\text{lb}/\text{hr}}{\text{lb}/10^3 \text{lb}} \times 0.86 \frac{\text{lb}}{10^3 \text{lb fuel}} = 0.03 \frac{\text{lb}}{\text{cycle}}$$

$$E(CO)_{Takeoff(AB)} = \frac{0.20}{60} \frac{\text{min}/\text{cycle}}{\text{min}/\text{hr}} \times \frac{41682}{1,000} \frac{\text{lb}/\text{hr}}{\text{lb}/10^3 \text{lb}} \times 11.87 \frac{\text{lb}}{10^3 \text{lb fuel}} = 1.65 \frac{\text{lb}}{\text{cycle}}$$

$$E(CO)_{Climb out} = \frac{0.80}{60} \frac{\text{min}/\text{cycle}}{\text{min}/\text{hr}} \times \frac{5770}{1,000} \frac{\text{lb}/\text{hr}}{\text{lb}/10^3 \text{lb}} \times 0.86 \frac{\text{lb}}{10^3 \text{lb fuel}} = 0.07 \frac{\text{lb}}{\text{cycle}}$$

$$E(CO)_{Idle-in} = \frac{11.30}{60} \frac{\text{min}/\text{cycle}}{\text{min}/\text{hr}} \times \frac{2084}{1,000} \frac{\text{lb}/\text{hr}}{\text{lb}/10^3 \text{lb}} \times 35.32 \frac{\text{lb}}{10^3 \text{lb fuel}} = 13.86 \frac{\text{lb}}{\text{cycle}}$$

Step 2 – Calculate the total CO emissions for a single F-15D LTO.

$$E(Pol)_{LTO} = \sum_{i=1}^n [E(Pol)_{Mode_i} + \dots + E(Pol)_{Mode_n}] \times 2$$

$$E(CO)_{LTO} = (22.7 + 0.43 + 0.03 + 1.65 + 0.07 + 13.86) \frac{\text{lb}}{\text{cycle}} \times 2 = 77.48 \frac{\text{lb}}{\text{cycle}}$$

Step 3 – Determine the total CO emissions from annual F-15D operations.

$$E(CO)_{Aircraft} = 77.48 \frac{lb}{cycle} \times 2500 \frac{cycle}{yr}$$

$$E(CO)_{Total} = 193,700 \frac{lb}{yr}$$

2.8.2 Problem 2 – Auxiliary Power Unit Emissions

For planning purposes, a DAF installation also needs to calculate the annual NO_x emissions associated with the operation of the APUs on their aircraft. The following information was obtained:

APU Model	GTCP165-1
# APU per aircraft	1
Power Setting	Constant
Operating Time per LTO	15 minutes
Total LTO per year	1300

The annual NO_x emissions from APU use is calculated using Equation 2-2 as shown:

$$E(Pol)_{APU} = L \times N \times \frac{OT}{60} \times EF(Pol) \times \frac{FERF}{100}$$

Step 1 – Calculate the NO_x emissions for a single LTO cycle. Note that Table 2-12 lists the NO_x EF for the GTCP165-1 as 1.22 lb/hr.

$$E(NO_x)_{LTO} = \frac{15 \left(\frac{min}{cycle} \right)}{60 \left(\frac{min}{hr} \right)} \times 1.22 \left(\frac{lb}{hr} \right) = 0.305 \frac{lb}{cycle}$$

Step 2 – Calculate the NO_x pollutant emissions from annual APU operations.

$$E(Pol)_{APU} = L \times N \times E(Pol)_{LTO}$$

$$E(NO_x)_{APU} = 1300 \left(\frac{cycle}{yr} \right) \times 1 \times 0.305 \left(\frac{lb}{cycle} \right)$$

$$E(NO_x)_{APU} = 396.5 \frac{lb}{yr}$$

2.8.3 Problem 3 – On-Wing Engine Testing

A DAF installation performs on-wing evaluations of the F110-GE-100 engines used on their F-16D aircraft. The base must calculate CO and SO_x emissions from on-wing testing operations.

The base and the fuel supplier are in Louisiana, and the base wants the SO_x emissions specific for Louisiana sulfur content. Approximately 30 on-wing engine tests following similar procedures were conducted during the year. For these similar on-wing tests, the procedure, average fuel flow rate (FFR), and average operating times are summarized as follows:

Procedure	Avg FFR (lb/hr)	Avg Operating Time (min)
Stabilize at Idle	809.33	5
Accelerate and Hold	4,147.78	5
Stabilize at Idle	981.21	1
Accelerate and Hold	8,170.88	5
Decelerate and Hold	1,232.67	5
Accelerate and Hold	12,223.02	2
Decelerate and Hold	1,187.40	2
Accelerate and Hold	17,959.14	0.25
Decelerate and Hold	2,201.55	2
Stabilize at Idle	1,205.45	5
Shut down engine	---	---

Step 1 – Determine the engine power mode for each test setting. The operating mode encompasses a range of fuel flow rates. Select the operating mode by finding where the average fuel flow rate in the table above falls within the fuel flow rate range for the operating mode. Typically, this is simply by finding the numerically closest fuel flow rate in Table 2-9 to the average rates recorded in the table above, however, refer to the appropriate tables for the latest version of the *Air Emissions Guide for Air Force Stationary Sources* for assistance as needed. The operating modes are as follows:

Procedure	Avg FFR (lb/hr)	Avg Operating Time (min)	Engine Power Mode
Stabilize at Idle	809.33	5	Idle
Accelerate and Hold	4,147.78	5	Approach
Stabilize at Idle	981.21	1	Idle
Accelerate and Hold	8,170.88	5	Intermediate
Decelerate and Hold	1,232.67	5	Idle
Accelerate and Hold	12,223.02	2	Military
Decelerate and Hold	1,187.40	2	Idle
Accelerate and Hold	17,959.14	0.25	Afterburner
Decelerate and Hold	2,201.55	2	Idle

Stabilize at Idle	1,205.45	5	Idle

Step 2 – Calculate CO and SO_x emissions for each operating mode. In this example, calculating the emissions while operating in the “idle” modes is the most complicated since the engine is tested in that mode at several points and at different fuel flow rates. Note also that this example states that the base conducted 30 “similar” tests, and without calculating emissions using data from each test, the following method is an approximation. It is up to the base to determine the level of precision required when estimating emissions from on-wing engine testing. The emission factors for CO and SO_x for fuel flow rates corresponding to a flight mode are provided in Table 2-9.

$$E(Pol)_{mode} = \sum_{i=1}^n \left[\frac{TIM_i}{60} \times \frac{FFR_i}{1000} \times EF(Pol)_i \times \frac{FERF(Pol)}{100} \right]$$

$$E(CO)_{Idle} = \left[\left(\frac{5 \text{ min/test}}{60 \text{ min/hr}} \times \frac{809.33 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{1 \text{ min/test}}{60 \text{ min/hr}} \times \frac{981.21 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{5 \text{ min/test}}{60 \text{ min/hr}} \times \frac{1232.67 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{2 \text{ min/test}}{60 \text{ min/hr}} \times \frac{1187.40 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{2 \text{ min/test}}{60 \text{ min/hr}} \times \frac{2201.55 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{5 \text{ min/test}}{60 \text{ min/hr}} \times \frac{1205.45 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) \right] \times 24.11 \frac{\text{lb}}{10^3 \text{ lb fuel}} \times 30 \frac{\text{tests}}{\text{yr}} = 289.28 \frac{\text{lb}}{\text{yr}}$$

$$E(SO_x)_{Idle} = \left[\left(\frac{5 \text{ min/test}}{60 \text{ min/hr}} \times \frac{809.33 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{1 \text{ min/test}}{60 \text{ min/hr}} \times \frac{981.21 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{5 \text{ min/test}}{60 \text{ min/hr}} \times \frac{1232.67 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{2 \text{ min/test}}{60 \text{ min/hr}} \times \frac{1187.40 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{2 \text{ min/test}}{60 \text{ min/hr}} \times \frac{2201.55 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) + \left(\frac{5 \text{ min/test}}{60 \text{ min/hr}} \times \frac{1205.45 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \right) \right] \times 1.07 \frac{\text{lb}}{10^3 \text{ lb fuel}} \times 30 \frac{\text{tests}}{\text{yr}} = 12.84 \frac{\text{lb}}{\text{yr}}$$

CO and SO_x emissions for other modes are similarly calculated and is summarized as follows:

Mode	CO Emissions (min lb fuel lb/hr 10 ³ lb fuel yr)	SO _x Emissions (min lb fuel lb/hr 10 ³ lb fuel yr)
Idle	289.28	12.84
Approach	59.83	11.10
Intermediate	70.88	21.86
Military	41.31	13.08
Afterburner	151.33	2.40

Step 3 – Determine the total CO and SO_x emissions.

$$E(Pol)_{Aircraft} = \sum_{i=1}^n E(POL)_{Mode}$$

$$E(CO)_{Aircraft} = (289.28 + 59.83 + 70.88 + 41.31 + 151.33) \left(\frac{lb}{yr} \right)$$

$$E(CO)_{Aircraft} = 612.63 \frac{lb}{yr}$$

$$E(SO_x)_{Aircraft} = (12.84 + 11.10 + 21.86 + 13.08 + 2.40) \left(\frac{lb}{yr} \right)$$

$$E(SO_x)_{Aircraft} = 61.27 \frac{lb}{yr}$$

Note that the *Air Emissions Guide for Air Force Stationary Sources* provides an example of how to estimate emissions for jet engine testing. The two examples show a slightly different but virtually identical method for estimating emissions from both processes.

2.8.4 Problem 4 – Rotary Flight Cycle Emissions

For planning purposes, an AFB is receiving ten new Sikorsky Black Hawks (UH-60) that will perform 1,000 flight cycles annually. The UH-60 is equipped with two T700-GE-700 engines. Given the time spent in each phase given below, determine the total annual NO_x emissions from this action.

Idle TIP (TIP_{Idle}) = 5.5 min

Site-specific taxi time (TIP_{Taxi}) = 7.6 min

Takeoff TIP (TIP_{Takeoff}) = Landing TIP (TIP_{Landing}) = 0.68 min

Flight TIP (TIP_{Flight}) = 7.45 min

Step 1 – Determine the FFR and NO_x EF for each flight phase. This data is provided in Table 2-7 and provided in the table below:

Flight Phase	Fuel Flow (lb/hr)	Emission Factor (lb/1,000 lb fuel)						
		NO _x	SO _x	CO	VOC	HAPs	PM ₁₀	PM _{2.5}
Idle	134	3.36	1.07	46.24	0.50	0.33	1.48	1.33
Taxi	469	10.95	1.07	5.12	0.02	0.01	1.26	1.13
Takeoff or Landing	626	11.87	1.07	3.51	0.01	0.00	2.22	2.00
Flight	725	11.43	1.07	2.81	0.01	0.01	2.61	2.33

Step 2 – Calculate the total NO_x emissions. Using Equation 2-4 and the data provided above, the total NO_x emissions are calculated as follows:

$$E(Pol) = \sum_{i=1}^n \left[\frac{TIP_i}{60} \times \frac{FFR_i}{1000} \times EF(Pol)_i \right] \times N \times C$$

$$E(NO_X) = \sum \left[\left(\frac{5.5 \text{ min}}{60 \text{ min/hr}} \times \frac{134 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \times 3.36 \frac{\text{lb}}{10^3 \text{ lb}} \right) + \left(\frac{7.6 \text{ min}}{60 \text{ min/hr}} \times \frac{469 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \times 10.95 \frac{\text{lb}}{10^3 \text{ lb}} \right) + \left(\frac{0.68 \text{ min}}{60 \text{ min/hr}} \times \frac{626 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \times 11.87 \frac{\text{lb}}{10^3 \text{ lb}} \right) + \left(\frac{0.68 \text{ min}}{60 \text{ min/hr}} \times \frac{626 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \times 11.87 \frac{\text{lb}}{10^3 \text{ lb}} \right) + \left(\frac{7.45 \text{ min}}{60 \text{ min/hr}} \times \frac{725 \text{ lb/hr}}{1000 \text{ lb}/10^3 \text{ lb}} \times 11.43 \frac{\text{lb}}{10^3 \text{ lb}} \right) \right] \times 2 \times \frac{1000}{\text{yr}}$$

$$E(NO_X) = \sum [(0.04 \text{ lb}) + (0.65 \text{ lb}) + (0.08 \text{ lb}) + (0.08 \text{ lb}) + (1.03 \text{ lb})] \times 2 \times \frac{1000}{\text{yr}}$$

$$E(NO_X) = 3,760 \frac{\text{lb}}{\text{yr}}$$

Table 2-4. Comparison of Commercial and Military Fixed-Wing LTO Cycle Modes

Engine Type	Commercial LTO Cycle Modes	Military LTO Cycle Modes	Typical Engine Power Setting(%)
Turbofan	Taxi/Idle-out	Idle	7
	Takeoff	Military or Afterburner (AB)	100 or 110-150 ^a
	Climb out	Intermediate	70-85 ^a
	Approach	Approach	30
	Taxi/Idle-in	Idle	7
Turboprop	Taxi/Idle-out	Idle	7
	Takeoff	Military	90
	Climb out	Intermediate	70-85 ^a
	Approach	Approach	30
	Taxi/Idle-in	Idle	7

SOURCE (unless otherwise noted): *Airport Air Quality Manual*, International Civil Aviation Organization, 2020.

- a. Power setting percentage from *Air Emissions Factor Guide to Air Force Mobile Sources*, 2009 which cites Emissions and Dispersion Modeling System (EDMS) as the original source. For military aircraft equipped with afterburner (AB), it should be generally assumed that the duration of Takeoff mode is 50% AB and 50% military.

Table 2-5. Default Time-in-Mode for Various Aircraft Categories

Aircraft Type	Typical Duration by Mode (Minutes)				
	Taxi-in/Taxi-out	Takeoff ^a	Climb out	Approach	Total
Military Aircraft					
Combat:					
USAF	29.80	0.40	0.80	3.50	34.50
USAF F-35 ^b	29.80	1.065 (Military) 0.013 (AB)	0.012	2.501	33.391
USN	13.00	0.40	0.50	1.60	15.50
Trainer - Turbine: ^c					
USAF T-7	9.74	0.43 (Military) 0.37 (AB)	0.95	1.67	13.16
USAF T-38	19.20	0.40	0.90	3.80	24.30
USAF General	11.20	0.50	1.40	4.00	17.10
USN	13.00	0.40	0.50	1.60	15.50
Transport - Turbine: ^c					
USAF general	15.90	0.40	1.20	5.10	22.60
USN	26.00	0.50	2.50	4.50	33.50
USAF B-52 and KC-135	47.70	0.70	1.60	5.20	55.20
Military - Piston	13.00	0.60	5.00	4.60	23.20

SOURCE (unless otherwise noted): *Procedures for Emission Inventory Preparation Volume IV: Mobile Sources*, EPA420-R-92-009, December 1992. DAF – United States Air Force. USN – United States Navy

- For military aircraft equipped with afterburner (AB), it should be generally assumed that the duration of Takeoff mode is 50% AB and 50% military.
- SOURCE: *F-35A/B/C Flight Profiles (Karnes 3.2) for US Air Force, US Navy, and US Marine Corps Airfield Noise and Air Studies*, June 2015. Note that the duration of “Takeoff” mode is the total of the TIM in military and AB for each takeoff.
- Turbines include both turbofan and turboprop engines.

Table 2-6. Military Airframe/Engine/APU Combinations

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
A-3A	Combat: USN	J57-P-6B (2)	---	---	c, h(1)
A-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
A-4	Combat: USN	J52-P-2 (1)	---	---	c, h(4)
		J52-P-8 (1)	---	---	c, h(4)
		J65-W-2 (1)	---	---	c, h(4)
		J65-W-4 (1)	---	---	c, h(4)
A-4C	Combat: USN	J65-W-16A (1)	---	---	c, h(1)
		J65-W-20 (1)	---	---	h(3)
A-4E	Combat: USN	J52-P-6A (1)	---	---	c, h(1)
		J52-P-8A, -8B (1)	---	---	c, h(1)
A-4F	Combat: USN	J52-P-8A, -8B (1)	---	---	c, h(1)
A-4L	Combat: USN	J65-W-20 (1)	---	---	h(1)
A-4M	Combat: USN	J52-P-408 (1)	---	---	h(1)
A-6A	Combat: USN	J52-P-6A, -6B (2)	---	---	c, h(1), h(3)
		J52-P-8A, -8B (2)	---	---	c, h(1)
A-6B	Combat: USN	J52-P-6A (2)	---	---	c, h(1)
		J52-P-8A (2)	---	---	c, h(1)
A-6C	Combat: USN	J52-P-8A (2)	---	---	c, h(1)
A-6E	Combat: USN	J52-P-8A, -8B (2)	---	---	c, h(1)
A-6F	Combat: USN	F404-GE-400D (2)	---	---	c, h(1)
A-7A	Combat: USN	TF30-P-6B (1)	---	---	h(3)
A-7B, -7C	Combat: USN	TF30-P-8 (1)	---	---	c, h(1)
		TF30-P-408 (1)	---	---	c, h(1)
A-7D, -7K	Combat: USAF	TF41-A-1 (1)	---	---	h(1), h(5)
A-7E	Combat: USN	TF41-A-2 (1)	---	---	h(1)
A-10	Combat: USAF	TF34-GE-100A (2)	---	---	h(2)
		TF34-GE-400 (2)	---	---	h(3)
A-10A	Combat: USAF	TF34-GE-100 (2)	GTCP 36-50 (1)	1.00	b, c, h(1)
A-10C	Combat: USAF	TF34-GE-100 (2)	---	---	h(6)
A-29	Combat: USAF	PT6A-68C (1)	---	---	h(17)
A-37	Combat: USAF	J69-T-25 (2)	---	---	h(3)
A-37A, -37B	Combat: USAF	J85-GE-17A (2)	---	---	h(4)
AC-130A	Transport - Turbine: USAF general	T56-A-1A (4)	---	---	h(1)
		T56-A-9 (4)	---	---	h(1)
AC-130H	Transport - Turbine: USAF general	T56-A-15 (4)	GTCP 85-180L (1)	1.00	c, e, h(1), i(1)
AC-130J	Transport - Turbine: USAF general	AE2100D3 (4)	---	---	c, h(6)
AC-130U, -130W	Transport - Turbine: USAF general	T56-A-15 (4)	---	---	h(1), h(6)
AT-6B	Trainer - Turbine: USAF General	PT6A-68D (1)	---	---	h(14)
AT-38B	Trainer - Turbine: USAF T-38	J85-GE-5, -5A, -5G, -5J (2)	---	---	c, h(1)
AU-24	Combat: USAF	PT6A-27 (1)	---	---	h(3)
AV-8B	Combat: USN	F402-RR-406 (1)	---	---	h(7)
		F402-RR-408A (1)	---	---	h(7)
BAMS-D	Combat: USN	AE3700N (1)	---	---	c, h(7)
B-1A	Combat: USAF	F101-GE-100 (4)	---	---	h(5)
B-1B	Combat: USAF	F101-GE-102 (4)	GTCP 165-9 (1)	2.00	b, c, h(1)
B-2A	Combat: USAF	F118-GE-100 (4)	131-3A (2)	4.00	b, c, h(1)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
B-52D	Transport - Turbine: USAF B-52	J57-P-19W (8)	---	---	h(5)
		J57-P/F-43WB (8)	---	---	h(5)
B-52G	Transport - Turbine: USAF B-52	J57-P-22 (8)	---	---	h(3)
B-52H	Transport - Turbine: USAF B-52	TF33-P-3 (8)	---	---	h(3)
		TF33-P-5 (8)	---	---	h(3)
		TF33-P-7 (8)	---	---	h(3)
		TF33-P-103 (8)	---	---	h(6)
C-1	General Aviation: Piston	R-1820-82 (2)	---	---	h(3)
C-1A	General Aviation: Piston	R-1820-82, -82A (2)	---	---	c, h(1)
C-2	Transport - Turbine: USN	T56-A-7 (2)	---	---	h(3)
C-2A	Transport - Turbine: USN	T56-A-8, -8A, -8B (2)	---	---	c, h(1)
		T56-A-425 (2)	---	---	c, h(7)
C-5A	Transport - Turbine: USAF general	TF39-GE-1, -1A, -1C (4)	GTCP 85-98d (1)	8.00	c, e, h(1), h(3), h(9), i(1)
C-5B, -5C	Transport - Turbine: USAF general	TF39-GE-1C (4)	GTCP 85-98d (1)	8.00	e, h(1), i(1)
C-5M	Transport - Turbine: USAF general	CF6-80C2L1F (4)	---	---	c, h(1)
		F138-GE-100 (4)	---	---	c, h(1), i(2)
C-9	Transport - Turbine: USAF general	JT8D-17 (2)	---	---	g, h(3)
C-9A	Transport - Turbine: USAF general	JT8D-9A (2)	GTCP 85-98d (1)	6.00	h(1), i(1)
C-9B	Transport - Turbine: USN	JT8D-9A (2)	---	---	c, h(1)
C-9C	Transport - Turbine: USAF general	JT8D-9A (2)	---	---	c, h(1)
C-11A	General Aviation: Business Jet	F113-RR-100 (2)	---	---	h(1), k, i(1)
		SPEY Mk511-8 (2)	---	---	c, h(1)
C-12	General Aviation: Turboprop	PT6A-27 (2)	---	---	h(3)
C-12A	General Aviation: Turboprop	PT6A-38 (2)	---	---	h(1)
		PT6A-41 (2)	---	---	h(3)
C-12C, -12D, -12L	General Aviation: Turboprop	PT6A-41 (2)	---	---	h(1)
C-12F, -12R, -12T, -12U	General Aviation: Turboprop	PT6A-42 (2)	---	---	h(1), h(6)
C-12J	General Aviation: Turboprop	PT6A-65B (2)	---	---	c, h(6)
C-12S	General Aviation: Turboprop	PT6A-60A (2)	---	---	h(1)
C-17A	Transport - Turbine: USAF general	F117-PW-100 (4)	331 250G (1)	0.50	b, h(1)
		PW2040 (4)	331 250G (1)	0.50	b, h(1), i(2)
C-18B	Transport - Turbine: USAF general	JT3D-7 (4)	T41M-9A (1)	0.50	b, c, h(1)
C-20A	General Aviation: Business Jet	F113-RR-100 (2)	GTCP 36-100 (1)	0.50	b, h(1), i(1)
		SPEY Mk511-8 (2)	GTCP 36-100 (1)	0.50	b, c, h(1)
C-20B, -20C, -20D, -20E, -20J	General Aviation: Business Jet	F113-RR-100 (2)	---	---	h(1), k, i(1)
		SPEY Mk511-8 (2)	---	---	c, h(1)
C-20F, -20G, -20H	General Aviation: Business Jet	TAY Mk611-8 (2)	---	---	h(1)
C-21A	General Aviation: Business Jet	TFE731-2-2B (2)	---	---	h(1)
C-22A	Transport - Turbine: USAF general	JT8D-7A (3)	GTCP 85-98ck (1)	1.00	c, h(1), i(1)
C-22B	Transport - Turbine: USAF general	JT8D-7 (3)	GTCP 85-98ck (1)	1.00	h(1), i(1)
C-23A	General Aviation: Turboprop	PT6A-45R (2)	---	---	c, h(1)
C-23B, -23C	General Aviation: Turboprop	PT6A-65AR (2)	---	---	c, h(1)
C-26A	General Aviation: Turboprop	TPE331-11U (2)	---	---	c, h(1)
C-26B, -26D	General Aviation: Turboprop	TPE331-12UA-701G (2)	---	---	c, h(1)
C-27J	Transport - Turbine: USAF general	AE2100D2 (2)	---	---	c, h(6)
C-28A	General Aviation: Piston	GTSIO-520-M (2)	---	---	h(1)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
C-32A	Transport - Turbine: USAF general	F117-PW-100 (2)	331-49-7081 (1)	3.00	b, h(1), k
		PW2040 (2)	331-49-7081 (1)	3.00	b, h(1)
C-37A	General Aviation: Business Jet	BR700-710A1-10 (2)	---	---	h(6)
C-37B	General Aviation: Business Jet	BR700-710C4-11 (2)	---	---	h(7)
C-38A	General Aviation: Business Jet	TFE731-40 (2)	---	---	c, h(1)
C-40A	Transport - Turbine: USN	CFM56-7B24 (2)	---	---	d, h(1)
C-40B	Transport - Turbine: USAF general	CFM56-7B27 (2)	131-9 (1)	0.50	b, c, h(1)
		CFM56-7B3 (2)	131-9 (1)	0.50	b, c, h(1)
C-40C	Transport - Turbine: USAF general	CFM56-7B3 (2)	---	---	c, d, h(1)
		CFM56-7B27 (2)	---	---	d, h(1)
C-123K	Transport - Turbine: USAF general	J85-GE-17 (2)	---	---	c, h(1)
		R-2800-99W (2)	---	---	h(1)
C-130A, -130D	Transport - Turbine: USAF general	T56-A-9, -9A, -9B (4)	GTCP 85L (1)	1.00	b, c, h(1)
C-130B	Transport - Turbine: USAF general	T56-A-7, -7A (4)	GTCP71/71A (1)	1.00	b, c, h(1)
C-130E	Transport - Turbine: USAF general	T56-A-7, -7A (4)	GTCP71/71A (1)	1.00	b, c, h(1)
C-130F	Transport - Turbine: USN	T56-A-7, -7A (4)	GTCP71/71A (1)	1.00	b, c, h(1)
C-130H	Transport - Turbine: USAF general	T56-A-15 (4)	GTCP 85-180L (1)	1.00	c, e, h(1), i(1)
C-130J	Transport - Turbine: USAF general	T56-A-15 (4)	GTCP 85L (1)	1.00	b, h(1)
		AE2100D3 (4)	---	---	c, h(6)
C-130T	Transport - Turbine: USN	T56-A-16 (4)	---	---	h(1)
C-135A	Transport - Turbine: USAF general	J57-P/F-59W (4)	T41M-9A (1)	1.00 to 2.00	b, c, h(5)
			ASHG70-1 (1)	1.00 to 2.00	b, c, h(5)
C-135B, -135C	Transport - Turbine: USAF general	J57-P/F-59W (4)	T41M-9A (1)	1.00 to 2.00	b, c, h(5)
			ASHG70-1 (1)	1.00 to 2.00	b, c, h(5)
		TF33-P-5 (4)	T41M-9A (1)	1.00 to 2.00	b, c, h(1)
			ASHG70-1 (1)	1.00 to 2.00	b, c, h(1)
C-135E	Transport - Turbine: USAF general	TF33-P-102 (4)	T41M-9A (1)	1.00 to 2.00	b, c, h(1)
			ASHG70-1 (1)	1.00 to 2.00	b, c, h(1)
C-137B, -137C	Transport - Turbine: USAF general	JT3D-3B (4)	---	---	h(1)
C-140A	General Aviation: Business Jet	J60-P-5A, -5B (4)	---	---	h(5)
C-140B	General Aviation: Business Jet	J60-P-5 (4)	---	---	c, h(6)
C-141	Transport - Turbine: USAF general	TF33-P-3 (4)	GTCP 165-1 (1)	3.00	h(3), i(2)
		TF33-P-5 (4)	GTCP 165-1 (1)	3.00	h(3), i(2)
C-141A, -141B, -141C	Transport - Turbine: USAF general	TF33-P-7 (4)	GTCP85-106/106A (1)	3.00	b, c, h(1), h(3)
C-145A	Trainer - Turbine: USAF General	PT6A-65B (2)	---	---	c, h(6)
C-146A	Transport - Turbine: USAF general	PW119C (2)	---	---	c, h(6)
CMV-22B	Transport - Turbine: USN	AE1107C (2)	---	---	f, h(7)
CT-1B	General Aviation: Business Jet	JT15D-5 (2)	---	---	d, h(1)
CT-39A	General Aviation: Business Jet	J60-P-3, -3A (2)	---	---	c, h(1)
CT-39E, -39G	General Aviation: Business Jet	JT12A-8 (2)	---	---	c, h(1)
CT-43A	Transport - Turbine: USAF general	JT8D-9A (2)	---	---	h(1)
CT-49A	Transport - Turbine: USAF general	JT3D-7 (4)	---	---	d, h(1)
CV-22, -22A	Transport - Turbine: USAF general	AE1107C (2)	---	---	f, h(1)
		T406-AD-400 (2)	---	---	f, h(1), h(2)
CV-22B	Transport - Turbine: USN	AE1107C (2)	---	---	f, h(7)
DC-130A	Transport - Turbine: USAF general	T56-A-9, -9A (4)	---	---	c, h(1)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
DF-8L	Combat: USN	J57-P-4A (1)	---	---	c, h(1)
DT-2B	Trainer - Turbine: USN	J60-P-6 (2)	---	---	c, h(1)
E-1B	General Aviation: Piston	R-1820-82A (2)	---	---	c, h(1)
E-2	Transport - Turbine: USN	T56-A-7 (2)	---	---	h(3)
E-2B	Transport - Turbine: USN	T56-A-8, -8A, -8B (2)	---	---	c, h(1)
E-2C	Transport - Turbine: USN	T56-A-422 (2)	---	---	c, h(1)
		T56-A-427 (2)	---	---	c, h(10)
E-2D	Transport - Turbine: USN	T56-A-427 (2)	---	---	c, h(10)
E-3A	Transport - Turbine: USAF general	TF33-P-3 (4)	---	---	d, h(3)
		TF33-P-5 (4)	---	---	d, h(3)
		TF33-P-7 (4)	---	---	d, h(3)
		TF33-P-100A (4)	---	---	c, d, h(1)
E-3B, -3C	Transport - Turbine: USAF general	TF33-P-100A (4)	GTCP 165-1 (1)	2.00	c, h(1), i(1)
E-4A	Transport - Turbine: USAF general	F103-GE-100 (4)	---	---	h(5)
E-4B	Transport - Turbine: USAF general	CF6-50E2 (4)	GTCP 660-4 (1)	2.00	h(6), i(1)
E-6B	Transport - Turbine: USN	CFM56-2A-2 (4)	---	---	c, h(7)
E-8C	Transport - Turbine: USAF general	JT3D-3B (4)	GTCP 85 (1)	2.00	e, h(1), k
		TF33-PW-102C (4)	GTCP 85 (1)	2.00	c, e, h(1)
E-9A	Transport - Turbine: USAF general	PW120A (2)	---	---	c, h(6)
EA-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
EA-4F	Combat: USN	J52-P-6A, -6B (1)	---	---	c, h(1)
		J52-P-8A (1)	---	---	c, h(1)
EA-6A	Combat: USN	J52-P-8A, -8B (2)	---	---	c, h(1)
EA-6B	Combat: USN	J52-P-8A, -8B (2)	---	---	c, h(1)
		J52-P-408 (2)	---	---	h(1)
EA-7L	Combat: USN	TF41-A-2 (1)	---	---	h(1)
		TF30-P-408 (1)	---	---	c, h(1)
EA-18G	Combat: USN	F414-GE-400 (2)	---	---	h(7)
EB-57B	Combat: USAF	J65-W-5, -5B (2)	---	---	c, h(1)
EC-18B, -18D	Transport - Turbine: USAF general	JT3D-7 (4)	---	---	h(1)
EC-24A	Transport - Turbine: USN	JT3D-3B (4)	---	---	h(1)
EC-37B	Transport - Turbine: USAF general	BR700-710C4-11 (2)	---	---	h(15)
EC-130E	Transport - Turbine: USAF general	T56-A-7, -7A (4)	---	---	c, h(1)
		T56-A-15 (4)	---	---	h(6)
EC-130H	Transport - Turbine: USAF general	T56-A-15 (4)	GTCP 85-180L (1)	1.00	h(1), i(1)
EC-130J, -130SJ	Transport - Turbine: USAF general	AE2100D3 (4)	---	---	c, h(6)
EC-130Q	Transport - Turbine: USAF general	T56-A-423 (4)	---	---	c, h(1)
EC-130V	Transport - Turbine: USN	T56-A-15 (4)	---	---	d, h(1)
EC-135A, -135G, -135L	Transport - Turbine: USAF general	J57-P/F-59W (4)	---	---	h(1), h(5)
EC-135B	Transport - Turbine: USAF general	TF33-P-5 (4)	---	---	h(1)
EC-135C, -135J	Transport - Turbine: USAF general	TF33-P-9 (4)	---	---	h(1)
EC-135E	Transport - Turbine: USAF general	TF33-P-102 (4)	---	---	h(1)
EC-135H, -135K, -135P	Transport - Turbine: USAF general	J57-P/F-59W (4)	---	---	h(1), k
		TF33-P-102 (4)	---	---	h(5)
EC-135N	Transport - Turbine: USAF general	J57-P/F-43WB (4)	---	---	h(1)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
EC-135Y	Transport - Turbine: USAF general	J57-P/F-43WB (4)	---	---	h(1)
		J57-P/F-59W (4)	---	---	h(1)
EC-137D	Transport - Turbine: USAF general	JT3D-3B (4)	---	---	h(1)
EF-4J	Combat: USN	J79-GE-8B (2)	---	---	c, h(1)
EF-111A	Combat: USAF	TF30-P-109 (2)	---	---	h(1)
EKA-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
EP-3A	Transport - Turbine: USN	T56-A-10W (4)	---	---	c, h(1)
EP-3B, -3E, -3J	Transport - Turbine: USN	T56-A-14 (4)	---	---	h(1), h(7)
ERA-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
ES-2D	General Aviation: Piston	R-1820-82A (2)	---	---	c, h(1)
F-4	Combat: USN	J79-GE-10 (2)	---	---	c, h(3)
F-4B, -4N	Combat: USN	J79-GE-8B, -8C (2)	---	---	c, h(1)
F-4C, -4D	Combat: USAF	J79-GE-15 (2)	---	---	h(1)
F-4E, -4G	Combat: USAF	J79-GE-17 (2)	---	---	h(1)
F-4J	Combat: USN	J79-GE-8B (2)	---	---	c, h(1)
F-4S	Combat: USN	J79-GE-10B (2)	---	---	c, h(1)
F-5A, -5B	Combat: USAF	J85-GE-13 (2)	---	---	d, h(3)
F-5E, -5F	Combat: USAF	J85-GE-21 (2)	---	---	d, h(1)
F-8	Combat: USN	J57-P-22 (1)	---	---	c, h(3)
F-8J	Combat: USN	J57-P-420 (1)	---	---	h(1)
F-8K	Combat: USN	J57-P-16, -16B (1)	---	---	c, h(1)
F-14A	Combat: USN	TF30-P-412 (2)	---	---	c, h(1)
		TF30-P-414A (2)	---	---	c, h(7)
F-14C	Combat: USN	TF30-P-412 (2)	---	---	c, h(1)
F-14B, -14D	Combat: USN	F110-GE-400 (2)	---	---	h(1)
F-15A, -15B	Combat: USAF	F100-PW-100 (2)	---	---	h(1)
F-15C, -15D	Combat: USAF	F100-PW-100 (2)	---	---	h(1)
		F100-PW-220 (2)	---	---	h(1)
		F100-PW-229 (2)	---	---	h(6)
F-15E	Combat: USAF	F100-PW-220 (2)	---	---	h(1)
		F100-PW-229 (2)	---	---	h(1)
F-16	Combat: USAF	F100-PW-100 (1)	T-62T-40-8 (1)	1.00	b, c, h(3)
F-16A, -16B	Combat: USAF	F100-PW-200 (1)	T-62T-40-8 (1)	1.00	b, c, h(1)
		F100-PW-220 (1)	T-62T-40-8 (1)	1.00	b, c, h(7)
F-16C, -16D	Combat: USAF	F100-PW-200 (1)	T-62T-40-8 (1)	1.00	b, c, h(1)
		F100-PW-220 (1)	T-62T-40-8 (1)	1.00	b, c, h(6)
		F100-PW-229 (1)	T-62T-40-8 (1)	1.00	b, c, h(1)
		F110-GE-100 (1)	T-62T-40-8 (1)	1.00	b, c, h(1)
		F110-GE-129 (1)	T-62T-40-8 (1)	1.00	b, c, h(1)
F-16N	Combat: USN	F110-GE-100 (1)	---	---	h(1)
F-22A, -22B	Combat: USAF	F119-PW-100 (2)	---	---	h(1)
F-35A	Combat: USAF	F135-PW-100 (1)	---	---	c, h(1)
F-35B	Combat: USN	F135-PW-600 (1)	---	---	c, d, h(11)
F-35C	Combat: USN	F135-PW-100 (1)	---	---	c, h(7)
F-100	Combat: USAF	J57-P-22 (1)	---	---	c, h(3)
F-106A, -106B	Combat: USAF	J75-P-17 (1)	---	---	h(1)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
F-111, -111F	Combat: USAF	TF30-P-100 (2)	---	---	h(1), h(3)
F-111A	Combat: USAF	TF30-P-3 (2)	---	---	h(1)
F-111D, -111E	Combat: USAF	TF30-P-3 (2)	---	---	h(1)
		TF30-P-9 (2)	---	---	h(5)
F-111G	Combat: USAF	TF30-P-107 (2)	---	---	h(1)
F-117A	Combat: USAF	F404-GE-F1D2 (2)	3800100-4 (1)	2.00	b, c, h(8)
F/A-18A, -18B	Combat: USN	F404-GE-400 (2)	---	---	h(1), h(7)
F/A-18C, -18D	Combat: USN	F404-GE-400 (2)	---	---	h(1)
		F404-GE-402 (2)	---	---	c, h(7)
F/A-18E, -18F	Combat: USN	F404-GE-400 (2)	---	---	h(7)
		F414-GE-400 (2)	---	---	c, h(7)
FA-22A	Combat: USAF	F119-PW-100 (2)	---	---	h(1)
FB-22A	Combat: USAF	F119-PW-100 (2)	---	---	h(1)
FB-111A	Combat: USAF	TF30-P-7 (2)	---	---	h(1)
HC-130H	Transport - Turbine: USAF general	T56-A-15 (4)	GTCP 85-180L (1)	1.00	e, h(1), i(1)
HC-130J	Transport - Turbine: USAF general	AE2100D3 (4)	---	---	c, h(6)
HC-130P/N	Transport - Turbine: USAF general	T56-A-15 (4)	---	---	h(6)
HV-22A, -22B	Transport - Turbine: USN	AE1107C (2)	---	---	f, h(1), k
		T406-AD-400 (2)	---	---	f, h(1), l(2)
JA-6A	Combat: USN	J52-P-6A, -6B (2)	---	---	c, h(1)
		J52-P-8A, -8B (2)	---	---	c, h(1)
KA-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
KA-6D	Combat: USN	J52-P-6A (2)	---	---	c, h(1)
		J52-P-8A (2)	---	---	c, h(1)
KC-10, -10A	Transport - Turbine: USAF general	CF6-50C2 (3)	TSCP 700-4B (1)	6.00	h(1), i(1)
		F103-GE-100 (3)	TSCP 700-4B (1)	6.00	h(5), i(1)
		F103-GE-101 (3)	TSCP 700-4B (1)	6.00	h(12), i(1)
KC-46A	Transport - Turbine: USAF general	PW4062 (2)	GTCP 331-200 (1)	0.87	e, h(6), j
			GTCP 331-200ER (1)	0.87	e, h(6), j
KC-130F, -130R, -130T	Transport - Turbine: USN	T56-A-16 (4)	---	---	h(1)
KC-135	Transport - Turbine: USAF KC-135	J57-P-22 (4)	---	---	h(3)
KC-135A	Transport - Turbine: USAF KC-135	J57-P/F-43WB (4)	---	---	h(1)
		J57-P/F-59W (4)	---	---	h(1)
KC-135D, -135Q	Transport - Turbine: USAF KC-135	J57-P/F-59W (4)	---	---	h(1), h(5)
KC-135E	Transport - Turbine: USAF KC-135	TF33-P-102 (4)	GTCP 85-180L (1)	1.00	c, e, h(1), i(1)
KC-135J	Transport - Turbine: USAF KC-135	AE2100D3 (4)	---	---	c, h(7)
KC-135R, -135T	Transport - Turbine: USAF KC-135	CFM56-2B-1 (4)	---	---	h(1), k
		F108-CF-100 (4)	---	---	h(1), l(2)
KC-767A	Transport - Turbine: USAF general	CF6-80C2B6F (2)	---	---	h(13)
		CF6-80C2B7F (2)	---	---	h(13)
		PW4062 (2)	---	---	h(13)
KS-3A	Combat: USN	TF34-GE-2 (2)	---	---	c, h(1)
LC-130F, -130R	Transport - Turbine: USN	T56-A-16 (4)	---	---	h(1)
LC-130H	Transport - Turbine: USAF general	T56-A-15 (4)	---	---	h(1)
MC-12W	General Aviation: Turboprop	PT6A-60 (2)	---	---	c, h(6)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
MC-130E	Transport - Turbine: USAF general	T56-A-7 (4)	---	---	h(1)
		T56-A-15, -15A (4)	---	---	c, h(1), h(6)
MC-130H	Transport - Turbine: USAF general	T56-A-15 (4)	GTCP 85-180L (1)	1.00	c, h(1), i(1)
MC-130J	Transport - Turbine: USAF general	AE2100D3 (4)	---	---	c, h(6)
MC-130P, -130W	Transport - Turbine: USAF general	T56-A-15 (4)	---	---	h(1), h(6)
MQ-1B	Military - Piston	Rotax 914F (1)	---	---	h(6)
MQ-1C	Military - Piston	TAE-125 (1)	---	---	h(13)
MQ-4C	Combat: USN	AE3007H (1)	---	---	h(7)
MQ-9	Combat: USAF	TPE331-10GD (1)	---	---	c, h(6)
MQ-25	Combat: USN	AE3007H (1)	---	---	h(7)
MV-22A, -22B	Transport - Turbine: USN	AE1107C (2)	---	---	f, h(1), k
		T406-AD-400 (2)	---	---	f, h(1), l(2)
NA-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
NA-4E	Combat: USN	J52-P-6A (1)	---	---	c, h(1)
		J52-P-8A, -8B (1)	---	---	c, h(1)
NA-4F	Combat: USN	J52-P-8A (1)	---	---	c, h(1)
NA-4M	Combat: USN	J52-P-408 (1)	---	---	h(1)
NA-6A	Combat: USN	J52-P-6A, -6B (2)	---	---	c, h(1)
		J52-P-8A, -8B (2)	---	---	c, h(1)
NA-6E	Combat: USN	J52-P-8B (2)	---	---	h(1)
NA-7A	Combat: USN	TF30-P-6 (1)	---	---	c, h(1)
NA-7C	Combat: USN	TF30-P-8 (1)	---	---	c, h(1)
NA-7E	Combat: USN	TF41-A-2 (1)	---	---	h(1)
NB-52B	Transport - Turbine: USAF B-52	J57-P-19W (8)	---	---	h(1)
NC-12B	General Aviation: Turboprop	PT6A-41 (2)	---	---	h(1)
NC-21A	General Aviation: Business Jet	TFE731-2-2B (2)	---	---	h(1)
NC-37B	General Aviation: Business Jet	BR700-710C4-11 (2)	---	---	h(7)
NC-130A	Transport - Turbine: USAF general	T56-A-9, -9A, -9B (4)	---	---	c, h(1)
NC-130B, -130E	Transport - Turbine: USAF general	T56-A-7, -7A (4)	---	---	c, h(1)
NC-130H	Transport - Turbine: USAF general	T56-A-15 (4)	GTCP 85-180L (1)	1.00	c, e, h(1), i(1)
NC-135A	Transport - Turbine: USAF general	J57-P/F-43WB (4)	---	---	h(5)
NC-135W	Transport - Turbine: USAF general	TF33-P-5 (4)	---	---	h(1)
NC-141A	Transport - Turbine: USAF general	TF33-P-7 (4)	GTCP 85-106/106A (1)	3.00	b, c, h(1)
NF-4D	Combat: USAF	J79-GE-15 (2)	---	---	h(1)
		J79-GE-17 (2)	---	---	h(1)
NF-14B	Combat: USN	F401-PW-400 (2)	---	---	c, h(1)
NF-14D	Combat: USN	F110-GE-400 (2)	---	---	h(1)
NF-16A	Combat: USAF	F100-PW-200 (1)	---	---	h(1)
NF-16D	Combat: USAF	F100-PW-200 (1)	---	---	h(1)
		F100-PW-229 (1)	---	---	h(1)
		F110-GE-100 (1)	---	---	h(1)
		F110-GE-129 (1)	---	---	h(1)
NF-106B	Combat: USAF	J75-P-17 (1)	---	---	h(5)
NF/A-18A, -18B, -18C, -18D	Combat: USN	F404-GE-400 (2)	---	---	h(1)
NKC-135A	Transport - Turbine: USAF KC-135	J57-P/F-43WB (4)	---	---	h(1)
		J57-P/F-59W (4)	---	---	h(1)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
NKC-135E	Transport - Turbine: USAF KC-135	TF33-P-102 (4)	GTCP 85-180L (1)	2.00	c, h(1), i(1)
NP-3A	Transport - Turbine: USN	T56-A-10W (4)	---	---	c, h(1)
NP-3C, -3D	Transport - Turbine: USN	T56-A-14 (4)	---	---	h(1)
NRA-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
NT-33A	Trainer - Turbine: USAF General	J33-A-35 (1)	---	---	h(1)
NT-34C	General Aviation: Piston	PT6A-25 (1)	---	---	c, h(1)
NT-39A	General Aviation: Business Jet	J60-P-3, -3A (2)	---	---	c, h(1)
NTA-4F, -4J	Combat: USN	J52-P-6A (1)	---	---	c, h(1)
NUP-3A	Transport - Turbine: USN	T56-A-14 (4)	---	---	h(1)
O-1	General Aviation: Piston	O-470C (1)	---	---	h(3)
O-2A, -2B	General Aviation: Piston	IO-360-C (2)	---	---	h(1), h(3)
		IO-360-D (2)	---	---	h(3)
OA-4M	Combat: USN	J52-P-6A, -6B (1)	---	---	c, h(1)
		J52-P-8A (1)	---	---	c, h(1)
OA-10A	Combat: USAF	TF34-GE-100 (2)	---	---	h(1)
OA-37B	Combat: USAF	J85-GE-17A (2)	---	---	h(1)
OC-135B	Transport - Turbine: USAF general	TF33-P-5 (4)	---	---	h(1)
OT-47B	General Aviation: Business Jet	JT15D-5D (2)	---	---	c, h(1)
OV-10A	General Aviation: Turboprop	T76-G-10A (2)	---	---	c, g, h(1)
		T76-G-12A (2)	---	---	c, g, h(1)
		T76-G-418 (2)	---	---	g, h(1)
		T76-G-419 (2)	---	---	g, h(1)
P-3A	Transport - Turbine: USN	T56-A-10W (4)	---	---	c, h(1)
P-3B	Transport - Turbine: USN	T56-A-14 (4)	---	---	h(1)
P-3C	Transport - Turbine: USN	T56-A-7 (4)	---	---	h(3)
		T56-A-14 (4)	---	---	h(1)
P-8A	Transport - Turbine: USN	CFM56-7B27/3 (2)	---	---	h(9)
QF-4B	Combat: USN	J79-GE-8B, -8C (2)	---	---	c, h(1)
QF-4E	Combat: USAF	J79-GE-10 (2)	---	---	c, h(1)
		J79-GE-17 (2)	---	---	h(1)
QF-4G	Combat: USAF	J79-GE-15 (2)	---	---	h(1)
		J79-GE-17 (2)	---	---	h(1)
QF-106A, -106B	Combat: USAF	J75-P-17 (1)	---	---	h(1)
QRF-4C	Combat: USAF	J79-GE-10 (2)	---	---	c, h(1)
		J79-GE-17 (2)	---	---	h(1)
QT-33A	Trainer - Turbine: USN	J33-A-35 (1)	---	---	h(1)
RA-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
RA-5C	Combat: USN	J79-GE-8B, -8C (2)	---	---	c, h(1)
		J79-GE-10 (2)	---	---	c, h(1)
RC-12D, -12G, -12H	General Aviation: Turboprop	PT6A-41 (2)	---	---	h(1)
RC-12F, -12M	General Aviation: Turboprop	PT6A-42 (2)	---	---	h(1)
RC-12K, -12N, -12P, -12Q	General Aviation: Turboprop	PT6A-67 (2)	---	---	h(1)
RC-135M, -135X	Transport - Turbine: USAF general	TF33-P-5 (4)	---	---	h(1), h(5), h(6)
RC-135S	Transport - Turbine: USAF general	TF33-P-5 (4)	---	---	h(1)
		CFM56-2B-1 (4)	---	---	h(6), k
		F108-CF-201 (4)	---	---	h(6), l(2)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
RC-135T	Transport - Turbine: USAF general	TF33-P-102 (4)	---	---	h(5)
RC-135U	Transport - Turbine: USAF general	TF33-P-9 (4)	---	---	h(1)
		CFM56-2B-1 (4)	---	---	h(6), k
		F108-CF-201 (4)	---	---	h(6), l(2)
		TF33-P-5 (4)	---	---	h(1)
RC-135V, -135W	Transport - Turbine: USAF general	CFM56-2B-1 (4)	---	---	h(6), k
		F108-CF-201 (4)	---	---	h(6), l(2)
		TF33-P-5 (4)	---	---	h(1)
RF-4B	Combat: USN	J79-GE-8B, -8C (2)	---	---	c, h(1)
RF-4C	Combat: USAF	J79-GE-15 (2)	---	---	h(1)
RF-5E	Combat: USAF	J85-GE-21 (2)	---	---	h(1)
RF-8G	Combat: USN	J57-P-22 (1)	---	---	c, h(1)
RF/A-18A	Combat: USN	F404-GE-400 (2)	---	---	h(1)
RP-3A	Transport - Turbine: USN	T56-A-10W (4)	---	---	c, h(1)
RP-3D	Transport - Turbine: USN	T56-A-14 (4)	---	---	h(1)
RQ-4	Combat: USAF	AE3007H (1)	---	---	c, h(1)
		F137-RR-100 (1)	---	---	c, h(6)
RQ-4A	Combat: USAF	AE3007 (1)	---	---	c, h(1)
		F137-RR-100 (1)	---	---	c, h(6)
RQ-4B	Combat: USAF	AE3007H (1)	---	---	c, h(1)
RU-21A, -21D, -21E, -21H	General Aviation: Turboprop	PT6A-20 (2)	---	---	c, h(1)
RU-21B, -21C	General Aviation: Turboprop	PT6A-29 (2)	---	---	c, h(1)
RU-21J	General Aviation: Turboprop	PT6A-41 (2)	---	---	h(1)
S-2, -2G	General Aviation: Piston	R-1820-82 (2)	---	---	h(1), h(3)
S-2D, -2E	General Aviation: Piston	R-1820-82A (2)	---	---	c, h(1)
S-3A	Combat: USN	TF34-GE-400 (2)	---	---	h(3)
SV-22A	Transport - Turbine: USN	AE1107C (2)	---	---	f, h(1), k
		T406-AD-400 (2)	---	---	f, h(1), l(2)
T-1A	Trainer - Turbine: USAF general	JT15D-5B (2)	---	---	h(1)
T-2	Trainer - Turbine: USN	J85-GE-5F (2)	---	---	h(3)
T-2B	Trainer - Turbine: USN	J60-P-6 (2)	---	---	c, h(1)
T-2C	Trainer - Turbine: USN	J85-GE-4, -4A (2)	---	---	c, h(1)
T-6A	Trainer - Turbine: USAF general	PT6A-68 (1)	---	---	g, h(1)
T-7A	Trainer-Turbine: USAF general	F404-GE-102 (1)	4501687C (1)	0.25	h(18)
T-28	General Aviation: Piston	R-1820-82 (1)	---	---	h(3)
T-28B, -28C	General Aviation: Piston	R-1820-86A (1)	---	---	c, h(1)
T-33A	Trainer - Turbine: USAF general	J33-A-35 (1)	---	---	h(1)
T-34	General Aviation: Piston	O-470C (1)	---	---	h(3)
T-34A, -34B	General Aviation: Piston	IO-470-4 (1)	---	---	c, h(1)
T-34C	General Aviation: Turboprop	PT6A-27 (1)	---	---	h(3)
		PT6A-25 (1)	---	---	c, h(7)
T-37, -37B	Trainer - Turbine: USAF general	J69-T-25 (2)	---	---	h(1), h(3)
T-38	Trainer - Turbine: USAF T-38	J85-GE-5F (2)	---	---	h(3)
T-38A	Trainer - Turbine: USAF T-38	J85-GE-5, -5A, -5G, -5J, -5M (2)	---	---	c, h(1)
T-38C	Trainer - Turbine: USAF T-38	J85-GE-5, -5A, -5G, -5J, -5R (2)	---	---	c, h(1)
T-38N	Trainer - Turbine: USAF T-38	J85-GE-5H, -5N (2)	---	---	c, h(1)
T-39A, -39D	General Aviation: Business Jet	J60-P-3A (2)	---	---	h(1), h(5)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
T-39B	General Aviation: Business Jet	J60-P-3, -3A (2)	---	---	c, h(1)
T-39G, -39N	General Aviation: Business Jet	JT12A-8 (2)	---	---	c, h(1)
T-41	General Aviation: Piston	IO-360-C (1)	---	---	h(3)
T-41A	General Aviation: Piston	IO-300-D (1)	---	---	c, h(1)
T-41B	General Aviation: Piston	IO-360-D (1)	---	---	h(1)
T-41C, -41D	General Aviation: Piston	IO-360-D34 (1)	---	---	h(1)
T-43A	Transport - Turbine: USAF general	JT8D-9 (2)	---	---	h(1)
T-44	Trainer - Turbine: USN	PT6A-27 (2)	---	---	h(3)
		PT6A-34B (2)	---	---	c, h(7)
T-45A, -45C	Trainer - Turbine: USN	F405-RR-401 (1)	---	---	h(7)
T-45B	Trainer - Turbine: USN	Mk-851-49	---	---	c, h(1)
T-47A	General Aviation: Business Jet	JT15D-5 (2)	---	---	h(1)
T-50A	Trainer - Turbine: USAF general	F404-GE-102 (1)	---	---	h(16)
TA-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
TA-4B	Combat: USN	J65-W-20 (1)	---	---	h(1)
TA-4F	Combat: USN	J52-P-6A, -6B (1)	---	---	c, h(1)
		J52-P-8A (1)	---	---	c, h(1)
TA-4J	Combat: USN	J52-P-6A (1)	---	---	c, h(8)
TA-7C	Combat: USN	TF30-P-8 (1)	---	---	c, h(1)
TC-18E	Transport - Turbine: USAF general	TF33-P-100A (4)	---	---	c, h(1)
TC-18F	Transport - Turbine: USAF general	JT3D-3B (4)	---	---	h(1)
TC-130H	Transport - Turbine: USAF general	T56-A-15 (4)	---	---	h(1)
TC-135S, -135W	Transport - Turbine: USAF general	TF33-P-5 (4)	---	---	h(1)
TE-2A, -2C	Transport - Turbine: USN	T56-A-8, -8A, -8B (2)	---	---	c, h(1)
TE-8A	Transport - Turbine: USAF general	JT3D-3B (4)	---	---	h(1)
TF-16N	Combat: USN	F110-GE-100 (1)	---	---	h(1)
TF-18A	Combat: USN	F404-GE-400 (2)	---	---	h(1)
TF/A-18A	Combat: USN	F404-GE-400 (2)	---	---	h(1)
TP-3A	Transport - Turbine: USN	T56-A-10W (4)	---	---	c, h(1)
TS-2A	General Aviation: Piston	R-1820-82 (2)	---	---	h(1)
TU-2R, -2S	Combat: USAF	F118-GE-101 (1)	---	---	c, h(6)
U-2S	Combat: USAF	F118-GE-101 (1)	---	---	c, h(6)
U-21	General Aviation: Turboprop	PT6A-27 (2)	---	---	h(3)
U-21A, -21G	General Aviation: Turboprop	PT6A-20 (2)	---	---	c, h(1)
U-21F	General Aviation: Turboprop	PT6A-28 (2)	---	---	c, h(1)
U-21J	General Aviation: Turboprop	PT6A-41 (2)	---	---	h(1)
U-28A	General Aviation: Turboprop	PT6A-67B (1)	---	---	h(6)
UA-3B	Combat: USN	J57-P-10 (2)	---	---	h(1)
UC-12B	General Aviation: Turboprop	PT6A-41 (2)	---	---	h(1)
UC-12F, -12M	General Aviation: Turboprop	PT6A-42 (2)	---	---	h(1)
UC-12W	General Aviation: Turboprop	PT6A-60A (2)	---	---	h(1)
UC-26C	General Aviation: Turboprop	TPE331-7 (2)	---	---	c, h(1)
UC-35A, -35C	General Aviation: Business Jet	JT15D-5D (2)	---	---	c, h(1)
UC-35D	General Aviation: Business Jet	PW535A (2)	---	---	c, h(7)
UC-123K	Transport - Turbine: USAF general	J85-GE-17 (2)	---	---	c, h(1)

Table 2-6. Military Airframe/Engine/APU Combinations (cont.)

Aircraft Model(s)	Time-In-Mode Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU Hours of Operation Per LTO ^b	Notes:
UP-3A	Transport - Turbine: USN	T56-A-10W (4)	---	---	c, h(1)
UP-3B	Transport - Turbine: USN	T56-A-14 (4)	---	---	h(1)
US-2A, -2B, -2C	General Aviation: Piston	R-1820-82 (2)	---	---	h(1)
US-2D	General Aviation: Piston	R-1820-82A (2)	---	---	c, h(1)
UV-18A	Transport - Turbine: USAF general	PT6A-20 (2)	---	---	c, h(1)
UV-18B	Transport - Turbine: USAF general	PT6A-27 (2)	---	---	h(1)
UV-20A	General Aviation: Turboprop	PT6A-27 (2)	---	---	h(1)
VC-25A	Transport - Turbine: USAF general	CF6-80C2B1 (4)	GTCP 660-4 (1)	8.00	c, h(1)
VC-137B, -137C	Transport - Turbine: USAF general	JT3D-3B (4)	---	---	h(8)
VC-140B	General Aviation: Business Jet	J60-P-5A, -5B (4)	---	---	h(5)
WC-130E	Transport - Turbine: USAF general	T56-A-7 (4)	---	---	h(5)
		T56-A-15 (4)	---	---	h(5)
WC-130H	Transport - Turbine: USAF general	T56-A-15 (4)	GTCP 85-180L (1)	1.00	c, e, h(1), i(1)
WC-130J	Transport - Turbine: USAF general	AE2100D3 (4)	---	---	c, h(6)
WC-135B, -135W	Transport - Turbine: USAF general	TF33-P-5 (4)	---	---	h(1)
WC-135C	Transport - Turbine: USAF general	TF33-P-9 (4)	---	---	h(1)
WP-3A	Transport - Turbine: USN	T56-A-10W (4)	---	---	c, h(1)
X-29A	Combat: USAF	F404-GE-400 (1)	---	---	g, h(1)
X-31A	Combat: USN	F404-GE-400 (1)	---	---	h(1)
X-44A	Combat: USAF	F119-PW-100 (2)	---	---	h(1)
YA-7D	Combat: USAF	TF41-A-1 (1)	---	---	h(1)
YC-14A	Transport - Turbine: USAF general	CF6-50A (2)	---	---	h(1)
YE-2C	Transport - Turbine: USN	T56-A-8, -8A, -8B (2)	---	---	c, h(1)
YF-4J	Combat: USN	J79-GE-8B (2)	---	---	c, h(1)
YF-15A, -15B	Combat: USAF	F100-PW-100 (2)	---	---	h(1)
YF-16A, -16B	Combat: USAF	F100-PW-200 (1)	---	---	h(1)
YOV-10D	General Aviation: Turboprop	T76-G-10, -10A (2)	---	---	c, h(1)
		T76-G-12, -12A (2)	---	---	c, h(1)
YP-3C	Transport - Turbine: USN	T56-A-14 (4)	---	---	h(1)
YS-2G	General Aviation: Piston	R-1820-82 (2)	---	---	h(1)
YT-2B	Trainer - Turbine: USN	J60-P-6 (2)	---	---	c, h(1)
YT-34C	General Aviation: Piston	PT6A-25 (1)	---	---	c, h(1)

Notes for Table 2-6 follow Table 2-7.

Table 2-7. Military Helicopter/Engine/APU Combinations

Aircraft Model(s)	Time-In-Phase Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU hours of Operation Per LTO ^b	Notes:
AH-1G	Military - Helicopter	T53-L-11D (1)	---	---	h(3)
		T53-L-13, -13A, -13B (1)	---	---	c, h(1)
AH-1J	Military - Helicopter	T400-CP-400 (1)	---	---	h(1)
AH-1W, -1Z	Military - Helicopter	T700-GE-401C (2)	---	---	h(7)
AH-64A	Military - Helicopter	T700-GE-700 (2)	---	---	h(1)
CH-3B	Military - Helicopter	T58-GE-8B (2)	---	---	c, h(1)
CH-3E	Military - Helicopter	T58-GE-5 (2)	---	---	h(8)
CH-46	Military - Helicopter	T58-GE-5 (2)	---	---	h(3)
CH-46A	Military - Helicopter	T58-GE-8B, -8F (2)	---	---	c, h(1)
CH-46E	Military - Helicopter	T58-GE-16 (2)	---	---	h(1)
CH-47F	Military - Helicopter	T55-GA-714A (2)	---	---	h(1)
CH-53A	Military - Helicopter	T64-GE-6B (2)	---	---	h(1)
CH-53D	Military - Helicopter	T64-GE-413 (2)	---	---	h(1)
CH-53E	Military - Helicopter	T64-GE-416 (3)	---	---	h(7)
CH-53K	Military - Helicopter	T408-GE-400 (3)	---	---	c, h(7)
EH-1H	Military - Helicopter	T53-L-13 (1)	---	---	h(1)
EH-1X	Military - Helicopter	T53-L-13 (1)	---	---	h(1)
EH-60A	Military - Helicopter	T700-GE-700 (2)	---	---	h(1)
HH-1H	Military - Helicopter	T53-L-13B (1)	---	---	h(1)
HH-1K	Military - Helicopter	T53-L-13, -13A, -13B (1)	---	---	c, h(1)
HH-1N	Military - Helicopter	T400-CP-400 (2)	---	---	h(7)
HH-2D	Military - Helicopter	T58-GE-8B, -8F (2)	---	---	c, h(1)
HH-3A	Military - Helicopter	T58-GE-8F (2)	---	---	h(1)
HH-3E	Military - Helicopter	T58-GE-5 (2)	---	---	h(8)
HH-3F	Military - Helicopter	T58-GE-8B, -8F (2)	---	---	c, h(1)
HH-43	Military - Helicopter	T53-L-11D (1)	---	---	h(3)
HH-46A	Military - Helicopter	T58-GE-8B, -8F (2)	---	---	c, h(1)
HH-52	Military - Helicopter	T58-GE-5 (2)	---	---	h(3)
HH-52A	Military - Helicopter	T58-GE-8B (1)	---	---	c, h(1)
HH-53	Military - Helicopter	T64-GE-6B (2)	---	---	h(3)
HH-60G	Military - Helicopter	T700-GE-700 (2)	---	---	h(6)
		T700-GE-701C (2)	---	---	h(6)
MH-53E	Military - Helicopter	T64-GE-416 (3)	---	---	c, h(1)
		T64-GE-419 (3)	---	---	c, h(7)
MH-53J	Military - Helicopter	T64-GE-415 (2)	T-62T-27 (1)	4.00	h(1), i(1)
MH-53M	Military - Helicopter	T64-GE-100 (2)	---	---	h(6)
MH-60A, -60G	Military - Helicopter	T700-GE-700 (2)	---	---	h(1)
MH-60R, -60S	Military - Helicopter	T700-GE-401C (2)	---	---	h(7)

Table 2-7. Military Helicopter/Engine/APU Combinations

Aircraft Model(s)	Time-In-Phase Category ^a	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU hours of Operation Per LTO ^b	Notes:
MH-139	Military - Helicopter	PT6C-67C (2)	---	---	h(11)
NCH-46A	Military - Helicopter	T58-GE-8B, -8F (2)	---	---	c, h(1)
NRH-53D	Military - Helicopter	T64-GE-415 (2)	---	---	h(1)
NSH-3A	Military - Helicopter	T58-GE-8B (2)	---	---	c, h(1)
NUH-1E	Military - Helicopter	T53-L-11D (1)	---	---	h(1)
NUH-1N	Military - Helicopter	T400-CP-400 (2)	---	---	h(1)
NVH-3A	Military - Helicopter	T58-GE-8F (2)	---	---	h(1)
OH-6A	Military - Helicopter	T63-A-5A (1)	---	---	h(3)
OH-58	Military - Helicopter	T63-A-5A (1)	---	---	h(3)
RH-53D	Military - Helicopter	T64-GE-415A (2)	---	---	c, h(1)
SH-2D	Military - Helicopter	T58-GE-5 (2)	---	---	h(3)
		T58-GE-8B (2)	---	---	c, h(1)
SH-2F	Military - Helicopter	T58-GE-5 (2)	---	---	h(3)
		T58-GE-8F (2)	---	---	h(1)
SH-3A	Military - Helicopter	T58-GE-8B (2)	---	---	c, h(1)
SH-3G	Military - Helicopter	T58-GE-8B, -8F (2)	---	---	c, h(1)
SH-60	Military - Helicopter	T700-GE-700 (2)	---	---	h(7)
TH-1L	Military - Helicopter	T53-L-13, -13A, -13B (1)	---	---	c, h(1)
TH-53A	Military - Helicopter	T64-GE-100 (2)	---	---	h(13)
TH-57	Military - Helicopter	250-C20BJ (1)	---	---	h(7)
TH-67	Military - Helicopter	250-C20J (1)	---	---	c, h(7)
TH-73A	Military - Helicopter	PT6B-37A (1)	---	---	h(7)
UH-1E	Military - Helicopter	T53-L-11D (1)	---	---	h(1)
UH-1H	Military - Helicopter	T53-L-11D (1)	---	---	h(3)
		T53-L-13 (1)	---	---	h(1)
UH-1L	Military - Helicopter	T53-L-13, -13A, -13B (1)	---	---	c, h(1)
UH-1N	Military - Helicopter	T400-CP-400 (2)	---	---	h(6)
UH-1V	Military - Helicopter	T53-L-13 (1)	---	---	h(1)
UH-1Y	Military - Helicopter	T700-GE-401C (2)	---	---	h(7)
UH-2C	Military - Helicopter	T58-GE-8B, -8F (2)	---	---	c, h(1)
UH-3A	Military - Helicopter	T58-GE-8B (2)	---	---	c, h(1)
UH-46A	Military - Helicopter	T58-GE-8B, -8F (2)	---	---	c, h(1)
UH-60A	Military - Helicopter	T700-GE-700 (2)	T-62T-40-1 (1)	1.00	c, b, h(1)
UH-60C	Military - Helicopter	T700-GE-700 (2)	---	---	h(1)
UH-60Q	Military - Helicopter	T700-GE-700 (2)	---	---	h(1)
UH-72	Military - Helicopter	Arriel 1E2 (2)	---	---	h(7)
VH-3D	Military - Helicopter	T58-GE-400B (2)	---	---	c, h(7)
VH-60N	Military - Helicopter	T700-GE-401 (2)	---	---	h(7)
YSH-2E	Military - Helicopter	T58-GE-8B, -8F (2)	---	---	c, h(1)

Notes for Table 2-6 and Table 2-7 on following page.

Notes for Table 2-6 and Table 2-7.

Note that some Aircraft model/engine/Auxiliary Power Unit (APU) combinations may be missing due to unverified sources and/or missing emission factors for either engine(s) and/or APU(s).

- a. Time-in-Mode category selected for the aircraft based on that aircraft's expected flight pattern and not based on its mission designation.
- b. SOURCE: Flightline Emission Factors – Aircraft/Auxiliary Power Units/Aerospace Ground Support Equipment, IERA-RS-BR-SR-2005-0001, December 2004. This reference cites survey responses as source of data.
- c. This document does not have emission factors for at least one engine/APU listed for this aircraft.
- d. Time-in-Mode category for this aircraft was selected as the recommended category for calculating emissions though this aircraft is operated by another military branch.
- e. APU operating time is an estimate based on similar APUs on similar aircraft.
- f. Aircraft may also be operated as a military helicopter. If the aircraft is primarily operated in this mode at the installation, then use the appropriate Time-in-Mode category.
- g. This aircraft is operated by multiple military branches.
- h. The Airframe/Engine combination source was reported in the following documents:
 - (1) SOURCE: Model Designation of Military Aerospace Vehicles, Department of Defense May 2004.
 - (2) SOURCE: Air Force Reserve Website (www.afreserve.com).
 - (3) SOURCE: Air Pollutant Emission Factors for Military and Civil Aircraft, EPA-450/3-78-117, October 1978.
 - (4) SOURCE: Smithsonian National Air and Space Museum website (www.airandspace.si.edu).
 - (5) SOURCE: Aircraft Engine Emissions Estimator, AFESC, November 1985.
 - (6) SOURCE: US Air Force fact sheets accessed via official Air Force website (www.af.mil).
 - (7) SOURCE: US Navy fact sheets accessed via official Navy website (www.navy.mil).
 - (8) SOURCE: National Museum of the Air Force accessed via official website (www.nationalmuseum.af.mil).
 - (9) SOURCE: GE Aviation website (www.geaviation.com).
 - (10) SOURCE: Northrop Grumman website (www.northropgrumman.com).
 - (11) SOURCE: Pratt and Whitney website (www.pw.utc.com).
 - (12) SOURCE: Energy and Environmental Viability of Select Alternative Jet Fuel Pathways, Carter, Nicholas A., et al. AIAA 2011-5968. 2011.
 - (13) SOURCE: Flightline Emission Factors-Aircraft/Auxiliary Power Units/Aerospace Ground Support Equipment, IERA-RS-BR-SR-2005-0001, December 2004.
 - (14) SOURCE: Beechcraft website (www.beechcraft.com).
 - (15) SOURCE: Gulfstream website (www.gulfstream.com).
 - (16) SOURCE: Airforce Monthly website (www.airforcemonthly.com).
 - (17) SOURCE: Embraer website (www.embraer.com).
 - (18) SOURCE: Airframe/engine/APU combination and run times collected from field data.
- i. The Airframe/APU combination was reported in the following documents:
 - (1) SOURCE: Air Emissions Factor Guide to Air Force Mobile Sources, AFCEC 2009.
 - (2) SOURCE: EDMS input from Paine Field.
- j. According to the source document, the actual APU operating time may range between 0.23-0.26 if there is gate power or 0.87 if there is no gate power. The most conservative value of 0.87 is listed here.
- k. This engine is not explicitly listed in the source document as the engine in this aircraft. It is listed here, however, because it is an alternate designation of an engine listed in the source document.
- l. This is the military designation of a civilian engine listed for the aircraft in the source document. The source for the military designation of the civilian engine is:
 - (1) SOURCE: Air Force One, Robert F. Dorr, 2002.
 - (2) The Federal Business Opportunities website (www.fbo.gov)

“---” – Indicates either no APU for that aircraft or no data available.

Table 2-8. Commercial Airframe/Engine/APU Combinations

Aircraft Model(s)	Time-In-Mode Category	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU hours of Operation Per LTO ^a [Without Gate Power]	Notes:
A300 Series	Commercial Carrier: Jumbo, long, and medium range jet	CF6-50A, -50C, -50C1, -50C2 (2) CF6-80C2A1, -80C2A3, -80C2A5 (2) JT9D-7R4H1 (2) PW4158 (2)	GTCP 331-250 (1)	0.23 - 0.26 [1.0 - 1.5]	b, c(2), c(3), d(2)
A310 Series	Commercial Carrier: Jumbo, long, and medium range jet	CF6-80A3, -80C2A2(2) JT9D-7R4D1, -7R4E1 (2) PW4152 (2) PW4156A (2)	GTCP 331-250 (1)	0.23 - 0.26 [1.0 - 1.5]	b, c(2), c(3), d(2)
A318 Series	Commercial Carrier: Jumbo, long, and medium range jet	CFM56-5B8, -5B9 (2) PW6122A (2) PW6124A (2)	GTCP 36-300 (1)	0.23 - 0.26 [0.87]	b, c(3), c(4), d(2)
A319 Series	Commercial Carrier: Jumbo, long, and medium range jet	CFM56-5A4, -5A5, -5B5, -5B6, -5B7 (2) V2522-A5 (2) V2524-A5 (2) V2527-A5 (2)	GTCP 36-300 (1)	0.23 - 0.26 [0.87]	b, c(3), c(4), c(5), d(2)
A320 Series	Commercial Carrier: Jumbo, long, and medium range jet	CFM56-5-A1, -5A3, -5B4, -5B5, -5B6 (2) V2500-A1 (2) V2527-A5 (2)	GTCP 36-300 (1)	0.23 - 0.26 [0.87]	b, c(3), c(4), c(5), d(2)
A321 Series	Commercial Carrier: Jumbo, long, and medium range jet	CFM56-5B1, -5B2, 5B3 (2) V2533-A5 (2) V2530-A5 (2)	GTCP 36-300 (1)	0.23 - 0.26 [0.87]	b, c(3), c(4), c(5), d(2)
A330 Series	Commercial Carrier: Jumbo, long, and medium range jet	CF6-80E1, -E1A1, -E1A3, -E1A4 (2) PW4164 (2) PW4168, PW4168A (2) PW4170 (2) Trent 768-60 (2) Trent 772-60 (2)	GTCP 331-250 (1)	0.23 - 0.26 [1.0 - 1.5]	b, c(3), c(4), c(5), d(2)
A340 Series	Commercial Carrier: Jumbo, long, and medium range jet	CFM56-5C2, -5C2/4, -5C2/F, -5C2/F4, -5C2/G, -5C2/G4, -5C2/P (4) CFM56-5C3/F, -5C3/F4, 5C3/G, -5C3/G4, -5C3/P (4) CFM56-5C4, -5C4/1, -5C4/P, -5C4/1P (4) Trent 553-61, -553A2-61 (4) Trent 556-61, -556A2-61 (4)	---	---	b, c(4), c(5)
A380 Series	Commercial Carrier: Jumbo, long, and medium range jet	GP7270 (4) Trent 970B-84 (4) Trent 972B-84 (4)	---	---	b, c(2), c(4)
ACJ318	General Aviation: Business Jet	CFM56-5B9/3 (2)	---	---	c(5)
ACJ319	General Aviation: Business Jet	CFM56-5B7/3 (2)	---	---	c(5)
ACJ320	General Aviation: Business Jet	CFM56-5B4/3 (2)	---	---	c(5)
ACJ330	General Aviation: Business Jet	Trent 772B-60 (2)	---	---	b, c(5)
ACJ340	General Aviation: Business Jet	Trent 553-61 (4)	---	---	c(5)
ACJ380	General Aviation: Business Jet	Trent 970-84 (4)	---	---	c(5)
B707 Series	Commercial Carrier: Jumbo, long, and medium range jet	JT3D-3, -3B (4) JT3D-7 (4)	GTCP 85 (1)	0.23 - 0.26 [0.87]	b, c(1), c(2), c(6), d(1)
B717 Series	Commercial Carrier: Jumbo, long, and medium range jet	BR700-715A1-30, -715C1-30 (2)	---	---	c(2)

Table 2-8. Commercial Airframe/Engine/APU Combinations

Aircraft Model(s)	Time-In-Mode Category	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU hours of Operation Per LTO ^a [Without Gate Power]	Notes:
B727 Series	Commercial Carrier: Jumbo, long, and medium range jet	JT8D-7, -7A, -7B (3) JT8D-9, -9A (3) JT8D-11 (3) JT8D-15, -15A (3) JT8D-17, -17A, -17AR, -17R (3)	GTCP 85-98 (1)	0.23 - 0.26 [0.87]	b, c(1), c(2), c(6), d(1)
B737 Series	Commercial Carrier: Jumbo, long, and medium range jet	CFM56-3-B1, -3B-2, -3C-1 (2) CMF56-7B18/3, -7B20, -7B20/2, -7B20/3, -7B20E (2) CFM56-7B22, -7B22/2, -7B22/3, -7B22E (2) CFM56-7B24, -7B24/2, -7B24/3, -7B24/3B1, -7B24E, -7B24E/B1 (2) CFM56-7B26, -7B26E/B1, -7B26E/B2, -7B26E/B2F, -7B26/2, 7B26/3, -7B26/3F, -7B26E, -7B26E/F (2) CFM56-7B27, -7B27/2, -7B27/3, 7B27/3F, -7B27E, -7B27E/F, -7B27/3B1, -7B27/3B1F, -7B27E/B1, -7B27E/B1F, -7B27/3B3, -7B27E/B3 (2) JT8D-7, -7A, -7B (2) JT8D-9A (2) JT8D-15, -15A (2) JT8D-17, -17A (2)	GTCP 85-129 (1)	0.23 - 0.26 [0.87]	b, c(4), d(3)
B747 Series	Commercial Carrier: Jumbo, long, and medium range jet	CF6-50E, -50E1, -50E2 (4) CF6-80C2B1, -80C2B1F, -80C2B5F (4) Genx-2B67, -2B67B (4) JT9D-7, -7A, -7F, -7J, 7Q, -7Q3, -7R4G2 (4) JT9D-70A (4) PW4056 (4) RB211-524D4-19, -524D4-39, -524B2-19, -524C2-19, -524G2-19, -524G3-19, -524H2-19 (4) RB211-524G2-T-19, -524G3-T-19, -524H2-T-19 (4)	GTCP 660-4 (1) PW901A (1)	0.23 - 0.26 [1.0 - 1.5]	b, c(2), c(4), d(3)
B757 Series	Commercial Carrier: Jumbo, long, and medium range jet	RB211-535C-37, -535E4-B-37, -535E4-37, -535E4-C-37 (2) PW2037 (2) PW2040 (2)	GTCP 331-200ER (1)	0.23 - 0.26 [0.87]	b, c(2), c(4), d(3)
B767 Series	Commercial Carrier: Jumbo, long, and medium range jet	CF6-80A, -80A2, -80C2B2, -80C2B2F, -80C2B4, -80C2B4F, -80C2B6, -80C2B6F, -80C2B7F, -80C2B8F (2) JT9D-7R4D, -7R4E, -7R4E4 (2) PW4056, PW4060, PW4060A, PW4060C, PW4062 (2) RB211-524H36, -524H-T-36 (2)	GTCP 331-200 (1) GTCP 331-200ER (1)	0.23 - 0.26 [0.87]	b, c(2), c(4), d(1), d(3)
B777 Series	Commercial Carrier: Jumbo, long, and medium range jet	GE90-76B, -77B, -85B, -90B, -94B, -110B1, -110B1L, -115B, -115BL (2) PW4074, -4074D, -4077, -4077D, -4084, -4084D, -4090, -4090-3, -4098 (2) Trent 875, -877, -884, -884B, -892, -892B, -895 (2)	GTCP 331-500 (1)	0.23 - 0.26 [1.0 - 1.5]	b, c(2), c(4), c(6), d(3)
B787 Series	Commercial Carrier: Jumbo, long, and medium range jet	Genx-1B64, -1B64/P1, -1B67, -1B67/P1, -1B70, -1B70/P1, -1B70/75/P1 (2) Trent 1000-A, -1000-C, -1000-E (2)	---	---	b, c(2), c(4)
BAe 146-100A, -200A	General Aviation: Business Jet	ALF 502R-3, -3A, -5 (4)	---	---	b, c(2)
BAe 146-300A	General Aviation: Business Jet	ALF 502R-3A, -5 (4)	---	---	b, c(2)
BAe Avro 146-RJ100A	General Aviation: Business Jet	LF507-1F (4)	---	---	c(2)
BAe Avro 146-RJ70A	General Aviation: Business Jet	LF507-1F (4)	---	---	c(2)
BAe Avro 146-RJ85A	General Aviation: Business Jet	LF507-1F (4)	---	---	c(2)
BD-100-1A10	General Aviation: Business Jet	AS907-1-1A (2)	---	---	c(2)
BD-700-1A10, -1A11	General Aviation: Business Jet	BR700-710A2-20 (2)	---	---	c(2)
Beechcraft 76	General Aviation: Turboprop	PT6A-27 (2)	---	---	c(1)
Beechcraft 99A, -99B, -A99A, -B99	General Aviation: Turboprop	PT6A-27 (2)	---	---	c(2)
BH.125 Series 400A	General Aviation: Business Jet	TFE731-3, -3R (2)	---	---	b, c(2)
BH.125 Series 600A	General Aviation: Business Jet	TFE731-3, -3R (2)	---	---	b, c(2)

Table 2-8. Commercial Airframe/Engine/APU Combinations

Aircraft Model(s)	Time-In-Mode Category	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU hours of Operation Per LTO ^a [Without Gate Power]	Notes:
Cessna 150, -150A, -150B, -150C, -150D, -150E, -150F, -150G, -150H, -150J, -150K, -150L, -150M	General Aviation: Piston	O-200-A (1)	---	---	b, c(2)
Cessna 172L, -172K, -172L, -172M	General Aviation: Piston	O-320-E2D (1)	---	---	b, c(2)
Cessna 172N	General Aviation: Piston	O-320-H2AD (1)	---	---	b, c(2)
Cessna 172P	General Aviation: Piston	O-320-D2J (1)	---	---	b, c(2)
Cessna 336	General Aviation: Piston	IO-360-A (2) TSIO-360-C (2)	---	---	b, c(1), c(2), c(6)
Cessna 337, -337A, -337B	General Aviation: Piston	IO-360-C, -360-CB, -360-D, -360-DB, -360-G, -360-GB (2)	---	---	b, c(2)
Cessna 337C, -337D, -337E, -337F, -337G	General Aviation: Piston	IO-360-C, -360-CB, -360-G, -360-GB (2)	---	---	b, c(2)
Cessna 337H	General Aviation: Piston	IO-360-G, -360-GB (2)	---	---	b, c(2)
Cessna Citation I	General Aviation: Business Jet	JT15D-1, -1A, -1B (2)	---	---	c(1), c(3)
Cessna Citation II, -II/S	General Aviation: Business Jet	JT15D-4, -4B (2)	---	---	c(3)
Cessna Citation Ultra	General Aviation: Business Jet	JT15D-5D (2)	---	---	b, c(3)
Cessna Citation V	General Aviation: Business Jet	JT15D-5A (2)	---	---	c(3)
Cessna M337B	General Aviation: Piston	IO-360-D, -360-DB (2)	---	---	b, c(2)
Cessna P337H	General Aviation: Piston	TSIO-360-C, -360-CB (2)	---	---	b, c(2)
Cessna T337B	General Aviation: Piston	TSIO-360-A, -360-AB, -360-B, -360-BB (2)	---	---	b, c(2)
Cessna T337C, -T337D, -T337E, -T337F	General Aviation: Piston	TSIO-360-A, -360-AB (2)	---	---	b, c(2)
Cessna T337H	General Aviation: Piston	IO-360-G, -360-GB (2) TSIO-360-JB (2)	---	---	b, c(2)
Cheyenne III, -IIIA	General Aviation: Turboprop	PT6A-41 (2)	---	---	c(3)
CL-600-1A11	General Aviation: Business Jet	ALF 502L, -502L-2 (2)	---	---	b, c(2)
CL-600-2A12	General Aviation: Business Jet	CF34-3A, -3A2 (2)	---	---	b, c(2)
CL-600-2B16	General Aviation: Business Jet	CF34-3A, -3A1, -3A2, -3B (2)	---	---	b, c(2)
CL-600-2B19	General Aviation: Business Jet	CF34-3A1, -3B1 (2)	---	---	b, c(2)
CL-600-2C10	General Aviation: Business Jet	CF34-8C1, -8C5B1 (2)	---	---	c(2)
CL-600-2D15	General Aviation: Business Jet	CF34-8C5, -8C5A1 (2)	---	---	c(2)
CL-600-2D24	General Aviation: Business Jet	CF34-8C5, -8C5A1 (2)	---	---	c(2)
CL-600-2E25	General Aviation: Business Jet	CF34-8C5, -8C5A1, -8C5A2 (2)	---	---	c(2)
DC-10 Series	Commercial Carrier: Jumbo, long, and medium range jet	CF6-6D, -6D1, -6D1A, -6K, -6K2 (3) CF6-50A, -50C, -50C1, -50C2, -50C2B, -50C2R, -50CA (3) JT9D-20, -20J, -59A (3)	TSCP 700-4B (1)	0.23 - 0.26 [1.0- 1.5]	b, c(1), c(2), d(2)
DC-8 Series	Commercial Carrier: Jumbo, long, and medium range jet	CFM56-2-C1, -2-C3, -2-C5 (4) JT3D-3, -3B, -7 (4)	---	---	b, c(2)
DC-9 Series	Commercial Carrier: Jumbo, long, and medium range jet	JT8D-7, -7A, -7B, -9, -9A (2) JT8D-11, -15, 15A, -17, -17A (2) JT8D-209, -217, -217A, -217C, -219 (2)	GTCP 85-98D (1)	0.23 - 0.26 [0.87]	b, c(1), c(2), d(1), d(2)
DH.125 Series 1A, -3A, -3A/RA, -400A	General Aviation: Business Jet	TFE731-3, -3R (2)	---	---	b, c(2)
DHC-6-300, -400	General Aviation: Turboprop	PT6A-27 (2)	---	---	c(2)
F.27 Mark 100, -200, -300, -400, -600, -700	General Aviation: Turboprop	SPEY Mk511, -Mk511-7E (2)	---	---	b, c(2)
F.28 Mark 0070	General Aviation: Business Jet	TAY Mk650-15 (2)	---	---	c(2)
F.28 Mark 0100	General Aviation: Business Jet	TAY Mk620-15 (2) TAY Mk650-15 (2)	---	---	c(2)
F.28 Mark 1000, -2000	General Aviation: Business Jet	SPEY Mk555-15 (2)	---	---	b, c(2)
F.28 Mark 3000, -4000	General Aviation: Business Jet	SPEY Mk555-15H (2)	---	---	b, c(2)

Table 2-8. Commercial Airframe/Engine/APU Combinations

Aircraft Model(s)	Time-In-Mode Category	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU hours of Operation Per LTO ^a [Without Gate Power]	Notes:
Falcon 20	General Aviation: Business Jet	CF700-2D (2)	---	---	c(1)
G-1159, -1159A, -1159B	General Aviation: Business Jet	SPEY Mk511-8 (2)	GTCP 36-6 (1)	0.23 - 0.26 [0.87]	b, c(2), d(2)
G200	General Aviation: Business Jet	PW306A (2)	---	---	c(3)
G-21	General Aviation: Turboprop	PT6A-27 (2)	---	---	c(1)
G280	General Aviation: Business Jet	AS907-2-1G (2)	---	---	c(2)
GIV	General Aviation: Business Jet	TAY Mk611-8 (2)	---	---	c(2)
GIV-X	General Aviation: Business Jet	TAY Mk611-8C (2)	---	---	b, c(2)
GV	General Aviation: Business Jet	BR700-710A1-10 (2)	---	---	c(2)
GVI	General Aviation: Business Jet	BR725A1-12 (2)	---	---	c(2)
GV-SP	General Aviation: Business Jet	BR700-710C4-11 (2)	---	---	c(2)
Hawker 4000	General Aviation: Business Jet	PW308A (2)	---	---	c(3)
Hawker 400A, -400XP	General Aviation: Business Jet	JT15D-5, -5R (2)	---	---	b, c(3)
HS.125 Series 403B, -600A, -700A, -700B, -F3B, -F3B/RA, -F400B, -F600B	General Aviation: Business Jet	TFE731-3, -3R (2)	---	---	b, c(2)
JetStar 1329-25	General Aviation: Business Jet	TFE731-3-1F (4)	---	---	b, c(2)
King Air B200	General Aviation: Turboprop	PT6A-41 (2)	---	---	c(3)
L-1011-385-1	Commercial Carrier: Jumbo, long, and medium range jet	RB211-22C-02, -22B-02 (3)	---	---	b, c(2)
L-1011-385-1-14	Commercial Carrier: Jumbo, long, and medium range jet	RB211-22B-02, -524B-02, -524B4-02, -524B3-02 (3)	---	---	b, c(2)
L-1011-385-1-15	Commercial Carrier: Jumbo, long, and medium range jet	RB211-22B-02, -22B4D-02, -524B-02, -524B4-02, -524B3-02 (3)	---	---	b, c(2)
Learjet 31, -31A	General Aviation: Business Jet	TFE731-2-3B (2)	---	---	b, c(2)
Learjet 35, -36	General Aviation: Business Jet	TFE731-2, -2-2B (2)	---	---	c(1)
Learjet 35A, -36A	General Aviation: Business Jet	TFE731-2-2B (2)	---	---	c(1)
Learjet 55	General Aviation: Business Jet	TFE731-3A-2B1, -3A-2B, -3AR-2B1, -3AR-2B (2)	---	---	b, c(2)
Learjet 55B	General Aviation: Business Jet	TFE731-3AR-2B1, -3AR-2B (2)	---	---	b, c(2)
Learjet 55C	General Aviation: Business Jet	TFE731-3AR-3B1, -3AR-3B, -3AR-2B1, -3AR-2B (2)	---	---	b, c(2)
MD-10-10F	Commercial Carrier: Jumbo, long, and medium range jet	CF6-6D, -6K (3)	TSCP 700-4B (1)	0.23 - 0.26 [1.0 - 1.5]	c(2), d(2)
MD-10-30F	Commercial Carrier: Jumbo, long, and medium range jet	CF6-50C2 (3)	TSCP 700-4B (1)	0.23 - 0.26 [1.0 - 1.5]	c(2), d(2)
MD-11, -11F	Commercial Carrier: Jumbo, long, and medium range jet	CF6-80C2D1F (3) PW4460 (3)	TSCP 700-4 (1)	0.23 - 0.26 [1.0 - 1.5]	c(2), d(2)
MD-88	Commercial Carrier: Jumbo, long, and medium range jet	JT8D-217A, -217C, -219 (2)	---	---	c(2)
MD-90, -90-30	Commercial Carrier: Jumbo, long, and medium range jet	V2525-D5 (2) V2528-D5 (2)	---	---	c(2)
MU-300, -300-10	General Aviation: Business Jet	JT15D-4, -4D (2)	---	---	b, c(2)
NA-265-80	General Aviation: Business Jet	CF700-2D-2 (2)	---	---	b, c(2)
PA-18A	General Aviation: Piston	O-320 (1)	---	---	c(2)
PA-23, -23-160	General Aviation: Piston	O-320 (2)	---	---	c(2)
PA-28-140	General Aviation: Piston	O-320-E2A (1)	---	---	b, c(2)
PA-28-150	General Aviation: Piston	O-320-A2B, -E2A (1)	---	---	b, c(2)
PA-28-151	General Aviation: Piston	O-320-E3D (1)	---	---	b, c(2)

Table 2-8. Commercial Airframe/Engine/APU Combinations

Aircraft Model(s)	Time-In-Mode Category	Engine Model(s) (Number of Engines)	APU Model(s) (Number of APUs)	APU hours of Operation Per LTO ^a [Without Gate Power]	Notes:
PA-28-160	General Aviation: Piston	O-320-B2B, -D2A (1)	---	---	b, c(2)
PA-28-161	General Aviation: Piston	O-320-D2A, -D3G (1)	---	---	b, c(2)
PA-28-201T	General Aviation: Piston	TSIO-360-FB (1)	---	---	b, c(2)
PA-28R-180	General Aviation: Piston	IO-360-B1E (1)	---	---	b, c(2)
PA-28R-200	General Aviation: Piston	IO-360-C1C, -C1C6 (1)	---	---	b, c(2)
PA-28R-201, -28RT-201	General Aviation: Piston	IO-360-C1C6 (1)	---	---	b, c(2)
PA-28R-201T	General Aviation: Piston	TSIO-360-F, -360-FB (1)	---	---	b, c(2)
PA-28RT-201T	General Aviation: Piston	TSIO-360-FB (1)	---	---	b, c(2)
PA-28S-160	General Aviation: Piston	O-320-D2A (1)	---	---	b, c(2)
PA-31	General Aviation: Piston	TIO-540, -540-A1A, -540-A1B, -540-A2A, -540-A2B, -540-A2C' (2)	---	---	b, c(1)
PA-31-325	General Aviation: Piston	TIO-540-F2BD (2)	---	---	b, c(2)
PA-31-350	General Aviation: Piston	TIO-540-J2BD, -540-J2B (2)	---	---	b, c(2)
PA-32-301T	General Aviation: Piston	TIO-540-S1AD (1)	---	---	b, c(2)
PA-32-301XTC	General Aviation: Piston	TIO-540-AH1A (1)	---	---	b, c(2)
PA-32R-301T	General Aviation: Piston	TIO-540-S1AD, 540-AH1A (1)	---	---	b, c(2)
PA-32RT-300T	General Aviation: Piston	TIO-540-S1AD (1)	---	---	b, c(2)
PA-36-285	General Aviation: Turboprop	6-285-B, -285-BA, -285-C, -285-CA (1)	---	---	b, c(2)
PA-42	General Aviation: Turboprop	PT6A-41 (2)	---	---	c(2)
PA-46-350P, -46R-350T	General Aviation: Turboprop	TIO-540-AE2A (1)	---	---	b, c(2)
SA226-AT	General Aviation: Turboprop	TPE331-3U-303G, -3U-304G, -3UW-303G (2)	---	---	b, c(2)
SA226-T	General Aviation: Turboprop	TPE331-3U-303G, -3U-304G (2)	---	---	b, c(2)
SA226-TC	General Aviation: Turboprop	TPE331-3U-303G, -3U-304G, -3UW-303G, -3UW-304G (2)	---	---	b, c(2)
SC-7	General Aviation: Turboprop	TPE331-2-201A (2)	---	---	b, c(1)
Super King Air A100-1, -200, -200C, -200CT, -200T, -A200, -A200C, -A200CT, -B200, -B200C, -B200CT, -B200T	General Aviation: Turboprop	PT6A-41 (2)	---	---	c(2)
TU-154-B	Commercial Carrier: Jumbo, long, and medium range jet	NK-8-2U (3)	---	---	c(7)
Twin Commander 685	General Aviation: Piston	GTSIO-520-F, -520-K (2)	---	---	b, c(2)

Note that some Aircraft model/engine/APU combinations may be missing due to unverified sources and/or missing emission factors for either engine(s) and/or APU(s).

- SOURCE: *Airport Air Quality Manual*, International Civil Aviation Organization, 2020. ICAO provides a range for both narrow body and wide body aircraft. The values given out of the brackets assume gate power while the bracketed values are in instances where there is no gate power.
- This document does not have emission factors for at least one engine/APU listed for this aircraft.
- The Aircraft/Engine combination source was reported in one of the following documents:
 - SOURCE: *Air Pollutant Emission Factors for Military and Civil Aircraft*, EPA-450/3-78-117, October 1978.
 - SOURCE: The Federal Aviation Administration (FAA) Type Certificate Data Sheet (TCDS) for the airframe model listed.
 - SOURCE: Pratt & Whitney website (www.pw.utc.com).
 - SOURCE: The European Aviation Safety Agency (EASA) TCDS for the airframe model listed.
 - SOURCE: Airbus website (www.airbus.com).
 - SOURCE: Boeing website (www.boeing.com).
 - SOURCE: Tupolev website (www.tupolev.ru/english/).
- Airframe/APU combination source was reported in one of the following:
 - SOURCE: Emissions and Dispersion Modeling System Input from Paine Field
 - SOURCE: FAA TCDS for the listed airframe
 - SOURCE: EASA TCDS for the listed airframe

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
6-285-B	Idle (Taxi)	72	0.46	1.07	363.70	12.33	0.76 (S)	0.68 (S)
	Approach	84	4.72	1.07	1022.63	18.50	0.12 (S)	0.11 (S)
	Climb out	166	5.50	1.07	668.07	9.63	0.30 (S)	0.27 (S)
	Takeoff	153	5.88	1.07	998.04	13.38	0.31 (S)	0.28 (S)
Notes: c(1), d(5) - PM ₁₀ and PM _{2.5} data at all power settings, e, h, i, k(8)								
AE1107C	Idle	362	4.15	1.07	8.35	0.10	1.58	1.42
	Flight Idle	663	6.05	1.07	3.47	0.02	1.58	1.42
	Intermediate	948	7.87	1.07	1.82	0.02	1.58	1.42
	Max Continuous	2507	18.03	1.07	0.29	0.01	1.58	1.42
Notes: c(6) - This is the commercial designation of the T406-AD-400 engine, h, k(4)								
AE3007A	Idle (Taxi)	389	3.83	1.07	17.35	2.89	0.09	0.08
	Approach	929	7.79	1.07	3.28	0.74	0.10	0.09
	Climb out	2500	17.47	1.07	0.92	0.33	0.09	0.08
	Takeoff	2992	20.54	1.07	0.75	0.29	0.10	0.09
Notes: c(2), e, f, h, k(5)								
ALF 502L-2	Idle (Taxi)	379	3.38	1.07	45.63	7.65	0.13	0.12
	Approach	930	6.47	1.07	3.97	0.21	0.16	0.14
	Climb out	2568	12.03	1.07	0.30	0.03	0.13	0.12
	Takeoff	3174	13.43	1.07	0.40	0.02	0.10	0.09
Notes: c(2), e, f, h, k(8)								
ALF 502R-3	Idle (Taxi)	343	3.30	1.07	44.67	7.49	0.11	0.10
	Approach	815	6.15	1.07	8.43	0.33	0.14	0.12
	Climb out	2286	9.94	1.07	0.50	0.06	0.13	0.12
	Takeoff	2759	11.20	1.07	0.43	0.06	0.13	0.12
Notes: c(2), e, f, h, k(8)								
ALF 502R-5	Idle (Taxi)	324	3.78	1.07	40.93	6.20	0.11	0.10
	Approach	821	6.60	1.07	7.10	0.25	0.14	0.12
	Climb out	2345	10.56	1.07	0.25	0.06	0.14	0.12
	Takeoff	2842	13.35	1.07	0.30	0.07	0.13	0.12
Notes: c(2), e, f, h, k(8)								
AS907-1-1A	Idle (Taxi)	381	3.91	1.07	33.24	1.45	0.13	0.12
	Approach	825	8.81	1.07	6.28	0.14	0.08	0.07
	Climb out	2286	16.17	1.07	0.63	0.07	0.41	0.37
	Takeoff	2754	17.90	1.07	0.56	0.06	0.45	0.40
Notes: c(2), e, f, h, k(1)								
AS907-2-1G	Idle (Taxi)	389	3.97	1.07	30.48	1.14	0.13	0.12
	Approach	849	8.96	1.07	6.07	0.14	0.08	0.07
	Climb out	2444	16.44	1.07	0.60	0.07	0.41	0.37
	Takeoff	2952	18.43	1.07	0.57	0.06	0.45	0.40
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
BR700-710A1-10	Idle (Taxi)	706	4.69	1.07	27.82	1.25	0.08	0.07
	Approach	1698	7.68	1.07	4.78	0.06	0.07	0.06
	Climb out	4714	15.07	1.07	0.93	0.02	0.44	0.40
	Takeoff	5659	18.79	1.07	1.04	0.02	0.46	0.41
Notes: c(2), e, f, h, k(8)								
BR700-710A2-20	Idle (Taxi)	706	4.67	1.07	28.00	1.29	0.08	0.07
	Approach	1698	7.67	1.07	4.81	0.06	0.07	0.06
	Climb out	4722	15.03	1.07	0.93	0.02	0.44	0.40
	Takeoff	5667	18.73	1.07	1.04	0.02	0.46	0.41
Notes: c(2), e, f, h, k(8)								
BR700-710C4-11	Idle (Taxi)	659	4.50	1.07	31.57	2.63	0.08	0.08
	Approach	1706	7.71	1.07	4.92	0.06	0.07	0.06
	Climb out	4897	15.43	1.07	0.92	0.02	0.45	0.40
	Takeoff	5929	19.52	1.07	1.04	0.02	0.46	0.41
Notes: c(2), e, f, h, k(8)								
BR700-715A1-30	Idle (Taxi)	762	5.37	1.07	16.27	0.24	0.07	0.06
	Approach	1944	11.19	1.07	3.76	0.01	0.07	0.07
	Climb out	5476	18.65	1.07	0.75	0.02	0.22	0.20
	Takeoff	6635	23.97	1.07	0.78	0.00	0.23	0.20
Notes: c(2), e, f, h, k(8)								
BR700-715C1-30	Idle (Taxi)	833	4.28	1.07	17.85	0.07	0.06	0.06
	Approach	2159	9.23	1.07	3.23	0.02	0.08	0.08
	Climb out	6389	20.05	1.07	0.64	0.07	0.24	0.21
	Takeoff	7810	27.92	1.07	0.80	0.01	0.24	0.22
Notes: c(2), e, f, h, k(8)								
BR725A1-12	Idle (Taxi)	675	3.38	1.07	41.90	3.45	0.08	0.08
	Approach	1754	7.81	1.07	5.93	0.00	0.09	0.08
	Climb out	5159	13.32	1.07	0.32	0.00	0.24	0.21
	Takeoff	6262	16.92	1.07	0.40	0.00	0.20	0.18
Notes: c(2), e, f, h, k(8)								
CF6-6D	Idle (Taxi)	1371	4.50	1.07	54.20	24.15	0.25	0.22
	Approach	3841	11.40	1.07	6.50	0.81	0.12	0.11
	Climb out	11357	32.60	1.07	0.50	0.35	0.09	0.08
	Takeoff	13778	40.00	1.07	0.50	0.35	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-6D1A	Idle (Taxi)	1397	4.60	1.07	52.00	22.89	0.24	0.21
	Approach	3921	11.80	1.07	5.50	0.69	0.12	0.10
	Climb out	11921	33.90	1.07	0.50	0.35	0.09	0.08
	Takeoff	14381	41.60	1.07	0.50	0.35	0.11	0.10
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CF6-6K	Idle (Taxi)	1371	4.50	1.07	54.20	24.15	0.25	0.22
	Approach	3841	11.40	1.07	6.50	0.81	0.12	0.11
	Climb out	11357	32.60	1.07	0.50	0.35	0.09	0.08
	Takeoff	13778	40.00	1.07	0.50	0.35	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-6K2	Idle (Taxi)	1397	4.60	1.07	52.00	22.89	0.24	0.21
	Approach	3921	11.80	1.07	5.50	0.69	0.12	0.10
	Climb out	11921	33.90	1.07	0.50	0.35	0.09	0.08
	Takeoff	14381	41.60	1.07	0.50	0.35	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-50A	Idle (Taxi)	1294	3.40	1.07	24.04	3.13	0.08	0.07
	Approach	4960	9.72	1.07	4.35	0.36	0.08	0.07
	Climb out	14183	23.27	1.07	0.49	0.16	0.14	0.12
	Takeoff	17206	27.17	1.07	0.43	0.17	0.13	0.12
Notes: c(2), e, f, h, k(1)								
CF6-50C	Idle (Taxi)	1683	3.50	1.07	62.30	26.45	0.27	0.24
	Approach	5103	9.40	1.07	5.20	1.15	0.13	0.12
	Climb out	15199	29.00	1.07	0.50	0.81	0.12	0.11
	Takeoff	18881	35.00	1.07	0.50	0.69	0.15	0.13
Notes: c(2), e, f, h, k(1)								
CF6-50C1, -50C2	Idle (Taxi)	1706	3.60	1.07	61.80	25.07	0.26	0.24
	Approach	5238	9.50	1.07	4.30	1.15	0.13	0.12
	Climb out	15675	29.70	1.07	0.50	0.81	0.12	0.11
	Takeoff	19738	36.30	1.07	0.50	0.69	0.15	0.13
Notes: c(2) - CF6-50C2 is the commercial designation of the F103-GE-101 engine, e, f, h, k(1)								
CF6-50C2B	Idle (Taxi)	1294	3.40	1.07	24.04	3.13	0.08	0.07
	Approach	5294	10.49	1.07	3.42	0.30	0.07	0.07
	Climb out	15849	26.34	1.07	0.44	0.17	0.14	0.12
	Takeoff	19127	29.59	1.07	0.46	0.15	0.13	0.12
Notes: c(2), e, f, h, k(1)								
CF6-50C2R	Idle (Taxi)	1683	3.50	1.07	62.30	26.45	0.27	0.24
	Approach	5103	9.40	1.07	5.20	1.15	0.13	0.12
	Climb out	15199	29.00	1.07	0.50	0.81	0.12	0.11
	Takeoff	18881	35.00	1.07	0.50	0.69	0.15	0.13
Notes: c(2), e, f, h, k(1)								
CF6-50CA	Idle (Taxi)	1294	3.40	1.07	24.04	3.13	0.08	0.07
	Approach	5087	10.09	1.07	3.99	0.33	0.08	0.07
	Climb out	14881	24.30	1.07	0.46	0.16	0.14	0.12
	Takeoff	18103	28.03	1.07	0.44	0.16	0.13	0.12
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CF6-50E, -50E1	Idle (Taxi)	1294	3.40	1.07	24.04	3.13	0.08	0.07
	Approach	5262	10.16	1.07	3.71	0.32	0.08	0.07
	Climb out	15397	25.50	1.07	0.45	0.17	0.14	0.12
	Takeoff	18738	28.97	1.07	0.45	0.16	0.13	0.12
Notes: c(2), e, f, h, k(1)								
CF6-50E2	Idle (Taxi)	1706	3.60	1.07	61.80	25.07	0.26	0.24
	Approach	5238	9.50	1.07	4.30	1.15	0.13	0.12
	Climb out	15675	29.70	1.07	0.50	0.81	0.12	0.11
	Takeoff	19738	36.30	1.07	0.50	0.69	0.15	0.13
Notes: c(2) - CF6-50E2 is the commercial designation of the F103-GE-100 engine, e, f, h, k(1)								
CF6-80A	Idle (Taxi)	1190	3.40	1.07	28.20	7.23	0.11	0.10
	Approach	4881	10.30	1.07	3.10	0.54	0.09	0.08
	Climb out	14246	25.60	1.07	1.10	0.33	0.14	0.13
	Takeoff	17024	29.80	1.07	1.00	0.33	0.15	0.14
Notes: c(2), e, f, h, k(1)								
CF6-80A2, -80A3	Idle (Taxi)	1190	3.40	1.07	28.20	7.22	0.11	0.10
	Approach	5087	10.80	1.07	2.80	0.52	0.09	0.08
	Climb out	14960	26.60	1.07	1.10	0.43	0.15	0.13
	Takeoff	17889	29.60	1.07	1.00	0.35	0.15	0.14
Notes: c(2), e, f, h, k(1)								
CF6-80C2A1	Idle (Taxi)	1579	3.99	1.07	42.24	10.57	0.15	0.13
	Approach	5048	9.76	1.07	2.19	0.23	0.08	0.07
	Climb out	15500	24.85	1.07	0.54	0.10	0.10	0.09
	Takeoff	19048	32.22	1.07	0.56	0.09	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2A2	Idle (Taxi)	1500	3.95	1.07	46.01	12.05	0.16	0.14
	Approach	4603	9.44	1.07	2.94	0.26	0.08	0.07
	Climb out	13849	20.69	1.07	0.55	0.12	0.09	0.08
	Takeoff	16802	27.93	1.07	0.57	0.09	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CF6-80C2A3	Idle (Taxi)	1603	3.92	1.07	41.51	10.28	0.15	0.13
	Approach	5151	9.93	1.07	2.07	0.22	0.08	0.07
	Climb out	15897	25.46	1.07	0.56	0.09	0.10	0.09
	Takeoff	19500	34.50	1.07	0.58	0.07	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2A5	Idle (Taxi)	1643	3.79	1.07	41.65	10.34	0.15	0.13
	Approach	5452	9.11	1.07	1.93	0.23	0.08	0.07
	Climb out	16524	22.86	1.07	0.52	0.09	0.10	0.09
	Takeoff	20484	34.38	1.07	0.52	0.08	0.11	0.10
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CF6-80C2A5F	Idle (Taxi)	1746	4.90	1.07	16.96	1.36	0.08	0.07
	Approach	5484	12.64	1.07	1.92	0.13	0.07	0.07
	Climb out	16714	21.27	1.07	0.04	0.05	0.10	0.09
	Takeoff	20873	28.11	1.07	0.05	0.06	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CF6-80C2B1	Idle (Taxi)	1556	3.73	1.07	43.22	10.88	0.15	0.13
	Approach	4889	8.83	1.07	2.37	0.24	0.08	0.07
	Climb out	14865	21.26	1.07	0.55	0.10	0.09	0.08
	Takeoff	18135	28.11	1.07	0.58	0.09	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2B1F	Idle (Taxi)	1579	4.73	1.07	19.23	1.77	0.15	0.14
	Approach	5159	12.47	1.07	2.13	0.13	0.08	0.07
	Climb out	15738	19.72	1.07	0.04	0.06	0.10	0.09
	Takeoff	19222	24.94	1.07	0.04	0.06	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2B2	Idle (Taxi)	1508	4.45	1.07	22.41	2.27	0.16	0.15
	Approach	4643	11.79	1.07	2.61	0.14	0.08	0.08
	Climb out	13937	18.25	1.07	0.05	0.06	0.09	0.08
	Takeoff	16857	22.02	1.07	0.04	0.06	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CF6-80C2B2F	Idle (Taxi)	1492	4.52	1.07	21.56	2.14	0.15	0.14
	Approach	4706	11.80	1.07	2.64	0.14	0.08	0.08
	Climb out	14103	18.09	1.07	0.06	0.06	0.08	0.08
	Takeoff	17048	21.55	1.07	0.04	0.06	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2B4	Idle (Taxi)	1595	4.68	1.07	19.76	1.83	0.15	0.14
	Approach	5087	12.37	1.07	2.12	0.14	0.08	0.07
	Climb out	15595	20.17	1.07	0.04	0.06	0.10	0.09
	Takeoff	19119	25.93	1.07	0.05	0.06	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2B4F	Idle (Taxi)	1579	4.73	1.07	19.23	1.77	0.14	0.13
	Approach	5159	12.47	1.07	2.13	0.13	0.08	0.07
	Climb out	15738	19.72	1.07	0.04	0.06	0.10	0.09
	Takeoff	19302	25.08	1.07	0.04	0.06	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2B5F	Idle (Taxi)	1635	4.91	1.07	17.45	1.51	0.08	0.07
	Approach	5532	12.74	1.07	1.83	0.13	0.07	0.07
	Climb out	17159	21.76	1.07	0.04	0.06	0.10	0.09
	Takeoff	21310	28.58	1.07	0.05	0.06	0.10	0.09
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CF6-80C2B6	Idle (Taxi)	1627	4.76	1.07	18.89	1.70	0.15	0.13
	Approach	5333	12.53	1.07	1.91	0.13	0.08	0.07
	Climb out	16635	21.69	1.07	0.04	0.06	0.10	0.09
	Takeoff	20476	28.57	1.07	0.06	0.05	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2B6F	Idle (Taxi)	1611	4.81	1.07	18.42	1.64	0.16	0.15
	Approach	5413	12.63	1.07	1.93	0.13	0.08	0.07
	Climb out	16699	21.05	1.07	0.04	0.06	0.10	0.09
	Takeoff	20587	27.38	1.07	0.05	0.06	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2B7F	Idle (Taxi)	1611	4.81	1.07	18.42	1.64	0.16	0.15
	Approach	5413	12.63	1.07	1.93	0.13	0.08	0.07
	Climb out	16699	21.05	1.07	0.04	0.06	0.10	0.09
	Takeoff	20587	27.38	1.07	0.05	0.06	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80C2B8F	Idle (Taxi)	1627	4.59	1.07	16.69	1.31	0.07	0.07
	Approach	5437	12.42	1.07	1.69	0.10	0.07	0.06
	Climb out	16714	20.84	1.07	0.02	0.05	0.09	0.08
	Takeoff	20500	26.85	1.07	0.03	0.05	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CF6-80C2D1F	Idle (Taxi)	1556	3.80	1.07	41.78	10.38	0.16	0.14
	Approach	5214	9.16	1.07	1.94	0.23	0.08	0.07
	Climb out	16389	24.02	1.07	0.52	0.09	0.10	0.09
	Takeoff	20603	32.65	1.07	0.52	0.08	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80E1A1	Idle (Taxi)	1794	4.47	1.07	43.24	11.13	0.15	0.13
	Approach	5667	9.84	1.07	1.70	0.16	0.09	0.08
	Climb out	17452	27.11	1.07	0.34	0.08	0.11	0.10
	Takeoff	21445	37.87	1.07	0.38	0.06	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80E1A2	Idle (Taxi)	1810	4.53	1.07	42.67	10.78	0.15	0.13
	Approach	5746	9.91	1.07	1.61	0.16	0.09	0.08
	Climb out	17818	28.02	1.07	0.34	0.08	0.11	0.10
	Takeoff	21960	39.29	1.07	0.38	0.06	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF6-80E1A3	Idle (Taxi)	1802	4.69	1.07	37.02	10.96	0.15	0.14
	Approach	5992	10.29	1.07	1.23	0.21	0.09	0.08
	Climb out	18945	31.74	1.07	0.31	0.08	0.12	0.10
	Takeoff	23722	45.63	1.07	0.34	0.08	0.12	0.11
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CF6-80E1A4	Idle (Taxi)	1802	4.62	1.07	38.09	11.90	0.16	0.14
	Approach	5905	10.13	1.07	1.33	0.21	0.09	0.08
	Climb out	18548	30.30	1.07	0.30	0.08	0.11	0.10
	Takeoff	23048	43.15	1.07	0.34	0.07	0.12	0.10
Notes: c(2), e, f, h, k(1)								
CF34-3A, -3A1	Idle (Taxi)	394	3.82	1.07	42.60	4.54	0.12	0.11
	Approach	944	6.86	1.07	1.90	0.15	0.09	0.08
	Climb out	2653	10.14	1.07	0.00	0.07	0.12	0.11
	Takeoff	3230	11.61	1.07	0.00	0.07	0.20	0.18
Notes: c(2), e, f, h, k(4)								
CF34-3B	Idle (Taxi)	388	3.72	1.07	47.59	5.39	0.12	0.11
	Approach	921	6.63	1.07	1.88	0.15	0.09	0.08
	Climb out	2610	9.68	1.07	0.00	0.06	0.12	0.11
	Takeoff	3167	11.28	1.07	0.00	0.07	0.17	0.15
Notes: c(2), e, f, h, k(1)								
CF34-8C1	Idle (Taxi)	548	4.31	1.07	24.92	0.09	0.06	0.06
	Approach	1334	11.10	1.07	2.91	0.07	0.06	0.06
	Climb out	3921	12.82	1.07	0.50	0.02	0.06	0.05
	Takeoff	4795	14.67	1.07	0.41	0.02	0.09	0.08
Notes: c(2), e, f, h, k(1)								
CF34-8C5	Idle (Taxi)	508	4.60	1.07	18.25	0.15	0.08	0.07
	Approach	1421	10.75	1.07	4.24	0.07	0.08	0.07
	Climb out	4206	12.60	1.07	0.57	0.02	0.06	0.06
	Takeoff	5143	14.69	1.07	0.64	0.02	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CF34-8C5A1	Idle (Taxi)	516	4.65	1.07	17.85	0.15	0.09	0.08
	Approach	1452	10.87	1.07	4.17	0.07	0.09	0.08
	Climb out	4310	12.82	1.07	0.57	0.02	0.07	0.06
	Takeoff	5278	15.09	1.07	0.66	0.02	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CF34-8C5A2	Idle (Taxi)	524	4.70	1.07	17.30	0.15	0.12	0.11
	Approach	1492	11.06	1.07	4.05	0.07	0.11	0.10
	Climb out	4468	13.15	1.07	0.57	0.02	0.08	0.07
	Takeoff	5484	15.81	1.07	0.71	0.02	0.13	0.12
Notes: c(2), e, f, h, k(1)								
CF34-8C5B1	Idle (Taxi)	500	4.50	1.07	19.52	0.18	0.06	0.06
	Approach	1357	10.42	1.07	4.44	0.08	0.06	0.06
	Climb out	3944	12.03	1.07	0.58	0.03	0.06	0.05
	Takeoff	4810	13.89	1.07	0.60	0.02	0.09	0.08
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CF700-2D	Idle (Taxi)	460	0.89	1.07	155.00	20.70	3.0E-03 (S)	2.7E-03 (S)
	Approach	919	1.80	1.07	62.00	1.61	0.01 (S)	0.01 (S)
	Climb out	2322	4.30	1.07	11.34	0.11	0.01 (S)	0.01 (S)
	Takeoff	2607	5.60	1.07	9.98	0.11	0.02 (S)	0.02 (S)
Notes: c(1), d(8) - PM ₁₀ and PM _{2.5} at all power settings, e, j, k(8)								
CFM56-2A Series	Idle (Taxi)	1032	4.30	1.07	23.50	1.30	0.08	0.07
	Approach	2524	8.70	1.07	3.40	0.09	0.08	0.07
	Climb out	7230	17.30	1.07	0.90	0.05	0.09	0.08
	Takeoff	8841	20.40	1.07	0.90	0.05	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CFM56-2B-1	Idle (Taxi)	1136	3.88	1.07	23.65	0.19	2.07	1.86
	Approach	2547	5.73	1.07	8.57	0.06	1.55	1.40
	Intermediate	5650	11.04	1.07	2.32	0.03	0.65	0.58
	Military	6458	12.05	1.07	0.36	0.03	1.59	1.43
Notes: c(3) - CFM56-2B-1 is the commercial designation of the F108-CF-100 engine, h, k(5)								
CFM56-2-C5	Idle (Taxi)	1016	4.00	1.07	30.70	2.10	0.08	0.08
	Approach	2468	8.20	1.07	4.20	0.09	0.08	0.07
	Climb out	6500	16.00	1.07	0.90	0.06	0.07	0.07
	Takeoff	7818	18.50	1.07	0.90	0.05	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CFM56-3-B1	Idle (Taxi)	905	3.90	1.07	34.40	2.62	0.09	0.08
	Approach	2302	8.30	1.07	3.80	0.09	0.08	0.07
	Climb out	6286	15.50	1.07	0.95	0.06	0.07	0.06
	Takeoff	7508	17.70	1.07	0.90	0.05	0.08	0.07
Notes: c(2), e, f, h, k(1)								
CFM56-3B-2	Idle (Taxi)	944	4.10	1.07	30.10	2.01	0.08	0.08
	Approach	2492	8.70	1.07	3.40	0.08	0.08	0.07
	Climb out	6968	16.70	1.07	0.90	0.05	0.07	0.07
	Takeoff	8381	19.40	1.07	0.90	0.04	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CFM56-3C-1	Idle (Taxi)	984	4.30	1.07	26.80	1.63	0.08	0.08
	Approach	2667	9.10	1.07	3.10	0.08	0.08	0.07
	Climb out	7571	17.80	1.07	0.90	0.05	0.08	0.08
	Takeoff	9159	20.70	1.07	0.90	0.03	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CFM56-5-A1	Idle (Taxi)	802	4.00	1.07	17.60	1.61	0.08	0.08
	Approach	2310	8.00	1.07	2.50	0.46	0.13	0.12
	Climb out	6841	19.60	1.07	0.90	0.26	0.16	0.14
	Takeoff	8341	24.60	1.07	0.90	0.26	0.17	0.15
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CFM56-5A3	Idle (Taxi)	829	4.10	1.07	16.20	1.50	0.09	0.08
	Approach	2437	8.30	1.07	2.40	0.35	0.13	0.12
	Climb out	7341	21.10	1.07	0.90	0.23	0.16	0.14
	Takeoff	8976	26.40	1.07	0.90	0.23	0.17	0.15
Notes: c(2), e, f, h, k(1)								
CFM56-5A4	Idle (Taxi)	754	4.04	1.07	20.30	2.01	0.09	0.08
	Approach	2071	8.51	1.07	3.10	0.58	0.13	0.12
	Climb out	5873	19.11	1.07	1.10	0.26	0.14	0.13
	Takeoff	7119	22.64	1.07	1.10	0.26	0.16	0.14
Notes: c(2), e, f, h, k(1)								
CFM56-5A5	Idle (Taxi)	778	4.29	1.07	18.50	1.76	0.09	0.08
	Approach	2190	8.94	1.07	2.80	0.52	0.13	0.12
	Climb out	6341	19.98	1.07	1.10	0.26	0.15	0.13
	Takeoff	7714	24.79	1.07	1.10	0.26	0.16	0.14
Notes: c(2), e, f, h, k(1)								
CFM56-5B1	Idle (Taxi)	929	4.60	1.07	28.40	3.69	0.11	0.10
	Approach	2889	10.80	1.07	1.57	0.14	0.09	0.08
	Climb out	8833	27.20	1.07	0.50	0.12	0.13	0.11
	Takeoff	10786	35.10	1.07	0.50	0.12	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CFM56-5B2	Idle (Taxi)	944	4.70	1.07	27.40	3.50	0.11	0.10
	Approach	2984	11.00	1.07	1.40	0.14	0.09	0.08
	Climb out	9191	28.50	1.07	0.50	0.12	0.13	0.11
	Takeoff	11318	37.80	1.07	0.50	0.12	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CFM56-5B4	Idle (Taxi)	849	4.30	1.07	31.90	4.45	0.13	0.12
	Approach	2587	10.00	1.07	2.33	0.15	0.10	0.09
	Climb out	7627	23.30	1.07	0.50	0.12	0.13	0.12
	Takeoff	9254	28.70	1.07	0.50	0.12	0.12	0.11
Notes: c(2), e, f, h, k(1)								
CFM56-5B4/3, -5B7/3	Idle (Taxi)	810	4.22	1.07	32.07	2.21	0.08	0.07
	Approach	2508	8.85	1.07	3.24	0.06	0.07	0.06
	Climb out	7452	17.23	1.07	0.16	0.02	0.12	0.11
	Takeoff	9064	21.57	1.07	0.25	0.02	0.13	0.12
Notes: c(2), e, f, h, k(1)								
CFM56-5B9/3	Idle (Taxi)	754	3.92	1.07	38.80	3.46	0.09	0.08
	Approach	2206	8.26	1.07	4.42	0.08	0.07	0.06
	Climb out	6294	14.76	1.07	0.17	0.03	0.11	0.10
	Takeoff	7587	17.54	1.07	0.16	0.02	0.12	0.11
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CFM56-5C2	Idle (Taxi)	933	4.19	1.07	34.00	6.53	0.14	0.13
	Approach	2824	10.00	1.07	1.75	0.09	0.10	0.09
	Climb out	8540	25.80	1.07	0.80	0.01	0.50	0.45
	Takeoff	10381	32.60	1.07	0.93	0.01	0.54	0.48
Notes: c(2), e, f, h, k(1)								
CFM56-5C2/P	Idle (Taxi)	865	3.90	1.07	35.10	6.67	0.14	0.13
	Approach	2714	9.30	1.07	2.10	0.00	0.09	0.08
	Climb out	8214	23.80	1.07	0.70	0.00	0.50	0.45
	Takeoff	9937	29.70	1.07	0.80	0.00	0.52	0.47
Notes: c(2), e, f, h, k(1)								
CFM56-5C3/P	Idle (Taxi)	889	4.00	1.07	33.40	6.21	0.14	0.13
	Approach	2817	9.60	1.07	1.90	0.00	0.09	0.08
	Climb out	8611	25.10	1.07	0.70	0.00	0.51	0.46
	Takeoff	10445	31.60	1.07	0.80	0.00	0.55	0.49
Notes: c(2), e, f, h, k(1)								
CFM56-5C4	Idle (Taxi)	984	4.28	1.07	30.93	5.75	0.14	0.12
	Approach	3064	10.67	1.07	1.40	0.07	0.09	0.08
	Climb out	9484	29.05	1.07	0.85	0.01	0.54	0.48
	Takeoff	11556	37.67	1.07	1.00	0.01	0.58	0.52
Notes: c(2), e, f, h, k(1)								
CFM56-5C4/P	Idle (Taxi)	913	4.10	1.07	31.60	5.75	0.14	0.12
	Approach	2937	9.90	1.07	1.60	0.00	0.09	0.08
	Climb out	9071	26.70	1.07	0.70	0.00	0.53	0.48
	Takeoff	11072	34.10	1.07	0.80	0.00	0.56	0.50
Notes: c(2), e, f, h, k(1)								
CFM56-7B18/3	Idle (Taxi)	730	3.65	1.07	46.64	5.19	0.10	0.09
	Approach	2032	7.78	1.07	5.54	0.09	0.07	0.06
	Climb out	5571	13.00	1.07	0.28	0.03	0.10	0.09
	Takeoff	6683	14.81	1.07	0.17	0.03	0.10	0.09
Notes: c(2), e, f, h, k(1)								
CFM56-7B20	Idle (Taxi)	794	4.30	1.07	25.90	3.57	0.12	0.11
	Approach	2175	9.50	1.07	3.20	0.12	0.10	0.09
	Climb out	6040	17.40	1.07	0.50	0.12	0.11	0.10
	Takeoff	7246	20.50	1.07	0.60	0.12	0.13	0.11
Notes: c(2), e, f, h, k(1)								
CFM56-7B20/2	Idle (Taxi)	810	3.75	1.07	49.71	9.33	0.11	0.09
	Approach	2206	9.39	1.07	11.37	0.41	0.08	0.07
	Climb out	5984	10.81	1.07	11.38	0.26	0.07	0.06
	Takeoff	7167	13.25	1.07	4.26	0.08	0.06	0.05
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CFM56-7B20/3, -7B20E	Idle (Taxi)	746	3.77	1.07	43.31	4.42	0.10	0.09
	Approach	2127	7.98	1.07	5.03	0.09	0.07	0.06
	Climb out	5921	13.53	1.07	0.23	0.03	0.10	0.09
	Takeoff	7111	15.61	1.07	0.15	0.03	11.00	0.10
Notes: c(2), e, f, h, k(1)								
CFM56-7B22	Idle (Taxi)	833	4.50	1.07	22.80	2.88	0.12	0.11
	Approach	2365	10.00	1.07	2.50	0.12	0.10	0.09
	Climb out	6698	19.00	1.07	0.60	0.12	0.13	0.11
	Takeoff	8103	23.10	1.07	0.50	0.12	0.13	0.12
Notes: c(2), e, f, h, k(1)								
CFM56-7B22/2	Idle (Taxi)	833	3.94	1.07	45.35	8.35	0.12	0.11
	Approach	2405	6.37	1.07	30.87	6.97	0.10	0.09
	Climb out	6643	12.16	1.07	6.58	0.12	0.13	0.11
	Takeoff	8000	15.08	1.07	2.18	0.07	0.13	0.12
Notes: c(2), e, f, h, k(1)								
CFM56-7B22/3, -7B22E	Idle (Taxi)	786	3.95	1.07	37.90	3.25	0.09	0.08
	Approach	2310	8.35	1.07	4.18	0.08	0.07	0.06
	Climb out	6603	14.67	1.07	0.17	0.03	0.11	0.10
	Takeoff	7968	17.40	1.07	0.16	0.02	0.11	0.10
Notes: c(2), e, f, h, k(1)								
CFM56-7B24	Idle (Taxi)	865	4.40	1.07	22.00	2.76	0.13	0.11
	Approach	2508	10.10	1.07	2.20	0.12	0.10	0.09
	Climb out	7222	20.50	1.07	0.60	0.12	0.13	0.12
	Takeoff	8754	25.30	1.07	0.40	0.12	0.13	0.12
Notes: c(2), e, f, h, k(1)								
CFM56-7B24/2	Idle (Taxi)	865	4.08	1.07	42.72	7.53	0.10	0.09
	Approach	2484	6.72	1.07	30.32	6.91	0.39	0.35
	Climb out	7159	13.23	1.07	4.30	0.08	0.06	0.05
	Takeoff	8643	16.63	1.07	1.38	0.06	0.06	0.05
Notes: c(2), e, f, h, k(1)								
CFM56-7B24/3	Idle (Taxi)	817	4.09	1.07	34.71	2.65	0.09	0.08
	Approach	2444	8.60	1.07	3.68	0.07	0.07	0.06
	Climb out	7103	15.60	1.07	0.15	0.03	0.11	0.10
	Takeoff	8619	18.93	1.07	0.18	0.02	0.12	0.11
Notes: c(2), e, f, h, k(1)								
CFM56-7B24E, -7B24E/B1	Idle (Taxi)	794	4.10	1.07	34.70	2.65	0.09	0.08
	Approach	2381	8.60	1.07	3.70	0.12	0.07	0.06
	Climb out	7143	15.60	1.07	0.20	0.00	0.11	0.10
	Takeoff	8730	18.90	1.07	0.20	0.00	0.12	0.11
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
CFM56-7B26	Idle (Taxi)	897	4.70	1.07	18.80	2.19	0.14	0.12
	Approach	2683	10.80	1.07	1.60	0.12	0.11	0.10
	Climb out	7929	22.50	1.07	0.60	0.12	0.13	0.10
	Takeoff	9691	28.80	1.07	0.20	0.12	0.15	0.13
Notes: c(2), e, f, h, k(1)								
CFM56-7B26/2	Idle (Taxi)	897	4.27	1.07	39.93	6.76	0.09	0.08
	Approach	2651	7.26	1.07	26.07	5.44	0.32	0.29
	Climb out	7849	14.77	1.07	2.51	0.07	0.06	0.05
	Takeoff	9548	19.20	1.07	0.77	0.03	0.06	0.05
Notes: c(2), e, f, h, k(1)								
CFM56-7B26/3, -7B26E, -7B26E/B1, -7B26E/B2, -7B26E/B2F, -7B26E/F	Idle (Taxi)	857	4.27	1.07	30.94	2.01	0.08	0.07
	Approach	2627	8.93	1.07	3.07	0.06	0.07	0.06
	Climb out	7825	17.08	1.07	0.16	0.02	0.12	0.11
	Takeoff	9627	21.79	1.07	0.20	0.02	0.13	0.11
Notes: c(2), e, f, h, k(1)								
CFM56-7B27	Idle (Taxi)	921	4.80	1.07	17.90	1.96	0.14	0.13
	Approach	2770	11.00	1.07	1.40	0.12	0.12	0.11
	Climb out	8278	23.70	1.07	0.50	0.12	0.14	0.12
	Takeoff	10191	30.90	1.07	0.20	0.12	0.15	0.14
Notes: c(2), e, f, h, k(1)								
CFM56-7B27/2	Idle (Taxi)	913	4.36	1.07	38.73	6.39	0.09	0.08
	Approach	2786	7.53	1.07	24.28	4.84	0.29	0.26
	Climb out	8198	15.59	1.07	1.97	0.07	0.06	0.05
	Takeoff	10040	20.81	1.07	0.54	0.06	0.06	0.05
Notes: c(2), e, f, h, k(1)								
CFM56-7B27/3, -7B27E, -7B27E/B1, -7B27E/B1F, -7B27E/B3, -7B27E/F	Idle (Taxi)	873	4.36	1.07	29.39	1.77	0.08	0.07
	Approach	2722	9.09	1.07	2.82	0.06	0.07	0.06
	Climb out	8183	17.89	1.07	0.17	0.02	0.12	0.11
	Takeoff	10262	23.94	1.07	0.31	0.03	0.13	0.12
Notes: c(2), e, f, h, k(1)								
CT7-5	Idle (Taxi)	131	2.20	1.07	35.33	3.78	0.18	0.16
	Approach	364	6.88	1.07	5.29	1.42	0.37	0.33
	Climb out	756	13.17	1.07	2.59	0.95	0.57	0.51
	Takeoff	809	13.77	1.07	2.59	0.95	0.69	0.62
Notes: c(13), j, k(8)								
F100-PW-100	Idle (Taxi)	1127	4.64	1.07	49.58	3.79	3.13	2.82
	Approach	2765	12.52	1.07	3.99	1.06	1.57	1.41
	Intermediate	7685	27.09	1.07	0.72	0.14	0.72	0.65
	Military	10996	35.01	1.07	0.70	0.12	1.24	1.12
	Afterburner-1	54007	6.62	1.07	9.57	0.13	0.87	0.78
Notes: c(14), h, k(5)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
F100-PW-200	Idle (Taxi)	1006	6.21	1.07	24.06	2.05	2.47	2.22
	Approach	3251	17.93	1.07	1.22	0.05	2.37	2.13
	Intermediate	5651	26.55	1.07	0.38	0.07	1.58	1.42
	Military	8888	34.32	1.07	0.56	0.11	1.66	1.49
	Afterburner-5	40123	6.63	1.07	10.42	0.69	3.07	2.76
Notes: c(5), h, k(5)								
F100-PW-220	Idle (Taxi)	2084	4.61	1.07	35.32	7.94	0.67	0.60
	Approach	3837	12.50	1.07	1.92	5.12	0.70	0.63
	Intermediate	5770	22.20	1.07	0.86	2.89	0.70	0.63
	Military	9679	29.60	1.07	0.86	2.08	0.91	0.82
	Afterburner-5	41682	8.20	1.07	11.87	1.60	0.38	0.35
Notes: c(17), e, g, h, k(5)								
F100-PW-229	Idle (Taxi)	1087	3.80	1.07	10.17	0.45	0.67 (S)	0.60 (S)
	Approach	3098	15.08	1.07	1.17	0.24	0.70 (S)	0.63 (S)
	Intermediate	5838	17.54	1.07	0.15	0.35	0.70 (S)	0.63 (S)
	Military	11490	29.29	1.07	0.33	0.31	0.91 (S)	0.82 (S)
	Afterburner-1	20793	14.30	1.07	21.51	5.26	0.38 (S)	0.35 (S)
Notes: c(3), d(2) - PM _{2.5} and PM ₁₀ data at all power settings, e, h, k(5)								
F101-GE-100	Idle (Taxi)	476	7.30	1.07	120.10	28.98	0.09	0.08
	Approach	4533 (S)	9.16 (S)	1.07	1.03 (S)	0.02 (S)	4.21 (S)	3.74 (S)
	Intermediate	6557 (S)	13.15 (S)	1.07	0.85 (S)	0.04 (S)	1.35 (S)	0.72 (S)
	Military	10000	2.30	1.07	7.60	0.46	0.03	0.03
	Afterburner	66747	4.60	1.07	16.70	0.12	0.05	0.05
Notes: c(7), d(3) - All pollutants and fuel flow rates at Approach and Intermediate power settings, e, h, k(8)								
F101-GE-102	Idle (Taxi)	1117	4.10	1.07	24.46	0.16	2.18	1.96
	Approach	4533	9.16	1.07	1.03	0.02	4.21	3.79
	Intermediate	6557	13.15	1.07	0.85	0.04	1.35	1.21
	Military	7828	12.83	1.07	0.83	0.12	1.68	1.51
	Afterburner-1	15314	16.92	1.07	43.49	1.46	2.87	2.58
Notes: c(3), h, k(5)								
F103-GE-100, -101	Idle (Taxi)	1706	3.60	1.07	61.80	25.07	0.26	0.24
	Approach	5238	9.50	1.07	4.30	1.15	0.13	0.12
	Climb out	15675	29.70	1.07	0.50	0.81	0.12	0.11
	Takeoff	19738	36.30	1.07	0.50	0.69	0.15	0.13
Notes: c(2) - F103-GE-100 is the military designation of the CF6-50E2 engine and F103-GE-101 is the military designation of the CF6-50C2 engine, e, f, h, k(1)								
F108-CF-100, -201	Idle (Taxi)	1136	3.88	1.07	23.65	0.19	2.07	1.86
	Approach	2547	5.73	1.07	8.57	0.06	1.55	1.40
	Intermediate	5650	11.04	1.07	2.32	0.03	0.65	0.58
	Military	6458	12.05	1.07	0.36	0.03	1.59	1.43
Notes: c(3) - F108-CF-100 is the military designation of the CFM56-2B-1 engine, this engine used as a surrogate at all settings for F108-CF-201 engine, h, k(5)								
F110-GE-100	Idle (Taxi)	1111	3.77	1.07	24.11	0.22	2.60	2.34
	Approach	5080	9.78	1.07	5.77	0.03	1.37	1.23
	Intermediate	7332	16.92	1.07	3.47	0.05	0.58	0.52
	Military	11358	29.00	1.07	3.38	0.04	0.14	0.13
	Afterburner-1	18088	14.26	1.07	67.41	1.21	3.35	3.01
Notes: c(3), h, k(5)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
F110-GE-129	Idle (Taxi)	961	2.62	1.07	45.04	4.90	2.60 (S)	2.34 (S)
	Approach	4832	13.42	1.07	1.93	0.03 (S)	1.37 (S)	1.23 (S)
	Intermediate	6939	17.82	1.07	1.53	0.05 (S)	0.58 (S)	0.52 (S)
	Military	8611	20.34	1.07	1.17	0.93	0.14 (S)	0.13 (S)
	Afterburner-1	15564	7.09	1.07	63.28	53.46	3.35 (S)	3.01 (S)
Notes: c(3), d(4) - VOC at Approach and Intermediate settings and PM ₁₀ and PM _{2.5} at all power settings, e, k(5)								
F110-GE-400	Idle (Taxi)	1287	2.76	1.07	16.57	3.48	0.02	0.02
	Approach	5809	12.41	1.07	0.96	0.44	0.02	0.02
	Climb out	11868	58.57	1.07	0.84	0.38	0.26	0.23
	Takeoff	11833	28.47	1.07	0.84	0.38	0.31	0.28
Notes: c(13), i, k(8)								
F113-RR-100	Idle (Taxi)	1008	3.60	1.07	31.77	4.24	0.25	0.22
	Approach	2206	7.20	1.07	2.65	0.21	0.28	0.25
	Climb out	5762	17.30	1.07	0.63	0.14	0.31	0.27
	Takeoff	7071	22.70	1.07	0.12	0.10	0.30	0.27
Notes: c(2) - F113-RR-100 is the military designation of the SPEY Mk511 engine, e, f, h, k(8)								
F117-PW-100	Idle (Taxi)	978	3.76	1.07	22.70	0.37	10.67	9.60
	Approach	4645	15.49	1.07	0.51	0.05	5.53	4.98
	Intermediate	10408	32.72	1.07	0.32	0.04	2.31	2.08
	Takeoff	13905 (S)	35.04 (S)	1.07	0.32 (S)	0.01 (S)	0.06 (S)	0.05 (S)
Notes: c(3) - F117-PW-100 is the military designation of the PW2040 engine, d(1) - HAPs at Takeoff setting only, d(16) - All remaining pollutants at Takeoff setting, h, k(5)								
F118-GE-100	Idle (Taxi)	1097	4.30	1.07	20.98	0.29	1.25	1.12
	Approach	3773	11.09	1.07	2.02	0.05	4.70	4.23
	Intermediate	6350	18.01	1.07	0.85	0.03	3.05	2.75
	Military	10887	33.12	1.07	0.65	0.03	1.64	1.48
Notes: c(3), h, k(5)								
F119-PW-100	Idle (Taxi)	1377	3.01	1.07	48.15	1.67	2.42	1.76
	Approach	2740	6.59	1.07	7.92	0.05	1.96	1.73
	Intermediate	10110	12.40	1.07	2.14	0.03	1.40	1.09
	Military	18612	19.81	1.07	0.75	0.01	1.12	0.97
	Afterburner	50170	7.37	1.07	16.10	1.8E-03 (C)	0.85 (C)	0.75 (C)
Notes: c(4), d(1) - VOC, HAP, PM ₁₀ , and PM _{2.5} pollutants at Afterburner setting only, k(5)								
F135-PW-100	Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors							
F402-RR-406A	Idle (Taxi)	1251	1.80	1.07	106.08	18.75	0.49	0.44
	Approach	3735	4.99	1.07	21.46	1.05	0.30	0.27
	Intermediate	7125	9.48	1.07	8.35	0.43	0.30	0.27
	Military	8094	10.78	1.07	6.93	0.43	0.32	0.29
Notes: c(13), i, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
F402-RR-408	Idle (Taxi)	1449	2.20	1.07	39.72	2.41	0.16	0.14
	Approach	3974	5.02	1.07	16.57	0.46	0.19	0.17
	Intermediate	7290	7.55	1.07	9.79	0.20	0.02	0.02
	Military	8494	8.38	1.07	8.58	0.20	0.21	0.19
Notes: c(13), j, k(8)								
F404-GE-102	Proprietary Information. Contact Air Quality Subject Matter Expert for More Information regarding this engine's Emission Factors							
F404-GE-400	Idle (Taxi)	685	1.70	1.07	110.18	3.39	4.47	4.02
	Approach	3111	7.86	1.07	2.02	0.04	1.46	1.31
	Intermediate	6464	17.03	1.07	1.54	0.07	1.57	1.42
	Military	7739	25.83	1.07	1.48	0.02	1.61	1.45
	Afterburner-3	15851	5.43	1.07	50.31	1.85	3.57	3.21
Notes: c(3), h, k(5)								
F404-GE-402	Ground Idle	624	1.16	1.07	137.34	66.91	13.79	13.79
	Flight Idle	815	2.01	1.07	123.52	51.18	12.38	12.38
	Average Intermediate	10467	25.16	1.07	1.05	0.36	2.81	2.81
	Max Afterburner	31764	9.22	1.07	23.12	0.15	1.49 (C)	1.34 (C)
Notes: c(18), d(1), e, k(4)								
F404-GE-F1D2	Idle (Taxi)	685	1.70	1.07	110.18	3.39	4.47	4.02
	Approach	3111	7.86	1.07	2.02	0.04	1.46	1.31
	Intermediate	6464	17.03	1.07	1.54	0.07	1.57	1.42
	Military	7739	25.83	1.07	1.48	0.02	1.61	1.45
Notes: c(3), h, k(5)								
F405-RR-401	Idle (Taxi)	498	0.27	1.07	151.21	39.12	8.94	8.94
	Approach	1495	2.68	1.07	19.54	1.71	8.11	8.11
	Climb out	3826	8.33	1.07	3.72	0.23	4.92	4.92
	Takeoff	4559	10.10	1.07	3.27	0.17	3.65	3.65
Notes: c(20), e, k(4)								
F414-GE-400	Ground Idle	695	3.18	1.07	98.18	75.13	12.64	12.64
	Flight Idle	821	3.47	1.07	77.90	48.65	12.37	12.37
	Intermediate	11768	38.17	1.07	0.70	0.14	2.78	2.78
	Max Afterburner	35763	9.67	1.07	275.00	5.60	1.52 (C)	1.37 (C)
Notes: c(19), d(1), e, g, k(4)								
GE90-76B	Idle (Taxi)	2048	5.10	1.07	34.12	3.69	0.21	0.19
	Approach	5857	13.76	1.07	2.77	0.08	0.12	0.11
	Climb out	18103	32.43	1.07	0.32	0.03	0.12	0.11
	Takeoff	22191	40.25	1.07	0.31	0.03	0.12	0.11
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
GE90-77B	Idle (Taxi)	2064	5.12	1.07	33.81	3.63	0.21	0.19
	Approach	5913	13.87	1.07	2.71	0.08	0.13	0.12
	Climb out	18326	32.78	1.07	0.32	0.03	0.12	0.11
	Takeoff	22460	40.83	1.07	0.31	0.03	0.12	0.11
Notes: c(2), e, f, h, k(1)								
GE90-85B	Idle (Taxi)	2151	5.33	1.07	31.34	3.22	0.20	0.18
	Approach	6381	14.77	1.07	2.16	0.07	0.17	0.15
	Climb out	20262	36.35	1.07	0.31	0.03	0.12	0.10
	Takeoff	24849	45.54	1.07	0.30	0.05	0.12	0.11
Notes: c(2), e, f, h, k(1)								
GE90-90B	Idle (Taxi)	2310	6.00	1.07	13.21	0.49	0.20	0.18
	Approach	6968	16.94	1.07	1.16	0.06	0.15	0.14
	Climb out	21691	39.50	1.07	0.13	0.05	0.12	0.10
	Takeoff	26572	52.48	1.07	0.12	0.05	0.12	0.10
Notes: c(2), e, f, h, k(1)								
GE90-94B	Idle (Taxi)	2349	6.09	1.07	12.69	0.47	0.08	0.07
	Approach	7206	17.38	1.07	1.07	0.06	0.09	0.08
	Climb out	22603	41.74	1.07	0.12	0.05	0.07	0.06
	Takeoff	27889	56.41	1.07	0.12	0.05	0.08	0.07
Notes: c(2), e, f, h, k(1)								
GE90-110B1	Idle (Taxi)	2937	5.11	1.07	40.59	5.23	0.08	0.08
	Approach	8571	15.78	1.07	2.29	0.07	0.06	0.06
	Climb out	27540	33.85	1.07	0.07	0.03	0.06	0.06
	Takeoff	34286	44.44	1.07	0.07	0.03	0.07	0.06
Notes: c(2), e, f, h, k(1)								
GE90-115B	Idle (Taxi)	3016	5.19	1.07	39.11	4.88	0.08	0.07
	Approach	8968	16.50	1.07	1.98	0.07	0.06	0.06
	Climb out	29127	35.98	1.07	0.07	0.03	0.06	0.06
	Takeoff	37222	50.34	1.07	0.08	0.05	0.07	0.07
Notes: c(2), e, f, h, k(1)								
GEnx-1B64	Idle (Taxi)	1579	4.24	1.07	21.62	0.93	0.06	0.05
	Approach	4794	9.03	1.07	2.99	0.07	0.13	0.11
	Climb out	14770	14.61	1.07	0.38	0.02	0.08	0.07
	Takeoff	17976	24.82	1.07	0.18	0.02	0.08	0.07
Notes: c(2), e, f, h, k(1)								
GEnx-1B64/P1	Idle (Taxi)	1667	4.37	1.07	19.73	0.74	0.06	0.05
	Approach	4905	9.11	1.07	2.91	0.07	0.11	0.10
	Climb out	14889	15.36	1.07	0.36	0.02	0.10	0.09
	Takeoff	18079	25.74	1.07	0.18	0.02	0.10	0.09
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
GENx-1B67	Idle (Taxi)	1611	4.30	1.07	20.70	0.83	0.06	0.05
	Approach	4960	9.29	1.07	2.76	0.07	0.13	0.11
	Climb out	15397	16.26	1.07	0.30	0.02	0.09	0.08
	Takeoff	18794	28.56	1.07	0.17	0.02	0.09	0.08
Notes: c(2), e, f, h, k(1)								
GENx-1B67/P1	Idle (Taxi)	1698	4.43	1.07	18.94	0.67	0.06	0.05
	Approach	5071	9.39	1.07	2.68	0.07	0.12	0.11
	Climb out	15508	17.04	1.07	0.29	0.02	0.10	0.09
	Takeoff	18889	29.34	1.07	0.18	0.02	0.10	0.09
Notes: c(2), e, f, h, k(1)								
GENx-1B70, -1B70/P1, -1B70/75/P1	Idle (Taxi)	1738	4.50	1.07	18.05	0.60	0.06	0.05
	Approach	5270	9.73	1.07	2.42	0.06	0.13	0.12
	Climb out	16278	19.30	1.07	0.24	0.02	0.10	0.09
	Takeoff	19881	34.61	1.07	0.17	0.02	0.10	0.09
Notes: c(2), e, f, h, k(1)								
GENx-2B67	Idle (Taxi)	1714	4.43	1.07	18.95	0.66	0.06	0.05
	Approach	5564	9.58	1.07	2.53	0.07	0.13	0.11
	Climb out	15968	17.94	1.07	0.28	0.02	0.09	0.08
	Takeoff	19453	31.20	1.07	0.17	0.02	0.09	0.08
Notes: c(2), e, f, h, k(1)								
GENx-2B67B	Idle (Taxi)	1611	4.66	1.07	16.39	0.67	0.06	0.05
	Approach	4183	9.27	1.07	2.81	0.07	0.13	0.11
	Climb out	12333	11.54	1.07	1.73	0.02	0.09	0.08
	Takeoff	14921	17.22	1.07	0.32	0.02	0.09	0.08
Notes: c(2), e, f, h, k(1)								
GP 7270	Idle (Taxi)	1857	5.24	1.07	33.58	4.65	0.12	0.11
	Approach	5643	12.90	1.07	1.27	0.08	0.07	0.06
	Climb out	17214	31.37	1.07	0.09	0.03	0.08	0.07
	Takeoff	20929	41.73	1.07	0.11	0.03	0.08	0.07
Notes: c(2), e, f, h, k(1)								
GTSIO-520-F	Idle (Taxi)	25	0.04	1.07	1293.70	78.29	0.50	0.45
	Approach	99	1.39	1.07	1261.60	15.39	0.40	0.36
	Climb out	205	0.24	1.07	1470.90	19.12	0.70	0.63
	Takeoff	260	0.36	1.07	1442.10	14.21	0.10	0.09
Notes: c(16), e, g, h, k(8)								
GTSIO-520-H	Idle (Taxi)	22	0.88	1.07	720.50	47.31	0.50 (S)	0.45 (S)
	Pattern	102	7.70	1.07	697.40	7.52	0.40 (S)	0.36 (S)
	Climb out	145	9.76	1.07	728.75	7.04	0.70 (S)	0.63 (S)
	Takeoff	256	1.03	1.07	1045.66	11.66	0.10 (S)	0.09 (S)
Notes: c(8), d(13) - PM ₁₀ and PM _{2.5} at all power settings, e, i, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
GTSIO-520-K, -520-M	Idle (Taxi)	25	0.04	1.07	1293.70	78.29	0.50	0.45
	Approach	99	1.39	1.07	1261.60	15.39	0.40	0.36
	Climb out	205	0.24	1.07	1470.90	19.12	0.70	0.63
	Takeoff	260	0.36	1.07	1442.10	14.21	0.10	0.09
Notes: c(16), e, g, h, k(8)								
IO-360-A	Idle (Taxi)	11	0.40	1.07	956.24	278.09	0.76	0.68
	Approach	22	10.62	1.07	727.75	85.31	0.12	0.11
	Climb out	85	17.65	1.07	840.53	55.11	0.30	0.27
	Takeoff	85	18.08	1.07	842.50	52.09	0.31	0.28
Notes: c(16), e, g, h, k(7)								
IO-360-B	Idle (Taxi)	8	1.16	1.07	897.40	56.58	0.76 (S)	0.68 (S)
	Approach	37	10.16	1.07	691.26	11.15	0.12 (S)	0.11 (S)
	Climb out	72	4.59	1.07	983.26	9.38	0.30 (S)	0.27 (S)
	Takeoff	103	1.99	1.07	1199.03	11.50	0.31 (S)	0.28 (S)
Notes: c(1), d(5) - PM ₁₀ and PM _{2.5} at all power settings, e, j, k(8)								
IO-360-B1E, -360-C, -360-C1C	Idle (Taxi)	11	0.40	1.07	956.24	278.09	0.76	0.68
	Approach	22	10.62	1.07	727.75	85.31	0.12	0.11
	Climb out	85	17.65	1.07	840.53	55.11	0.30	0.27
	Takeoff	85	18.08	1.07	842.50	52.09	0.31	0.28
Notes: c(16), e, g, h, k(7)								
IO-360-C1C6	Idle (Taxi)	12	0.28	1.07	882.98	263.40	0.30	0.27
	Approach	26	3.36	1.07	938.16	123.88	0.06	0.06
	Climb out	81	6.63	1.07	753.23	53.27	0.09	0.08
	Takeoff	81	7.48	1.07	757.17	47.22	0.10	0.09
Notes: c(16), e, g, h, k(7)								
IO-360-CB	Idle (Taxi)	11	0.40	1.07	956.24	278.09	0.76	0.68
	Approach	22	10.62	1.07	727.75	85.31	0.12	0.11
	Climb out	85	17.65	1.07	840.53	55.11	0.30	0.27
	Takeoff	85	18.08	1.07	842.50	52.09	0.31	0.28
Notes: c(16), e, g, h, k(7)								
IO-360-D	Idle (Taxi)	30	1.10	1.07	848.00	166.75	60.00	54.00
	Approach	50	4.00	1.07	912.45	54.17	47.95	43.16
	Intermediate	70	6.60	1.07	972.00	20.01	40.00	36.00
	Military	90	5.80	1.07	1030.00	25.88	20.00	18.00
Notes: c(7), e, h, k(8)								
IO-360-D34, -360-DB, -360-G, -360-GB	Idle (Taxi)	11	0.40	1.07	956.24	278.09	0.76	0.68
	Approach	22	10.62	1.07	727.75	85.31	0.12	0.11
	Climb out	85	17.65	1.07	840.53	55.11	0.30	0.27
	Takeoff	85	18.08	1.07	842.50	52.09	0.31	0.28
Notes: c(16), e, g, h, k(7)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
J33-A-35	Idle (Taxi)	1190	1.50	1.07	127.00	22.43	0.73	0.66
	Approach	1984	1.90	1.07	84.60	7.48	0.57	0.51
	Intermediate	4762	2.70	1.07	49.10	1.50	0.02	0.02
	Military	5556	3.60	1.07	31.30	0.58	0.02	0.02
Notes: c(7), e, g, h, k(8)								
J52-P-6B	Idle (Taxi)	714	2.07	1.07	86.37	27.46	19.94	17.95
	3000lb Thrust	2301	3.91	1.07	16.57	0.94	0.18 (S)	0.16 (S)
	75% Thrust	3977	5.84	1.07	6.00	0.75	0.18 (S)	0.16 (S)
	Military	6328	9.00	1.07	3.01	0.38	7.75	6.98
Notes: c(9), d(6) - PM ₁₀ and PM _{2.5} at 3000lb and 75% thrust power settings only, e, g, h, j - Percent thrust for 3000lb setting assumes maximum thrust of 8500lb for this engine, k(8)								
J52-P-8B	Idle (Taxi)	680	1.79	1.07	63.78	48.53	0.18 (S)	0.16 (S)
	3000lb Thrust	2300	6.34	1.07	10.54	1.98	0.18 (S)	0.16 (S)
	75% Thrust	4320	10.10	1.07	3.00	0.67	0.13 (S)	0.12 (S)
	Military	7370	13.05	1.07	0.71	1.07	0.13 (S)	0.12 (S)
Notes: c(9), d(6) - PM ₁₀ and PM _{2.5} at all power settings, e, j - Percent thrust for 3000lb setting assumes maximum thrust of 9300lb for this engine, k(8)								
J52-P-408	Idle (Taxi)	1466	2.79	1.07	50.10	3.62	0.18	0.16
	Approach	3325	7.25	1.07	16.07	0.29	0.18	0.16
	Intermediate	6502	7.53	1.07	7.70	0.03	0.13	0.12
	Military	6483	7.53	1.07	7.70	0.03	0.13	0.12
Notes: c(13), e, j, k(8)								
J57-P-10	Idle (Taxi)	1100	1.87	1.07	80.52	111.09	0.16 (S)	0.14 (S)
	75% Thrust	5670	7.40	1.07	3.21	0.87	0.93 (S)	0.84 (S)
	Normal Rated	7250	9.00	1.07	1.79	1.15	1.92 (S)	1.73 (S)
	Military	8370	10.37	1.07	1.16	0.99	1.72 (S)	1.55 (S)
Notes: c(9), d(7) - PM ₁₀ and PM _{2.5} at all power settings, e, j - Assumes 100% thrust at Military setting, k(8)								
J57-P-19W	Idle (Taxi)	952	2.20	1.07	79.00	88.55	0.16	0.14
	Approach	3333	5.80	1.07	7.90	1.61	0.93	0.84
	Intermediate	6508	9.50	1.07	2.40	0.23	1.92	1.73
	Military	7460	11.00	1.07	1.90	0.12	1.72	1.55
Notes: c(7), e, g, h, k(8)								
J57-P-22	Idle (Taxi)	1087	2.48	1.07	59.25	59.03	7.64	6.87
	Approach	1693	2.95	1.07	23.51	14.26	5.32 (C)	4.79 (C)
	Climb out	8358	11.16	1.07	1.78	0.74	1.44	1.29
	Takeoff	8358	11.16	1.07	1.78	0.74	1.44	1.29
Notes: c(1), d(1), e, g, h, k(8)								
J57-P-420	Idle (Taxi)	1322	1.53	1.07	80.74	87.93	0.16 (S)	0.14 (S)
	30% Thrust	3413	4.45	1.07	14.83	5.22	0.93 (S)	0.84 (S)
	75% Thrust	5767	6.99	1.07	4.32	1.25	1.92 (S)	1.73 (S)
	Intermediate	10570	12.97	1.07	0.34	0.56	1.72 (S)	1.55 (S)
	Afterburner	39721	5.16	1.07	14.20	2.92	3.10 (C)	2.80 (C)
Notes: c(9), d(1) - PM ₁₀ and PM _{2.5} at Afterburner power setting only, d(7) - PM ₁₀ and PM _{2.5} at all other power settings, e, j, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
J57-P/F-43WB	Idle (Taxi)	952	2.20	1.07	78.00	86.25	0.14	0.13
	Approach	1825	4.45	1.07	16.85	6.33	0.41	0.37
	Intermediate	6667	9.90	1.07	2.30	0.12	1.23	1.11
	Military	7778	11.00	1.07	1.50	0.12	1.74	1.57
Notes: c(7), e, g, h, k(8)								
J57-P/F-59W	Idle (Taxi)	1270	2.40	1.07	65.00	60.84	0.13	0.12
	Approach	1825	3.30	1.07	32.50	16.33	0.22	0.20
	Intermediate	3889	6.10	1.07	8.90	1.27	0.60	0.54
	Military	7937	11.30	1.07	2.40	0.23	0.84	0.76
Notes: c(7), e, g, h, k(8)								
J60-P-3A	Idle (Taxi)	556	1.50	1.07	70.00	10.58	0.02	0.02
	Approach	556	1.70	1.07	50.50	6.44	0.02	0.02
	Intermediate	1429	4.00	1.07	5.80	0.23	0.23	0.21
	Military	3413	4.60	1.07	4.00	0.12	0.17	0.15
Notes: c(7), e, g, h, k(8)								
J60-P-5A, -5B	Idle (Taxi)	476	1.50	1.07	70.00	10.58	0.02	0.02
	Approach	556	1.70	1.07	50.50	6.44	0.02	0.02
	Intermediate	1429	4.00	1.07	5.80	0.23	0.23	0.21
	Military	2460	4.60	1.07	4.00	0.12	0.17	0.15
Notes: c(7), e, g, h, k(8)								
J65-W-5F	Idle (Taxi)	1320	2.46	1.07	47.16	11.25	0.18 (S)	0.16 (S)
	7450 rpm	4370	7.30	1.07	12.61	1.09	0.18 (S)	0.16 (S)
	8000 rpm	5970	5.71	1.07	7.39	0.83	0.13 (S)	0.12 (S)
	8300 rpm	7040	5.15	1.07	4.57	0.38	0.13 (S)	0.12 (S)
	Military	6946	5.23	1.07	5.31	0.70	0.13 (S)	0.12 (S)
Notes: c(9), d(6) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
J65-W-20	Idle (Taxi)	1333	2.78	1.07	50.19	4.31	0.18 (S)	0.16 (S)
	75% rpm	2346	4.82	1.07	21.82	1.57	0.18 (S)	0.16 (S)
	85% rpm	3260	7.27	1.07	16.13	0.32	0.18 (S)	0.16 (S)
	90% rpm	3951	7.97	1.07	14.30	0.15	0.18 (S)	0.16 (S)
	Intermediate (Mil)	6421	7.55	1.07	7.72	0.04	0.13 (S)	0.12 (S)
Notes: c(1), d(6) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
J69-T-25	Idle (Taxi)	167	0.80	1.07	160.08	2.33	3.15	2.83
	Approach	568 (C)	1.71 (C)	1.07	56.03 (C)	0.14 (C)	1.52 (C)	1.37 (C)
	Intermediate	872	2.92	1.07	38.27	0.06	0.94	0.84
	Military	1085	4.53	1.07	32.86	0.03	0.67	0.61
Notes: c(3), d(1) - All pollutants at Approach power setting only, g, h, k(5)								
J75-P-17	Idle (Taxi)	1700	1.29	1.07	76.18	65.41	0.47	0.42
	Approach	11300	11.90	1.07	1.40	0.11	0.10	0.09
	Intermediate	12386 (C)	9.79 (C)	1.07	0.94 (C)	0.20 (C)	0.64 (C)	0.58 (C)
	Military	13200	8.20	1.07	0.60	0.26	1.05	0.95
	Afterburner	53700	4.10	1.07	12.00	0.14	1.73 (C)	1.57 (C)
Notes: c(1), d(1) - PM ₁₀ and PM _{2.5} at Afterburner power setting only, e, g, h, j - Assumes military setting has maximum percent thrust of 100%, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
J79-GE-8D	Idle (Taxi)	1325	2.36	1.07	55.59	16.14	0.44	0.40
	75% rpm	1550	2.97	1.07	30.55	4.20	0.90	0.81
	87% rpm	8310	8.44	1.07	2.56	0.12	0.15	0.14
	Military	9544	10.42	1.07	2.56	0.12	0.18	0.16
	Afterburner	34647	4.71	1.07	8.14	0.19	0.56	0.50
Notes: c(13), e, j, k(8)								
J79-GE-10D	Idle (Taxi)	1375	1.33	1.07	111.18	37.37	0.88	0.79
	Approach	3490	4.22	1.07	20.00	2.80	0.63	0.57
	Intermediate	7674	8.24	1.07	4.69	1.34	0.72	0.65
	Military	10097	10.24	1.07	2.83	1.34	0.72	0.65
	Afterburner	35339	4.50	1.07	8.63	1.01	0.37	0.33
Notes: c(13), e, j, k(8)								
J79-GE-15	Idle (Taxi)	1111	2.50	1.07	57.00	13.80	0.50	0.45
	Approach	3492	4.80	1.07	9.40	1.27	1.80	1.62
	Intermediate	5397	5.60	1.07	4.60	0.35	2.80	2.52
	Military	8889	8.90	1.07	2.20	0.23	2.20	1.98
	Afterburner	32223	9.10	1.07	4.00	0.01	0.15	0.14
Notes: c(7), e, g, h, k(8)								
J79-GE-17	Idle (Taxi)	1032	2.70	1.07	66.00	26.57	0.18	0.16
	Approach	3492	4.50	1.07	15.40	0.58	0.51	0.46
	Intermediate	6984	5.80	1.07	7.80	0.12	0.72	0.65
	Military	9841	10.60	1.07	5.20	0.12	0.92	0.83
	Afterburner	34921	8.10	1.07	4.00	0.01	0.15	0.14
Notes: c(7), e, g, h, k(8)								
J85-GE-5A	Idle (Taxi)	434	1.34	1.07	250.22	2.00	4.70	4.23
	Approach	875 (C)	1.45 (C)	1.07	115.08 (C)	1.31 (C)	2.42 (C)	2.17 (C)
	Intermediate	950	1.47	1.07	104.02	0.92	1.79	1.61
	Military	2740	2.64	1.07	32.91	0.12	1.13	1.01
	Afterburner-1	8138	1.98	1.07	13.46	0.05	0.25	0.23
Notes: c(3), d(1) - All pollutants at Approach power setting only, h, k(5)								
J85-GE-5F	Idle (Taxi)	524	1.34	1.07	178.05	34.46	4.70 (S)	4.02 (S)
	75% rpm	798	2.13	1.07	78.20	2.59	3.01 (C)	1.84 (C)
	85% rpm	1098	2.73	1.07	58.01	1.36	2.15 (C)	1.20 (C)
	Intermediate	1297	2.31	1.07	43.02	3.99	1.79 (S)	0.69 (S)
	Afterburner	8470	2.60	1.07	29.00	0.92	0.25 (S)	0.09 (S)
Notes: c(1), d(1) - PM ₁₀ and PM _{2.5} at 75% rpm and 85% rpm power settings, d(10) - PM ₁₀ and PM _{2.5} for remaining power settings, e, k(8)								
J85-GE-5H	Idle (Taxi)	434	1.14	1.07	211.97	39.12	4.70	4.02
	Approach	875 (C)	1.64 (C)	1.07	148.04 (C)	6.56 (C)	2.42 (C)	2.17 (C)
	Intermediate	950	1.74	1.07	123.43	6.51	1.79	0.69
	Military	2740	2.92	1.07	36.40	0.67	1.13	0.04
	Afterburner	8138	2.09	1.07	14.19	2.63	0.25	0.09
Notes: c(10), d(1) - All pollutants at Approach setting, g, h, k(8)								
J85-GE-5M	Idle (Taxi)	525	0.79	1.07	191.41	4.01	7.02	6.32
	Approach	703 (C)	1.09 (C)	1.07	110.79 (C)	1.50 (C)	8.83 (C)	7.94 (C)
	Intermediate	1045	1.81	1.07	48.90	0.54	12.30	11.07
	Military	2550	1.65	1.07	25.35	0.04	4.25	3.83
	Afterburner	7695	1.21	1.07	10.19	0.05 (S)	0.25 (S)	0.09 (S)
Notes: c(10), d(1) - All pollutants at Approach setting, d(10) - VOC, HAPs, PM ₁₀ and PM _{2.5} at Afterburner power setting only, h, k(6)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
J85-GE-5R	Idle (Taxi)	520	1.08	1.07	177.45	16.80	4.70 (S)	4.23 (S)
	Approach	689 (C)	0.91 (C)	1.07	119.23 (C)	7.96 (C)	2.42 (S)	2.17 (S)
	Intermediate	1030	0.70	1.07	65.07	2.78	1.79 (S)	1.61 (S)
	Military	2220	1.92	1.07	30.99	0.75	1.13 (S)	1.01 (S)
	Afterburner	7695	6.23	1.07	53.43	6.97	0.25 (S)	0.23 (S)
Notes: c(10), d(1) - Fuel flow, NO _x , CO, and VOC at Approach setting, d(10) - PM ₁₀ and PM _{2.5} at all power settings, e, k(6)								
J85-GE-13	Idle (Taxi)	556	1.30	1.07	178.00	34.50	3.0E-03	2.7E-03
	Approach	1230	2.05	1.07	58.30	5.69	0.01	0.01
	Intermediate	2222	2.30	1.07	43.00	4.03	0.01	0.01
	Military	2778	2.60	1.07	29.00	0.92	0.02	0.02
	Afterburner	8968	2.00	1.07	26.00	0.08	0.01	0.01
Notes: c(7), e, g, h, i, k(8)								
J85-GE-17A	Idle (Taxi)	556	1.30	1.07	178.00	34.50	3.0E-03 (S)	2.7E-03 (S)
	Approach	1230	2.05	1.07	58.30	5.69	0.01 (S)	0.01 (S)
	Intermediate	2222	2.30	1.07	43.00	4.03	0.01 (S)	0.01 (S)
	Military	3810	2.60	1.07	29.00	0.92	0.02 (S)	0.02 (S)
	Afterburner							
Notes: c(7), d(8) - PM ₁₀ and PM _{2.5} for all power settings, e, g, h, k(8)								
J85-GE-21	Idle (Taxi)	400	1.25	1.07	159.00	27.89	3.0E-03 (S)	2.7E-03 (S)
	75% rpm	700	2.00	1.07	92.14	14.29	0.01 (S)	0.01 (S)
	85% rpm	1200	2.92	1.07	46.17	2.97	0.01 (S)	0.01 (S)
	Intermediate (Military)	3200	5.00	1.07	21.56	0.29	0.02 (S)	0.02 (S)
	Afterburner	10650	5.60	1.07	36.40	0.12	0.01 (S)	0.01 (S)
Notes: c(1), d(8) - PM ₁₀ and PM _{2.5} at all power settings, e, g, h, k(8)								
JT3D-3B	Idle (Taxi)	1071	2.50	1.07	98.00	128.80	0.96	0.87
	Approach	2746	4.80	1.07	24.50	4.60	0.45	0.41
	Climb out	7397	9.90	1.07	2.80	2.30	1.51	1.36
	Takeoff	9318	12.10	1.07	1.50	4.60	2.27	2.04
	Afterburner							
Notes: c(2), e, f, h, k(1)								
JT3D-7 Series	Idle (Taxi)	1016	2.20	1.07	138.99	141.45	1.02	0.92
	Approach	3087	5.30	1.07	19.50	2.42	0.33	0.30
	Climb out	8191	9.59	1.07	1.90	0.46	1.19	1.07
	Takeoff	9952	12.69	1.07	0.89	0.58	1.56	1.41
	Afterburner							
Notes: c(2), e, f, h, k(1)								
JT8D-7 Series	Idle (Taxi)	1025	2.70	1.07	35.50	12.19	0.33	0.30
	Approach	2271	5.50	1.07	10.50	1.84	0.31	0.28
	Climb out	6439	13.50	1.07	2.00	0.58	0.38	0.34
	Takeoff	7851	17.10	1.07	1.50	0.46	0.40	0.36
	Afterburner							
Notes: c(2), e, f, h, k(1)								
JT8D-9 Series	Idle (Taxi)	1048	2.90	1.07	34.50	11.50	0.33	0.30
	Approach	2365	5.64	1.07	9.43	1.99	0.32	0.29
	Climb out	6714	14.21	1.07	1.66	0.54	0.39	0.35
	Takeoff	8254	17.92	1.07	1.24	0.54	0.42	0.38
	Afterburner							
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
JT8D-9A	Idle (Taxi)	1155	2.89	1.07	14.11	2.95	0.21	0.19
	Approach	2409	5.99	1.07	2.14	0.57	0.25	0.23
	Intermediate	6794	14.47	1.07	1.07	0.16	0.27	0.24
	Military	8334	19.26	1.07	1.07	0.16	0.27	0.24
Notes: c(13), j, k(8)								
JT8D-11	Idle (Taxi)	1155	2.75	1.07	35.00	11.50	0.32	0.29
	Approach	2650	5.80	1.07	9.40	1.61	0.30	0.27
	Climb out	7251	14.60	1.07	1.90	0.52	0.38	0.34
	Takeoff	8897	18.90	1.07	1.20	0.46	0.41	0.37
Notes: c(2), e, f, h, k(1)								
JT8D-15	Idle (Taxi)	1172	3.00	1.07	35.20	12.65	0.34	0.30
	Approach	2701	5.90	1.07	9.60	1.90	0.32	0.28
	Climb out	7500	15.00	1.07	1.00	0.29	0.39	0.35
	Takeoff	9349	19.10	1.07	0.70	0.29	0.42	0.37
Notes: c(2), e, f, h, k(1)								
JT8D-15A	Idle (Taxi)	1089	3.10	1.07	12.93	2.14	0.23	0.20
	Approach	2476	6.60	1.07	2.90	0.75	0.21	0.19
	Climb out	7107	13.90	1.07	1.20	0.38	0.26	0.24
	Takeoff	8849	18.10	1.07	1.08	0.29	0.27	0.24
Notes: c(2), e, f, h, k(1)								
JT8D-17	Idle (Taxi)	1170	3.20	1.07	10.46	1.44	0.33	0.30
	Approach	2810	8.00	1.07	2.67	0.60	0.33	0.30
	Climb out	7913	15.70	1.07	1.10	0.31	0.43	0.39
	Takeoff	9881	20.60	1.07	0.95	0.25	0.47	0.42
Notes: c(2), e, f, h, k(1)								
JT8D-17A	Idle (Taxi)	1112	3.20	1.07	12.46	7.59	0.26	0.24
	Approach	2622	6.70	1.07	2.88	0.74	0.22	0.20
	Climb out	7416	14.30	1.07	1.16	0.35	0.27	0.24
	Takeoff	9310	19.10	1.07	1.07	0.29	0.28	0.25
Notes: c(2), e, f, h, k(1)								
JT8D-17AR	Idle (Taxi)	1172	3.20	1.07	10.70	1.53	0.25	0.22
	Approach	2837	8.00	1.07	2.68	0.63	0.23	0.21
	Climb out	8310	16.00	1.07	1.08	0.31	0.30	0.27
	Takeoff	10833	24.50	1.07	0.93	0.24	0.31	0.28
Notes: c(2), e, f, h, k(1)								
JT8D-17R	Idle (Taxi)	1230	3.30	1.07	9.43	1.09	0.24	0.22
	Approach	2980	8.40	1.07	2.54	0.61	0.23	0.20
	Climb out	8754	17.60	1.07	1.03	0.31	0.30	0.27
	Takeoff	11246	25.30	1.07	0.95	0.24	0.31	0.28
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
JT8D-209	Idle (Taxi)	1034	3.50	1.07	14.10	4.63	0.21	0.19
	Approach	2851	8.80	1.07	4.37	1.94	0.25	0.22
	Climb out	7800	19.00	1.07	1.40	0.58	0.27	0.24
	Takeoff	9452	22.80	1.07	1.03	0.40	0.27	0.24
Notes: c(2), e, f, h, k(1)								
JT8D-217, -217A	Idle (Taxi)	1089	4.57	1.07	15.31	0.00	0.09	0.08
	Approach	3042	7.66	1.07	3.54	0.00	0.08	0.08
	Climb out	8556	13.54	1.07	0.47	0.00	0.17	0.15
	Takeoff	10476	17.54	1.07	0.42	0.00	0.16	0.15
Notes: c(2), e, f, h, k(1)								
JT8D-217C	Idle (Taxi)	1087	4.05	1.07	17.89	0.00	0.09	0.08
	Approach	2881	7.65	1.07	3.79	0.00	0.07	0.07
	Climb out	8294	13.02	1.07	0.49	0.00	0.13	0.12
	Takeoff	10175	16.49	1.07	0.42	0.00	0.16	0.15
Notes: c(2), e, f, h, k(1)								
JT8D-219	Idle (Taxi)	1067	3.60	1.07	12.63	4.00	0.26	0.24
	Approach	3029	9.13	1.07	4.07	1.83	0.29	0.26
	Climb out	8611	20.80	1.07	1.20	0.48	0.30	0.27
	Takeoff	10746	27.00	1.07	0.73	0.31	0.30	0.27
Notes: c(2), e, f, h, k(1)								
JT9D-7	Idle (Taxi)	1667	3.10	1.07	84.10	41.98	0.28	0.25
	Approach	4833	7.60	1.07	7.80	1.50	0.15	0.13
	Climb out	14000	27.70	1.07	0.00	0.12	0.12	0.11
	Takeoff	16532	37.90	1.07	0.00	0.12	0.13	0.12
Notes: c(2), e, f, h, k(1)								
JT9D-7A	Idle (Taxi)	1675	3.10	1.07	83.60	41.52	0.28	0.25
	Approach	4913	7.60	1.07	7.60	1.50	0.15	0.13
	Climb out	14199	28.50	1.07	0.00	0.12	0.12	0.11
	Takeoff	16659	38.70	1.07	0.00	0.12	0.13	0.12
Notes: c(2), e, f, h, k(1)								
JT9D-7F	Idle (Taxi)	1841	3.20	1.07	68.60	29.79	0.29	0.26
	Approach	4952	9.10	1.07	5.80	0.69	0.15	0.13
	Climb out	14119	31.50	1.07	0.90	0.00	0.14	0.13
	Takeoff	17151	41.70	1.07	0.90	0.00	0.14	0.13
Notes: c(2), e, f, h, k(1)								
JT9D-7J	Idle (Taxi)	1889	3.30	1.07	66.70	28.18	0.28	0.26
	Approach	5389	9.40	1.07	5.50	0.58	0.14	0.13
	Climb out	15095	34.90	1.07	0.90	0.00	0.14	0.13
	Takeoff	18373	44.90	1.07	0.90	0.00	0.14	0.13
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
JT9D-7Q	Idle (Taxi)	1881	3.00	1.07	53.00	13.80	0.15	0.14
	Approach	5400	7.80	1.07	1.70	0.35	0.09	0.08
	Climb out	15870	25.60	1.07	0.20	0.23	0.12	0.11
	Takeoff	19380	31.60	1.07	0.20	0.23	0.12	0.11
Notes: c(2), e, f, h, k(1)								
JT9D-7R4D, -7R4D1	Idle (Taxi)	1630	4.10	1.07	8.84	1.44	0.07	0.06
	Approach	5233	9.80	1.07	1.36	0.15	0.07	0.06
	Climb out	13318	30.00	1.07	0.48	0.14	0.09	0.08
	Takeoff	16310	38.50	1.07	0.51	0.17	0.10	0.09
Notes: c(2), e, f, h, k(1)								
JT9D-7R4E, -7R4E1	Idle (Taxi)	1754	4.10	1.07	8.27	1.28	0.07	0.06
	Approach	5182	10.40	1.07	1.23	0.15	0.07	0.06
	Climb out	13683	34.20	1.07	0.53	0.15	0.10	0.09
	Takeoff	16810	41.60	1.07	0.57	0.18	0.10	0.09
Notes: c(2), e, f, h, k(1)								
JT9D-7R4E4	Idle (Taxi)	1750	3.50	1.07	16.00	3.85	0.08	0.07
	Approach	5079	8.50	1.07	1.46	0.25	0.07	0.06
	Climb out	14516	29.70	1.07	0.67	0.15	0.09	0.08
	Takeoff	17603	36.90	1.07	0.67	0.17	0.10	0.09
Notes: c(2), e, f, h, k(1)								
JT9D-7R4G2	Idle (Taxi)	1777	3.80	1.07	11.82	1.78	0.08	0.07
	Approach	5230	8.80	1.07	1.40	0.21	0.08	0.07
	Climb out	14921	29.50	1.07	0.63	0.16	0.11	0.10
	Takeoff	19278	41.30	1.07	0.74	0.17	0.11	0.10
Notes: c(2), e, f, h, k(1)								
JT9D-7R4H1	Idle (Taxi)	1948	3.80	1.07	11.63	1.70	0.08	0.08
	Approach	5736	8.90	1.07	1.39	0.21	0.08	0.07
	Climb out	15865	30.00	1.07	0.63	0.16	0.11	0.10
	Takeoff	19937	45.20	1.07	0.74	0.17	0.12	0.10
Notes: c(2), e, f, h, k(1)								
JT9D-20	Idle (Taxi)	1675	3.10	1.07	83.60	41.52	0.28	0.25
	Approach	4913	7.60	1.07	7.60	1.50	0.15	0.13
	Climb out	14199	28.50	1.07	0.00	0.12	0.12	0.11
	Takeoff	16659	38.70	1.07	0.00	0.12	0.13	0.12
Notes: c(2), e, f, h, k(2)								
JT9D-20J	Idle (Taxi)	1889	3.30	1.07	66.70	28.18	0.28	0.26
	Approach	5389	9.40	1.07	5.50	0.58	0.14	0.13
	Climb out	15095	34.90	1.07	0.90	0.00	0.14	0.13
	Takeoff	18373	44.90	1.07	0.90	0.00	0.14	0.13
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
JT9D-59A, -70A	Idle (Taxi)	1881	3.00	1.07	53.00	13.80	0.15	0.14
	Approach	5400	7.80	1.07	1.70	0.35	0.09	0.08
	Climb out	15870	25.60	1.07	0.20	0.23	0.12	0.11
	Takeoff	19380	31.60	1.07	0.20	0.23	0.12	0.11
Notes: c(2), e, f, h, k(1)								
JT15D-1 Series	Idle (Taxi)	183	1.75	1.07	132.00	58.08	0.44	0.39
	Approach	405	3.44	1.07	40.50	5.09	0.36	0.32
	Climb out	984	6.77	1.07	3.50	0.01	0.14	0.12
	Takeoff	1175	7.60	1.07	2.65	0.01	0.14	0.12
Notes: c(2), e, f, h, k(2)								
JT15D-4 Series	Idle (Taxi)	207	2.63	1.07	97.00	46.00	0.37	0.33
	Approach	468	5.29	1.07	32.00	5.92	0.40	0.36
	Climb out	1135	8.56	1.07	3.18	0.22	0.15	0.13
	Takeoff	1347	9.23	1.07	2.10	0.10	0.14	0.13
Notes: c(2), e, f, h, k(2)								
JT15D-5, -5A, -5B	Idle (Taxi)	235	1.66	1.07	119.20	136.97	0.88	0.79
	Approach	524	4.93	1.07	38.60	13.46	0.78	0.70
	Climb out	1371	10.08	1.07	1.15	1.50	0.26	0.23
	Takeoff	1630	11.13	1.07	0.00	0.00	0.16	0.15
Notes: c(2), e, f, h, k(2)								
LF507-1F	Idle (Taxi)	360	3.28	1.07	37.83	5.43	0.19	0.17
	Approach	860	6.39	1.07	4.43	0.14	0.14	0.13
	Climb out	2350	12.02	1.07	0.30	0.01	0.12	0.11
	Takeoff	2840	14.52	1.07	0.20	0.01	0.11	0.10
Notes: c(2), e, f, h, k(8)								
NK-8-2U	Idle (Taxi)	1905	2.70	1.07	116.00	119.37	0.93	0.84
	Approach	4603	5.40	1.07	21.00	5.75	0.52	0.47
	Climb out	9286	12.90	1.07	6.00	0.63	0.44	0.39
	Takeoff	13889	13.90	1.07	5.50	0.52	0.47	0.42
Notes: c(2), e, f, h, k(8)								
O-200	Idle (Taxi)	8	1.58	1.07	644.42	33.36	0.55 (S)	0.49 (S)
	Approach	26	1.14	1.07	1187.84	38.20	0.13 (S)	0.12 (S)
	Climb out	45	4.87	1.07	974.10	23.93	0.17 (S)	0.16 (S)
	Takeoff	45	4.87	1.07	974.10	23.93	0.21 (S)	0.19 (S)
Notes: c(1), d(25) - PM ₁₀ and PM _{2.5} at all power settings, e, j, k(8)								
O-200A	Idle (Taxi)	9	0.93	1.07	969.24	198.77	0.55	0.49
	Approach	26	3.81	1.07	926.54	55.21	0.13	0.12
	Climb out	49	4.70	1.07	1047.01	56.02	0.17	0.16
	Takeoff	53	3.90	1.07	1033.41	55.30	0.21	0.19
Notes: c(16), e, g, h, k(7)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
O-320	Idle (Taxi)	9	0.52	1.07	1077.00	42.46	0.47 (S)	0.42 (S)
	Approach	47	0.95	1.07	1221.51	22.13	0.27 (S)	0.24 (S)
	Climb out	67	3.97	1.07	989.51	14.24	0.20 (S)	0.18 (S)
	Takeoff	89	2.19	1.07	1077.44	13.55	0.20 (S)	0.18 (S)
Notes: c(1), d(9) - PM ₁₀ and PM _{2.5} at all power settings, e, j, k(8)								
O-320-A2B, -320-B2B, -320-D2A	Idle (Taxi)	10	1.63	1.07	766.81	111.03	0.47	0.42
	Approach	34	7.25	1.07	769.65	45.56	0.27	0.24
	Climb out	81	7.96	1.07	904.75	40.87	0.20	0.18
	Takeoff	81	7.96	1.07	904.75	40.87	0.20	0.18
Notes: c(16), e, g, h, k(7)								
O-320-D2J	Idle (Taxi)	8	1.94	1.07	707.12	127.12	0.02	0.02
	Approach	34 (S)	7.25 (S)	1.07	769.65 (S)	45.56 (S)	0.27 (S)	0.24 (S)
	Climb out	81 (S)	7.96 (S)	1.07	904.75 (S)	40.87 (S)	0.20 (S)	0.18 (S)
	Takeoff	81 (S)	7.96 (S)	1.07	904.75 (S)	40.87 (S)	0.20 (S)	0.18 (S)
Notes: c(16), d(9) - All fuel flow rates and pollutants at Approach, Climb out, and Takeoff power settings, e, g, h, k(7)								
O-320-D3G	Idle (Taxi)	9	1.19	1.07	771.19	79.91	0.21	0.19
	Approach	27	14.03	1.07	599.45	49.43	0.09	0.08
	Climb out	82	19.46	1.07	649.65	51.31	0.12	0.11
	Takeoff	82	19.46	1.07	649.65	51.31	0.12	0.11
Notes: c(16), e, g, h, k(7)								
O-320-E2A	Idle (Taxi)	10	1.64	1.07	689.60	18.34	0.05	0.05
	Approach	38	19.44	1.07	695.60	15.74	0.04	0.04
	Climb out	63	6.92	1.07	836.60	17.32	0.07	0.06
	Takeoff	79	6.68	1.07	815.50	14.50	0.10	0.09
Notes: c(16), e, g, h, k(7)								
O-320-E2D	Idle (Taxi)	10	1.49	1.07	756.45	118.10	0.39	0.35
	Approach	33	4.62	1.07	836.50	45.72	0.42	0.38
	Climb out	83	4.43	1.07	1020.21	35.43	0.16	0.14
	Takeoff	83	4.43	1.07	1020.21	35.43	0.16	0.14
Notes: c(16), e, g, h, k(7)								
O-320-E3D	Idle (Taxi)	7	0.59	1.07	706.42	197.76	0.19	0.17
	Approach	29	2.55	1.07	762.97	50.07	0.20	0.18
	Climb out	82	5.60	1.07	941.15	46.63	0.29	0.26
	Takeoff	82	5.60	1.07	941.15	46.63	0.29	0.26
Notes: c(16), e, g, h, k(7)								
O-320-H2AD	Idle (Taxi)	10	3.45	1.07	713.64	103.42	0.18	0.16
	Approach	44	7.94	1.07	718.04	39.68	0.30	0.27
	Climb out	69	3.95	1.07	941.82	41.35	0.16	0.15
	Takeoff	69	3.95	1.07	941.82	41.35	0.16	0.15
Notes: c(16), e, g, h, k(7)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
O-470C	Idle (Taxi)	11	1.91	1.07	592.20	159.00	0.50	0.45
	Approach	61	3.77	1.07	995.10	13.01	0.40	0.36
	Climb out	99	4.32	1.07	960.80	10.98	0.07	0.06
	Takeoff	133	2.71	1.07	1082.00	10.55	0.10	0.09
Notes: c(16), e, g, h, k(8)								
PT6A-27	Idle (Taxi)	115	2.43	1.07	64.00	57.70	0.50 (S)	0.45 (S)
	Approach	215	8.37	1.07	23.26	2.51	0.10 (S)	0.09 (S)
	Climb out	400	7.00	1.07	1.20	0.00	0.25 (S)	0.23 (S)
	Takeoff	425	7.81	1.07	1.01	0.00	0.24 (S)	0.22 (S)
Notes: c(1), d(15) - PM ₁₀ and PM _{2.5} at all power settings, e, j, k(8)								
PT6A-38	Idle (Taxi)	103	2.09	1.07	82.44	2.09	0.50	0.45
	Approach	275	4.79	1.07	7.29	9.6E-05	0.10	0.09
	Climb out	450	6.69	1.07	2.17	9.6E-05	0.25	0.23
	Takeoff	489	7.08	1.07	2.05	9.6E-05	0.24	0.22
Notes: c(13), j, k(8)								
PT6A-41	Idle (Taxi)	147	1.97	1.07	115.31	116.88	0.50 (S)	0.45 (S)
	Approach	273	4.65	1.07	34.80	26.12	0.10 (S)	0.09 (S)
	Climb out	473	7.57	1.07	6.49	2.33	0.25 (S)	0.23 (S)
	Takeoff	510	7.98	1.07	5.10	2.01	0.24 (S)	0.22 (S)
Notes: c(1), d(15) - PM ₁₀ and PM _{2.5} at all power settings, e, j, k(8)								
PT6A-42	Idle (Taxi)	103	2.16	1.07	76.55	16.61	0.45	0.41
	Approach	275	4.89	1.07	6.89	9.6E-05	0.10	0.09
	Intermediate	466	6.88	1.07	1.95	9.6E-05	0.24	0.22
	Military	513	7.28	1.07	1.95	9.6E-05	0.23	0.21
Notes: c(13), j, k(8)								
PT6A-60A	Idle (Taxi)	480	2.98	1.07	42.18	166.43	0.09	0.08
	Approach	340 (S)	4.59 (S)	1.07	20.86 (S)	3.31 (S)	0.74 (S)	0.67 (S)
	Climb out	571 (S)	6.69 (S)	1.07	6.72 (S)	0.72 (S)	0.29 (S)	0.26 (S)
	Takeoff	633 (S)	7.08 (S)	1.07	5.36 (S)	0.53 (S)	0.26 (S)	0.23 (S)
Notes: c(16), d(11) - All fuel flow rates and pollutants at Approach, Climb out, and Takeoff power settings, e, g, h, k(1)								
PT6A-65	Idle (Taxi)	131	1.89	1.07	166.43	53.66	1.23	1.11
	Approach	340	4.59	1.07	20.86	3.31	0.74	0.67
	Intermediate	571	6.69	1.07	6.72	0.72	0.29	0.26
	Military	633	7.08	1.07	5.36	0.53	0.26	0.23
Notes: c(13), j, k(8)								
PT6A-67B	Idle (Taxi)	143	1.83	1.07	183.80	61.52	1.38	1.24
	Approach	364	4.59	1.07	20.96	3.24	0.72	0.65
	Intermediate	619	6.59	1.07	6.12	0.61	0.32	0.29
	Military	681	6.98	1.07	5.73	0.45	0.25	0.23
Notes: c(13), j, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
PT6A-67D	Idle (Taxi)	149	1.83	1.07	177.91	57.94	1.31	1.18
	Approach	372	4.69	1.07	19.76	2.93	0.66	0.59
	Intermediate	643	6.69	1.07	5.35	0.50	0.28	0.25
	Military	713	7.18	1.07	5.09	0.35	0.24	0.22
Notes: c(13), j, k(8)								
PT6A-68	Ground Idle	156	1.77	1.07	117.85	7.89	3.95	3.56
	Flight Idle	180	1.95	1.07	94.99	1.33	4.18	3.76
	Descend	328	5.03	1.07	33.69	3.29	4.15	3.73
	Approach	449	4.73	1.07	10.91	0.71	3.34	3.01
	Max. Continuous	612	8.18	1.07	3.88	0.20	4.30	3.87
Notes: c(11), h, j - Percent hp calculated assuming maximum hp of 1250 per manufacturer's stated specifications, k(6)								
PW306A	Idle (Taxi)	335	4.26	1.07	36.35	5.01	0.09	0.08
	Approach	773	11.87	1.07	7.11	0.00	0.08	0.08
	Climb out	2096	19.26	1.07	2.51	0.00	0.06	0.06
	Takeoff	2517	20.08	1.07	2.27	0.00	0.12	0.11
Notes: c(2), e, f, h, k(2)								
PW308A	Idle (Taxi)	353	3.65	1.07	38.21	7.61	0.16	0.14
	Approach	980	8.03	1.07	4.08	0.02	0.16	0.14
	Climb out	2374	14.06	1.07	1.06	0.00	0.54	0.48
	Takeoff	2860	16.74	1.07	0.83	0.00	0.48	0.43
Notes: c(2), e, f, h, k(1)								
PW2037	Idle (Taxi)	1206	4.10	1.07	22.36	2.21	0.07	0.06
	Approach	3635	9.77	1.07	1.95	0.13	0.09	0.08
	Climb out	10373	23.96	1.07	0.34	0.02	0.12	0.11
	Takeoff	12468	29.41	1.07	0.33	0.02	0.09	0.08
Notes: c(2), e, f, h, k(1)								
PW2040	Idle (Taxi)	978	3.76	1.07	22.70	0.37	10.67	8.75
	Approach	4645	15.49	1.07	0.51	0.05	5.53	5.10
	Intermediate	10408	32.72	1.07	0.32	0.04	2.31	1.42
	Takeoff	13905	35.04	1.07	0.32	0.01	0.06	0.05
Notes: c(2) - Pollutants at Takeoff power setting, c(3) - PW2040 is the commercial designation of the F117-PW-100 engine, d(1) - HAPs at Takeoff power setting only, k(5)								
PW2041	Idle (Taxi)	1388	4.49	1.07	23.05	2.13	0.15	0.14
	Approach	4184	10.98	1.07	2.49	0.15	0.13	0.12
	Climb out	12345	28.94	1.07	0.20	0.03	0.12	0.11
	Takeoff	15362	36.92	1.07	0.20	0.03	0.12	0.11
Notes: c(13), j, k(8)								
PW4056	Idle (Taxi)	1492	5.00	1.07	11.60	0.76	0.13	0.11
	Approach	5135	11.60	1.07	0.90	0.29	0.12	0.11
	Climb out	15722	24.60	1.07	0.14	0.20	0.15	0.13
	Takeoff	19437	32.50	1.07	0.08	0.13	0.14	0.13
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
PW4060	Idle (Taxi)	1635	3.72	1.07	44.46	13.37	0.12	0.11
	Approach	5524	11.91	1.07	2.04	0.12	0.06	0.05
	Climb out	16159	25.03	1.07	0.49	0.07	0.10	0.09
	Takeoff	20373	31.74	1.07	0.58	0.09	0.11	0.10
Notes: c(2), e, f, h, k(1)								
PW4062	Idle (Taxi)	1667	3.78	1.07	42.61	12.49	0.12	0.11
	Approach	5698	12.17	1.07	1.93	0.10	0.06	0.05
	Climb out	16865	25.98	1.07	0.50	0.08	0.10	0.09
	Takeoff	21627	34.36	1.07	0.61	0.09	0.11	0.10
Notes: c(2), e, f, h, k(1)								
PW4074	Idle (Taxi)	1810	4.20	1.07	21.00	3.68	0.09	0.08
	Approach	6310	11.00	1.07	0.40	0.23	0.06	0.06
	Climb out	18794	31.50	1.07	0.10	0.12	0.07	0.07
	Takeoff	23008	38.10	1.07	0.10	0.12	0.11	0.09
Notes: c(2), e, f, h, k(1)								
PW4074D	Idle (Taxi)	2421	3.80	1.07	26.34	3.59	0.09	0.08
	Approach	6897	11.35	1.07	0.96	0.05	0.06	0.05
	Climb out	19611	32.71	1.07	0.35	0.02	0.07	0.07
	Takeoff	24143	42.46	1.07	0.30	0.02	0.07	0.07
Notes: c(2), e, f, h, k(1)								
PW4077	Idle (Taxi)	1841	4.20	1.07	20.20	3.45	0.09	0.08
	Approach	6476	11.30	1.07	0.40	0.23	0.06	0.06
	Climb out	19460	32.50	1.07	0.10	0.12	0.08	0.07
	Takeoff	23960	39.80	1.07	0.10	0.12	0.11	0.10
Notes: c(2), e, f, h, k(1)								
PW4077D	Idle (Taxi)	1937	3.83	1.07	32.62	5.36	0.07	0.06
	Approach	6627	12.10	1.07	0.60	0.08	0.06	0.05
	Climb out	19897	35.82	1.07	0.25	0.05	0.07	0.06
	Takeoff	24460	44.74	1.07	0.22	0.03	0.09	0.08
Notes: c(2), e, f, h, k(1)								
PW4084	Idle (Taxi)	1921	4.40	1.07	18.73	3.11	0.11	0.10
	Approach	6944	12.00	1.07	0.40	0.23	0.07	0.06
	Climb out	21341	35.50	1.07	0.10	0.12	0.10	0.09
	Takeoff	27072	45.00	1.07	0.10	0.12	0.12	0.11
Notes: c(2), e, f, h, k(1)								
PW4084D	Idle (Taxi)	2048	4.08	1.07	25.74	3.78	0.07	0.06
	Approach	7198	12.70	1.07	0.48	0.07	0.06	0.05
	Climb out	21992	39.47	1.07	0.24	0.03	0.08	0.07
	Takeoff	27865	53.02	1.07	0.18	0.03	0.10	0.09
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
PW4090	Idle (Taxi)	2683	4.48	1.07	11.94	0.79	0.06	0.05
	Approach	7770	12.74	1.07	0.55	0.05	0.06	0.05
	Climb out	23778	41.17	1.07	0.31	0.02	0.09	0.08
	Takeoff	31159	57.52	1.07	0.27	0.02	0.11	0.10
Notes: c(2), e, f, h, k(1)								
PW4098	Idle (Taxi)	2548	7.78	1.07	6.48	0.00	0.09	0.08
	Approach	8532	14.89	1.07	0.70	0.00	0.07	0.06
	Climb out	25754	36.45	1.07	0.21	0.00	0.11	0.10
	Takeoff	32841	51.29	1.07	0.16	0.00	0.10	0.09
Notes: c(2), e, f, h, k(1)								
PW4152	Idle (Taxi)	1405	4.90	1.07	12.76	0.85	0.12	0.10
	Approach	4706	11.10	1.07	1.09	0.17	0.11	0.10
	Climb out	14167	22.70	1.07	0.17	0.18	0.14	0.12
	Takeoff	17278	26.90	1.07	0.12	0.15	0.14	0.12
Notes: c(2), e, f, h, k(1)								
PW4156	Idle (Taxi)	1492	5.00	1.07	11.60	0.76	0.13	0.11
	Approach	5135	11.60	1.07	0.90	0.29	0.12	0.11
	Climb out	15722	24.60	1.07	0.14	0.20	0.15	0.13
	Takeoff	19437	32.50	1.07	0.08	0.13	0.14	0.13
Notes: c(2), e, f, h, k(1)								
PW4158	Idle (Taxi)	1675	4.80	1.07	20.99	2.05	0.09	0.08
	Approach	5413	11.80	1.07	1.88	0.16	0.08	0.07
	Climb out	15905	23.70	1.07	0.54	0.02	0.11	0.10
	Takeoff	19691	30.20	1.07	0.40	0.10	0.11	0.10
Notes: c(2), e, f, h, k(1)								
PW4164	Idle (Taxi)	1667	4.03	1.07	26.67	5.13	0.11	0.10
	Approach	5984	14.10	1.07	1.86	0.18	0.05	0.05
	Climb out	17294	31.66	1.07	0.79	0.05	0.12	0.11
	Takeoff	20841	38.57	1.07	0.69	0.03	0.12	0.11
Notes: c(2), e, f, h, k(1)								
PW4164-1D	Idle (Taxi)	1929	3.79	1.07	17.13	1.66	0.07	0.07
	Approach	6151	12.10	1.07	1.55	0.07	0.06	0.05
	Climb out	17770	20.97	1.07	0.17	0.00	0.09	0.08
	Takeoff	21595	26.31	1.07	0.16	0.00	0.09	0.08
Notes: c(2), e, f, h, k(1)								
PW4168, -4168A	Idle (Taxi)	1754	4.15	1.07	23.51	3.78	0.11	0.10
	Approach	6333	14.66	1.07	1.75	0.17	0.05	0.05
	Climb out	18468	33.91	1.07	0.74	0.05	0.12	0.11
	Takeoff	22508	42.39	1.07	0.72	0.03	0.12	0.11
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
PW4168-1D, -4168A-1D	Idle (Taxi)	2000	4.08	1.07	14.78	1.09	0.07	0.06
	Approach	6492	12.39	1.07	1.26	0.06	0.05	0.05
	Climb out	19032	22.31	1.07	0.18	0.00	0.09	0.09
	Takeoff	23310	30.15	1.07	0.17	0.00	0.09	0.08
Notes: c(2), e, f, h, k(1)								
PW4170	Idle (Taxi)	2024	4.18	1.07	14.04	0.95	0.07	0.06
	Approach	6611	12.49	1.07	1.17	0.06	0.05	0.05
	Climb out	19445	22.84	1.07	0.18	0.00	0.10	0.09
	Takeoff	23960	31.40	1.07	0.18	0.00	0.09	0.08
Notes: c(2), e, f, h, k(1)								
PW4460	Idle (Taxi)	1690	4.90	1.07	20.32	1.91	0.09	0.08
	Approach	5579	12.00	1.07	1.78	0.16	0.08	0.07
	Climb out	16548	24.70	1.07	0.51	0.03	0.11	0.10
	Takeoff	21008	32.80	1.07	0.37	0.12	0.11	0.10
Notes: c(2), e, f, h, k(1)								
PW6122A	Idle (Taxi)	865	3.08	1.07	24.68	0.01	0.12	0.11
	Approach	2413	5.95	1.07	3.99	1.2E-03	0.09	0.08
	Climb out	6825	13.40	1.07	0.72	1.2E-03	0.25	0.22
	Takeoff	8310	17.04	1.07	0.74	0.00	0.23	0.21
Notes: c(2), e, f, h, k(1)								
PW6124A	Idle (Taxi)	905	3.58	1.07	25.19	2.3E-03	0.12	0.10
	Approach	2579	6.88	1.07	3.69	1.2E-03	0.09	0.08
	Climb out	7452	15.85	1.07	0.81	2.3E-03	0.27	0.24
	Takeoff	9278	21.03	1.07	0.68	0.00	0.26	0.23
Notes: c(2), e, f, h, k(1)								
R-1820-82	Idle (Taxi)	89	0.00	1.07	474.16	173.15	0.10 (S)	0.09 (S)
	Approach	323	6.50	1.07	384.83	6.41	0.10 (S)	0.09 (S)
	Climb out	862	2.09	1.07	435.03	55.77	0.10 (S)	0.09 (S)
	Takeoff	1166	1.72	1.07	531.73	108.89	0.10 (S)	0.09 (S)
Notes: c(1), d(12) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
R-2800-99W	Idle (Taxi)	8	22.00	1.07	1294.00	42.48	0.10	0.09
	Approach	175	13.64	1.07	1262.00	14.81	0.10	0.09
	Climb out	356	2.38	1.07	499.99	18.78	0.10	0.09
	Takeoff	1780	0.99	1.07	35.91	3.70	0.10	0.09
Notes: c(16), e, g, h, k(7)								
RB211-22B	Idle (Taxi)	1786	2.86	1.07	88.99	77.91	0.55	0.50
	Approach	4492	8.18	1.07	20.65	6.85	0.51	0.46
	Climb out	12270	26.89	1.07	1.68	0.29	0.21	0.19
	Takeoff	14897	37.33	1.07	0.78	0.17	0.22	0.20
Notes: c(2), e, f, h, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
RB211-524B Series	Idle (Taxi)	2159	3.53	1.07	82.20	58.19	0.37	0.33
	Approach	5500	9.75	1.07	20.00	5.73	0.36	0.32
	Climb out	15389	33.00	1.07	2.82	0.46	0.17	0.15
	Takeoff	18913	47.00	1.07	1.83	0.60	0.22	0.20
Notes: c(2), e, f, h, k(8)								
RB211-524C2	Idle (Taxi)	2381	3.37	1.07	81.00	62.33	0.39	0.35
	Approach	5873	10.40	1.07	18.90	5.08	0.32	0.28
	Climb out	16032	32.30	1.07	1.63	0.25	0.14	0.12
	Takeoff	19683	41.90	1.07	0.66	0.00	0.13	0.12
Notes: c(2), e, f, h, k(8)								
RB211-524D4	Idle (Taxi)	2381	4.11	1.07	73.80	53.43	0.34	0.31
	Approach	5873	9.65	1.07	16.90	5.52	0.33	0.30
	Climb out	15952	41.00	1.07	1.18	0.48	0.14	0.13
	Takeoff	19921	56.90	1.07	0.51	0.00	0.12	0.11
Notes: c(2), e, f, h, k(8)								
RB211-524G	Idle (Taxi)	2064	4.63	1.07	13.74	1.02	0.07	0.06
	Approach	5556	9.56	1.07	1.01	0.43	0.13	0.12
	Climb out	16508	40.54	1.07	0.43	0.31	0.21	0.19
	Takeoff	20794	58.71	1.07	0.59	0.45	0.18	0.16
Notes: c(2), e, f, h, k(8)								
RB211-524G-T	Idle (Taxi)	2064	4.00	1.07	28.82	4.54	0.10	0.09
	Approach	5873	9.68	1.07	1.17	0.00	0.11	0.10
	Climb out	16667	21.80	1.07	0.14	0.03	0.27	0.24
	Takeoff	20794	28.43	1.07	0.16	0.00	0.24	0.22
Notes: c(2), e, f, h, k(8)								
RB211-524H	Idle (Taxi)	2064	4.78	1.07	11.75	0.85	0.07	0.06
	Approach	5635	10.26	1.07	0.99	0.41	0.13	0.12
	Climb out	17222	46.31	1.07	0.38	0.38	0.21	0.19
	Takeoff	21667	65.84	1.07	0.87	0.39	0.18	0.16
Notes: c(2), e, f, h, k(8)								
RB211-524H-T	Idle (Taxi)	2064	4.16	1.07	26.17	3.81	0.09	0.08
	Approach	6111	9.91	1.07	1.05	0.00	0.11	0.10
	Climb out	17619	23.19	1.07	0.14	0.02	0.27	0.24
	Takeoff	22302	31.19	1.07	0.18	0.00	0.24	0.22
Notes: c(2), e, f, h, k(8)								
RB211-535C	Idle (Taxi)	1587	3.44	1.07	18.79	1.66	0.08	0.07
	Approach	4286	6.37	1.07	0.48	0.51	0.13	0.12
	Climb out	11667	24.89	1.07	0.27	0.16	0.11	0.10
	Takeoff	14286	33.71	1.07	0.70	0.29	0.13	0.12
Notes: c(2), e, f, h, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
RB211-535E4	Idle (Taxi)	1429	4.40	1.07	20.33	0.31	0.07	0.06
	Approach	4127	8.38	1.07	2.72	0.05	0.07	0.06
	Climb out	11905	17.56	1.07	0.29	0.00	0.31	0.28
	Takeoff	14683	22.31	1.07	0.26	0.03	0.29	0.26
Notes: c(2), e, f, h, k(8)								
Rotax 912	Idle (Taxi)	10	0.80	1.07	1206.17	21.03	1.0E-03	9.0E-04
	Approach	14	14.28	1.07	569.47	12.76	1.0E-03	9.0E-04
	Climb out	25	10.29	1.07	760.18	14.53	2.0E-03	1.8E-03
	Takeoff	30	12.71	1.07	700.69	14.08	3.0E-03	2.7E-03
Notes: c(16), e, g, h, k(8)								
Rotax 914	Idle (Taxi)	14	5.00	1.07	994.00	38.60	1.0E-03	9.0E-04
	Approach	23	14.00	1.07	776.00	16.00	1.0E-03	9.0E-04
	Climb out	44	18.00	1.07	664.00	12.30	2.0E-03	1.8E-03
	Takeoff	57	6.00	1.07	1020.00	15.00	3.0E-03	2.7E-03
Notes: c(16), e, g, h, k(8)								
Spey Mk511	Idle (Taxi)	1008	3.60	1.07	31.77	4.24	0.25	0.22
	Approach	2206	7.20	1.07	2.65	0.21	0.28	0.25
	Climb out	5762	17.30	1.07	0.63	0.14	0.31	0.27
	Takeoff	7071	22.70	1.07	0.12	0.10	0.30	0.27
Notes: c(2) - Spey MK511 is the commercial designation of the F113-RR-100 engine, e, f, h, k(8)								
Spey Mk555	Idle (Taxi)	762	3.70	1.07	29.30	2.14	0.28	0.25
	Approach	1754	6.80	1.07	3.70	0.33	0.43	0.39
	Climb out	4698	16.50	1.07	0.70	0.17	0.48	0.44
	Takeoff	5833	21.90	1.07	0.30	0.33	0.41	0.37
Notes: c(2), e, f, h, k(8)								
T53-L-11D	Ground Idle	145	1.58	1.07	31.51	66.80	1.44 (S)	1.30 (S)
	Flight Idle	222	2.53	1.07	37.79	15.61	2.95 (S)	2.66 (S)
	Normal Rated	645	6.43	1.07	6.83	0.66	0.31 (S)	0.28 (S)
	Military	685	6.34	1.07	3.34	0.30	0.36 (S)	0.32 (S)
	Takeoff	690	7.75	1.07	3.85	0.31	0.36 (S)	0.32 (S)
Notes: c(9), d(17) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
T53-L-13	Idle (Taxi)	160	1.58	1.07	31.45	64.28	1.44	1.30
	Approach	227	2.52	1.07	37.71	15.02	2.95	2.66
	Climb out	694	6.33	1.07	3.59	0.30	0.31	0.28
	Takeoff	696	7.73	1.07	3.59	0.30	0.36	0.32
Notes: c(13), j, k(8)								
T56 Series I	Idle (Taxi)	829	7.33	1.07	5.73	0.86	0.12	0.11
	Approach	1036	7.12	1.07	4.70	0.61	0.22	0.20
	Intermediate	1824	9.61	1.07	2.84	0.31	0.28	0.25
	Military	2059	9.87	1.07	2.82	0.31	0.28	0.25
Notes: c(13), j, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
T56 Series III	Idle (Taxi)	986	6.05	1.07	6.50	0.90	0.12	0.11
	Approach	1262	9.10	1.07	2.79	0.44	0.19	0.17
	Intermediate	2210	12.19	1.07	1.47	0.26	0.24	0.22
	Military	2476	12.76	1.07	1.47	0.26	0.26	0.23
Notes: c(13), j, k(8)								
T56-A-7	Idle (Taxi)	724	7.58	1.07	5.06	0.08	3.64	3.28
	Approach	880	7.54	1.07	3.89	0.06	3.85	3.47
	Intermediate	1742	9.15	1.07	1.94	0.02	1.46	1.31
	Military	2262	12.46	1.07	2.30	0.01	1.22	1.10
Notes: c(3), h, k(5)								
T56-A-9	Idle	794	3.90	1.07	32.00	24.15	0.83	0.75
	Approach	1423 (C)	4.40	1.07	22.20	14.26	0.97	0.87
	Intermediate	1825	9.20	1.07	2.40	0.58	0.51	0.46
	Military	1905	9.30	1.07	2.10	0.46	0.50	0.45
Notes: c(7), d(1), e, k(4)								
T56-A-14	Idle (Taxi)	324	3.72	1.07	30.39	15.85	0.43	0.39
	Approach	839	6.79	1.07	3.49	0.92	0.28	0.25
	Intermediate	1409	10.30	1.07	1.07	0.04	0.17	0.15
	Military	1563	12.05	1.07	0.95	0.04	0.16	0.14
Notes: c(13), k(8)								
T56-A-15	Idle (Taxi)	794	3.90	1.07	32.00	24.15	0.83	0.75
	Approach	1423 (C)	4.40	1.07	22.20	14.26	0.97	0.87
	Intermediate	1825	9.20	1.07	2.40	0.58	0.51	0.46
	Military	2302	9.30	1.07	2.10	0.46	0.50	0.45
Notes: c(7), d(1), e, h, k(8)								
T56-A-16	Ground Idle	756	6.35	1.07	5.65	1.40	0.83 (S)	0.75 (S)
	Flight Idle	836	6.52	1.07	4.54	1.09	0.97 (S)	0.87 (S)
	75%	1996	9.93	1.07	0.42	0.20	0.51 (S)	0.46 (S)
	100%	2136	10.29	1.07	0.68	0.14	0.50 (S)	0.45 (S)
	Military	2219	10.45	1.07	0.65	0.16	0.50 (S)	0.45 (S)
Notes: c(9), d(18) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
T58-GE-5	Idle	133	1.50	1.07	169.17	111.54	0.75	0.68
	Normal Cruise	757	6.34	1.07	7.66	1.82	0.79	0.71
	Intermediate (Military)	821	6.70	1.07	6.82	3.78	0.97	0.88
	Power Takeoff	886	7.22	1.07	5.64	0.91	0.90	0.81
Notes: c(1), e, k(4)								
T58-GE-8F	Idle	132	1.43	1.07	178.44	149.98	0.75 (S)	0.68 (S)
	Approach	581	4.47	1.07	17.28	1.29	0.79 (S)	0.71 (S)
	Cruise	627	4.68	1.07	14.13	0.92	0.79 (S)	0.71 (S)
	Max Continuous	685	4.90	1.07	12.96	0.84	0.79 (S)	0.71 (S)
	Takeoff	786	5.47	1.07	9.03	0.46	0.97 (S)	0.88 (S)
Notes: c(9), d(19) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
T58-GE-16	Ground Idle	150	3.03	1.07	139.73	47.05	0.75 (S)	0.68 (S)
	60% Normal	656	7.88	1.07	14.56	0.44	0.79 (S)	0.71 (S)
	75% Normal	779	9.47	1.07	10.89	0.72	0.79 (S)	0.71 (S)
	90% Normal	890	10.07	1.07	9.10	0.96	0.90 (S)	0.81 (S)
	Military	1020	11.60	1.07	7.73	1.52	0.90 (S)	0.81 (S)
Notes: c(9), d(19) - PM ₁₀ and PM _{2.5} at all power settings, e, k(4)								
T63-A-5A	Ground Idle	61	1.42	1.07	79.15	23.35	0.83 (S)	0.75 (S)
	Flight Idle	70	1.89	1.07	61.83	12.02	0.83 (S)	0.75 (S)
	30%	105	2.90	1.07	38.59	3.76	0.97 (S)	0.87 (S)
	60%	157	4.11	1.07	20.79	0.78	0.51 (S)	0.46 (S)
	Military	215	5.07	1.07	7.54	0.09	0.50 (S)	0.45 (S)
Notes: c(9), d(18) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
T64-GE-6B	Idle	337	3.86	1.07	48.66	15.01	0.30	0.27
	75% hp	1039	8.95	1.07	4.72	0.89	0.58	0.52
	Normal Rated	1257	10.42	1.07	2.86	0.82	0.72	0.64
	Intermediate (Military)	1390	11.15	1.07	2.30	0.74	0.79	0.71
Notes: c(1), e, k(8)								
T64-GE-100	Ground Idle	298	1.11	1.07	76.46	1.26	2.36	2.12
	75% Normal	941	6.85	1.07	7.85	0.05	1.97	1.77
	Normal	1698	9.46	1.07	2.21	0.01	1.61	1.45
	Military	1848	11.30	1.07	2.17	0.01	0.92	0.82
Notes: c(3), e, h, k(5)								
T64-GE-413	Idle	260	2.62	1.07	51.83	19.87	2.36 (S)	2.12 (S)
	75% hp	1287	8.54	1.07	1.94	0.40	1.97 (S)	1.77 (S)
	Normal Rated	1511	9.65	1.07	1.20	0.38	1.61 (S)	1.45 (S)
	Intermediate	1661	10.92	1.07	0.67	0.39	1.61 (S)	1.45 (S)
	Maximum	1721	11.42	1.07	0.49	0.31	1.61 (S)	1.45 (S)
Notes: c(9), d(20) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
T64-GE-415	Idle	269	2.12	1.07	74.33	28.00	2.36 (S)	2.12 (S)
	75%	1493	8.09	1.07	2.10	0.15	1.61 (S)	1.45 (S)
	Normal Rated	1730	9.29	1.07	1.50	0.09	1.61 (S)	1.45 (S)
	Military	1916	9.99	1.07	1.29	0.32	0.92 (S)	0.82 (S)
	Max. Rated	2005	10.83	1.07	1.47	0.22	0.92 (S)	0.82 (S)
Notes: c(9), d(20) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
T76-G-10	Idle (Taxi)	238	7.40	1.07	23.80	8.51	0.38	0.34
	Approach	476	8.50	1.07	17.20	0.92	0.50	0.45
	Intermediate	794	9.90	1.07	5.90	0.12	0.63	0.57
	Military	873	10.30	1.07	2.30	0.12	0.71	0.64
Notes: c(7), e, g, h, k(8)								
T76-G-12	Idle (Taxi)	397	7.40	1.07	23.80	8.51	0.38	0.34
	Approach	476	8.50	1.07	17.20	0.92	0.50	0.45
	Intermediate	794	9.90	1.07	5.90	0.12	0.63	0.57
	Military	857 (C)	10.30	1.07	2.30	0.12	0.71	0.64
Notes: c(7), d(1), e, g, h, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
T76-G-418	Idle (Taxi)	238	7.40	1.07	23.80	8.51	0.38	0.34
	Approach	476	8.50	1.07	17.20	0.92	0.50	0.45
	Intermediate	794	9.90	1.07	5.90	0.12	0.63	0.57
	Military	873	10.30	1.07	2.30	0.12	0.71	0.64
Notes: c(7), e, g, h, k(8)								
T76-G-419	Idle (Taxi)	397	7.40	1.07	23.80	8.51	0.38	0.34
	Approach	476	8.50	1.07	17.20	0.92	0.50	0.45
	Intermediate	794	9.90	1.07	5.90	0.12	0.63	0.57
	Military	857 (C)	10.30	1.07	2.30	0.12	0.71	0.64
Notes: c(7), d(1), e, g, h, k(8)								
T400-CP-400	Ground Idle	136	2.21	1.07	27.94	10.99	0.44	0.40
	Flight Idle	141	2.84	1.07	29.08	8.97	0.41 (C)	0.37 (C)
	Cruise	279	4.66	1.07	1.79	0.00	0.36	0.32
	Intermediate (Military)	406	5.91	1.07	0.00	0.00	0.25	0.22
	Maximum	1069	11.51	1.07	0.00	0.22	0.28	0.25
Notes: c(1), d(1) - PM ₁₀ and PM _{2.5} at Flight Idle power setting only, e, k(8)								
T406-AD-400	Idle	362	4.15	1.07	8.35	0.10	1.58	1.42
	Flight Idle	663	6.05	1.07	3.47	0.02	1.58	1.42
	Intermediate	948	7.87	1.07	1.82	0.02	1.58	1.42
	Max Continuous	2507	18.03	1.07	0.29	0.01	1.58	1.42
Notes: c(6) - T406-AD-400 is the military designation of the AE1107C engine, h, k(4)								
T700-GE-401, -401C	Idle	432	5.36	1.07	10.46	0.54	0.12	0.11
	Approach	348	5.36	1.07	10.46	0.54	0.21	0.19
	Climb out	443	5.60	1.07	10.11	0.53	0.46	0.41
	Takeoff	442	5.59	1.07	10.15	0.53	0.53	0.48
Notes: c(13), k(8)								
T700-GE-700	Ground Idle	134	3.36	1.07	46.24	0.50	1.48	1.33
	Flight Idle	469	10.95	1.07	5.12	0.02	1.26	1.13
	Flight Max	626	11.87	1.07	3.51	0.01	2.22	2.00
	Overspeed	725	11.43	1.07	2.81	0.01	2.61	2.33
Notes: c(3), h, k(5)								
TAE-125-01	Idle (Taxi)	2	16.91	1.07	24.80	9.78	0.05	0.05
	Approach	20	26.96	1.07	16.06	3.29	0.04	0.04
	Climb out	40	22.78	1.07	6.65	1.25	0.07	0.06
	Takeoff	51	20.01	1.07	7.51	1.05	0.10	0.09
Notes: c(16), e, g, h, k(8)								
TAY Mk611-8	Idle (Taxi)	873	2.50	1.07	24.10	3.91	0.26	0.24
	Approach	1825	5.70	1.07	3.90	1.04	0.64	0.57
	Climb out	5000	16.80	1.07	0.80	0.35	0.59	0.53
	Takeoff	6032	21.10	1.07	0.70	0.92	0.69	0.62
Notes: c(2), e, f, h, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
TAY 611-8C	Idle (Taxi)	810	2.53	1.07	24.40	1.71	0.07	0.07
	Approach	1706	5.31	1.07	2.89	0.75	0.10	0.09
	Climb out	4794	15.40	1.07	0.95	0.06	0.16	0.14
	Takeoff	5802	19.30	1.07	0.50	0.03	0.18	0.16
Notes: c(2), e, f, h, k(8)								
TAY Mk620-15	Idle (Taxi)	873	2.50	1.07	24.10	3.91	0.26	0.24
	Approach	1825	5.70	1.07	3.90	1.04	0.64	0.57
	Climb out	5000	16.80	1.07	0.80	0.35	0.59	0.53
	Takeoff	6032	21.10	1.07	0.70	0.92	0.69	0.62
Notes: c(2), e, f, h, k(8)								
TAY Mk650-15	Idle (Taxi)	944	1.70	1.07	33.77	3.78	0.08	0.08
	Approach	2016	4.55	1.07	6.54	1.01	0.17	0.15
	Climb out	5675	16.47	1.07	2.01	0.47	0.49	0.44
	Takeoff	6937	19.81	1.07	1.74	0.43	0.50	0.45
Notes: c(2), e, f, h, k(8)								
TF30-P-3	Idle (Taxi)	873	2.30	1.07	72.00	71.30	0.01	0.01
	Approach	2064	4.80	1.07	9.20	2.42	0.05	0.05
	Intermediate	4921	9.40	1.07	1.30	0.12	0.45	0.41
	Military	6191	12.00	1.07	0.80	0.03	0.40	0.36
	Afterburner	38413	3.10	1.07	4.06	0.01	0.15	0.14
Notes: c(7), e, g, h, k(8)								
TF30-P-6B	Idle (Taxi)	689	1.31	1.07	68.21	21.53	0.02 (S)	0.02 (S)
	75% Thrust	3550	6.68	1.07	6.31	3.40	0.12 (S)	0.11 (S)
	Normal Rated	4700	8.06	1.07	5.55	1.61	0.44 (S)	0.40 (S)
	Intermediate (Military)	6835	12.04	1.07	3.09	1.16	0.35 (S)	0.32 (S)
Notes: c(1), d(21) - PM ₁₀ and PM _{2.5} at all power settings, e, j - Assumes 100% thrust at Intermediate setting, k(8)								
TF30-P-7	Idle (Taxi)	952	3.00	1.07	53.00	34.50	0.02	0.02
	Approach	2064	6.10	1.07	11.50	3.68	0.12	0.11
	Intermediate	5714	14.00	1.07	1.20	0.23	0.44	0.40
	Military	7222	20.00	1.07	0.80	0.12	0.35	0.32
	Afterburner	38413	3.10	1.07	4.00	0.01	0.15	0.14
Notes: c(7), e, g, h, k(8)								
TF30-P-9	Idle (Taxi)	952	3.00	1.07	53.00	34.50	0.02	0.02
	Approach	2064	6.10	1.07	11.50	3.68	0.12	0.11
	Intermediate	5714	14.00	1.07	1.20	0.23	0.44	0.40
	Military	8730	20.00	1.07	0.80	0.12	0.35	0.32
	Afterburner	54525	3.10	1.07	4.00	0.01	0.15	0.14
Notes: c(7), e, k(8)								
TF30-P-100	Idle (Taxi)	1260	2.86	1.07	47.62	21.72	26.27	23.64
	Approach	4562 (C)	10.95 (C)	1.07	1.70 (C)	0.41 (C)	24.88 (C)	22.39 (C)
	Intermediate	6650	20.00	1.07	0.71	0.12	24.00	21.60
	Military	7120	28.01	1.07	0.70	0.11	8.34	7.51
	Afterburner	42850	4.47	1.07	24.80	2.30	5.36	4.82
Notes: c(1), d(1) - All pollutants at Approach power setting, e, j - Assumes 100% thrust at Takeoff power setting, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
TF30-P-103	Idle (Taxi)	827	4.00	1.07	100.00	88.44	0.51	0.46
	30%	2003	7.00	1.07	36.20	12.54	0.82	0.74
	75%	4119	15.10	1.07	5.50	0.36	0.20	0.18
	100%	5541	20.10	1.07	2.10	0.10	16.34	14.70
	Afterburner-1	14292	11.20	1.07	77.20	32.20	35.69 (C)	31.84 (C)
Notes: c(15), d(1) - PM ₁₀ and PM _{2.5} at Afterburner power setting only, e, f, h, k(3)								
TF30-P-109	Idle (Taxi)	761	2.93	1.07	48.49	7.44	1.24	1.11
	Approach	1727	6.19	1.07	20.73	2.35	1.52	1.37
	Intermediate	2921	9.58	1.07	5.17	0.80	1.64	1.47
	Military	6263	23.63	1.07	0.71	0.87	0.92	0.82
	Afterburner-5	38460	4.89	1.07	6.19	2.50	0.51	0.46
Notes: c(12), h, k(5)								
TF30-P-412A	Idle (Taxi)	999	2.40	1.07	68.17	44.20	26.53	23.87
	75% rpm	1448	3.66	1.07	38.60	11.12	24.03	21.63
	90% rpm	3597	9.62	1.07	6.34	0.19	15.01	13.51
	Intermediate (Military)	7394	16.66	1.07	2.12	0.11	8.34	7.51
	Afterburner	40000	6.75	1.07	15.00	1.15	17.33	15.60
Notes: c(1), e, k(8)								
TF33-P-3, -P-5	Idle (Taxi)	846	1.77	1.07	88.53	105.76	5.20	4.68
	Approach	3797	7.30	1.07	9.01	4.36	13.98	12.59
	Climb out	7323	9.00	1.07	1.80	0.46	14.00	12.60
	Takeoff	9979	11.00	1.07	1.30	0.35	8.00	7.20
Notes: c(1), e, h, j, k(8)								
TF33-P-7	Idle (Taxi)	1093	0.78	1.07	134.96	5.32	6.13	5.51
	Approach	4884	7.12	1.07	9.67	0.24	3.68	3.31
	Intermediate	6356	8.10	1.07	4.16	0.06	5.28	4.76
	Military	8264	10.29	1.07	1.49	0.02	3.58	3.22
Notes: c(3), e, h, k(5)								
TF33-P-9	Idle (Taxi)	1120	1.39	1.07	95.06	90.91	4.98	4.48
	Approach	4140	6.37	1.07	5.24	1.37	3.55	3.20
	Intermediate	8960	7.88	1.07	2.11	1.50	3.15	2.84
	Military	9630	12.08	1.07	0.00	0.55	3.67	3.30
Notes: c(6), e, h, k(4)								
TF33-P-100	Idle (Taxi)	1108	1.50	1.07	136.96	131.16	6.13	5.52
	Approach	2794	6.22	1.07	14.60	3.62	5.46	4.91
	Intermediate	8069	8.47	1.07	2.96	0.39	5.29	4.76
	Military	10856	11.49	1.07	1.19	0.25	2.93	2.64
Notes: c(6), h, k(8)								
TF33-P-102	Idle (Taxi)	1114	1.39	1.07	95.02	3.42	4.96	4.46
	Approach	4737	6.37	1.07	5.24	0.11	3.55	3.20
	Intermediate	5782	7.88	1.07	2.11	0.06	3.15	2.84
	Military	7561	12.08	1.07	0.00	0.02	2.52	2.26
Notes: c(3), e, h, k(5)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
TF33-P-102A	Idle (Taxi)	1065	1.80	1.07	117.03	106.96	4.98	4.48
	Approach	3912	5.84	1.07	12.37	1.74	3.55	3.20
	Intermediate	6985	8.74	1.07	2.01	0.95	3.15	2.84
	Military	8756	12.39	1.07	0.45	0.53	3.67	3.30
Notes: c(6), h, j, k(8)								
TF33-P-103	Idle (Taxi)	900	1.39	1.07	95.06	90.91	4.98	4.48
	Approach	3800	6.37	1.07	5.24	1.37	3.55	3.20
	Intermediate	6240	7.88	1.07	2.11	1.50	3.15	2.84
	Military	7440	12.08	1.07	0.00	0.55	3.67	3.30
Notes: c(6), e, h, k(4)								
TF34-GE-100	Idle (Taxi)	390	2.10	1.07	106.70	39.45	8.13 (S)	7.32 (S)
	Approach	920	5.70	1.07	16.30	2.19	6.21 (S)	5.59 (S)
	Intermediate	460	2.60	1.07	78.00	23.35	8.93 (S)	8.04 (S)
	Military	2710	10.70	1.07	2.20	0.12	2.66 (S)	2.39 (S)
Notes: c(7), d(22) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
TF34-GE-100A	Idle (Taxi)	498	0.32	1.07	65.62	2.24	8.13	7.32
	Approach	933	3.09	1.07	27.92	1.44	6.21	5.59
	Intermediate	1512	5.61	1.07	8.88	0.13	8.93	8.04
	Military	2628	9.11	1.07	3.94	0.07	2.66	2.39
Notes: c(3), h, k(5)								
TF34-GE-400	Idle (Taxi)	458	1.69	1.07	90.98	17.24	8.13 (S)	3.60 (S)
	Approach	1201 (C)	2.98 (C)	1.07	72.08 (C)	13.51 (C)	6.21 (S)	2.12 (S)
	Intermediate	2686 (C)	5.57 (C)	1.07	34.29 (C)	6.05 (C)	2.66 (S)	1.68 (S)
	Military	3800	7.51	1.07	5.95	0.45	2.66 (S)	1.68 (S)
Notes: c(9), d(1) - Fuel flow rates, NO _x , CO, and VOC at Approach and Intermediate power settings, d(22) - PM ₁₀ and PM _{2.5} at all power settings, e, k(8)								
TF39-GE-1C	Idle (Taxi)	1448	3.37	1.07	58.43	3.44	2.80	2.52
	Approach	10477	24.91	1.07	0.77	0.03	1.20	1.08
	Intermediate	12541	28.16	1.07	1.53	0.03	0.89	0.80
	Military	13862	32.66	1.07	1.29	0.03	1.18	1.06
Notes: c(3), h, k(5)								
TF41-A-1	Idle (Taxi)	1032	1.50	1.07	119.00	105.80	0.15	0.14
	Approach	3492	6.80	1.07	10.20	2.53	0.36	0.32
	Intermediate	5873	12.00	1.07	3.70	0.46	0.52	0.47
	Military	8413	21.00	1.07	1.80	0.23	0.67	0.60
Notes: c(7), e, k(8)								
TF41-A-2	Idle (Taxi)	1047	4.00	1.07	176.00	114.54	0.65	0.59
	30%	2704	8.90	1.07	45.00	11.62	0.73	0.66
	75%	5810	23.80	1.07	4.70	0.10	16.94	15.25
	100%	8086	32.90	1.07	3.20	0.09	28.60	25.74
Notes: c(15), e, f, h, k(3)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
TFE731-2, -2A	Idle (Taxi)	206	3.50	1.07	47.80	8.54	0.13 (S)	0.12 (S)
	Approach	571	6.90	1.07	15.56	1.41	0.13 (S)	0.12 (S)
	Intermediate	1476	16.08	1.07	1.62	0.07	0.09 (S)	0.09 (S)
	Military	1786	19.15	1.07	1.13	0.06	0.09 (S)	0.08 (S)
Notes: c(6), d(14) - PM ₁₀ and PM _{2.5} at all power settings, k(8)								
TFE731-2-2B	Idle (Taxi)	190	2.82	1.07	58.60	23.05	0.13 (S)	0.12 (S)
	Approach	532	5.90	1.07	22.38	4.90	0.09 (S)	0.08 (S)
	Climb out	1373	13.08	1.07	2.03	0.15	0.09 (S)	0.08 (S)
	Takeoff	1627	15.25	1.07	1.39	0.13	0.08 (S)	0.08 (S)
Notes: c(2), d(14) - PM ₁₀ and PM _{2.5} at all power settings, e, f, h, k(8)								
TFE731-3	Idle (Taxi)	206	3.72	1.07	47.70	10.40	0.13 (S)	0.12 (S)
	Approach	571	6.92	1.07	15.56	1.62	0.09 (S)	0.08 (S)
	Climb out	1476	16.02	1.07	1.62	0.08	0.09 (S)	0.08 (S)
	Takeoff	1786	19.15	1.07	1.13	0.07	0.08 (S)	0.08 (S)
Notes: c(2), d(14) - PM ₁₀ and PM _{2.5} at all power settings, e, f, h, k(8)								
TIO-540-A1A, -540-A1B, -540-A1B, -540-A2A, -540-A2B, -540-A2C, -540-AE2A, -540-AH1A, -540-F2BD, -540-J2B	Idle (Taxi)	25	0.04	1.07	1293.70	78.29	0.50	0.45
	Approach	99	1.39	1.07	1261.60	15.39	0.40	0.36
	Climb out	205	0.24	1.07	1470.90	19.12	0.70	0.63
	Takeoff	260	0.36	1.07	1442.10	14.21	0.10	0.09
Notes: c(16), e, g, h, k(8)								
TIO-540-J2B2	Idle (Taxi)	25	0.39	1.07	1293.70	78.29	0.50 (S)	0.45 (S)
	Approach	99	1.39	1.07	1261.57	15.38	0.40 (S)	0.36 (S)
	Climb out	205	0.24	1.07	1470.90	19.12	0.70 (S)	0.63 (S)
	Takeoff	260	0.36	1.07	1442.05	14.21	0.10 (S)	0.09 (S)
Notes: c(1), d(13) - PM ₁₀ and PM _{2.5} at all power settings, e, j, k(8)								
TIO-540-J2BD, -540-S1AD	Idle (Taxi)	25	0.04	1.07	1293.70	78.29	0.50	0.45
	Approach	99	1.39	1.07	1261.60	15.39	0.40	0.36
	Climb out	205	0.24	1.07	1470.90	19.12	0.70	0.63
	Takeoff	260	0.36	1.07	1442.10	14.21	0.10	0.09
Notes: c(16), e, g, h, k(8)								
TPE331-2	Idle (Taxi)	105	2.57	1.07	64.10	104.92	2.68 (S)	2.41 (S)
	Approach	220	8.27	1.07	16.59	3.08	2.40 (S)	2.16 (S)
	Climb out	372	9.92	1.07	1.37	0.46	1.47 (S)	1.32 (S)
	Takeoff	405	10.22	1.07	0.94	0.45	1.75 (S)	1.57 (S)
Notes: c(1), d(23) - PM ₁₀ and PM _{2.5} at all power settings, e, j, k(8)								
TPE331-3	Idle (Taxi)	112	2.86	1.07	61.52	90.97	2.68	2.41
	Approach	250	9.92	1.07	6.96	0.74	2.40	2.16
	Climb out	409	11.86	1.07	0.98	0.17	1.47	1.32
	Takeoff	458	12.36	1.07	0.76	0.13	1.75	1.57
Notes: c(1), e, h, j, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
Trent 553-61	Idle (Taxi)	1825	5.96	1.07	10.50	0.16	0.06	0.05
	Approach	4762	11.37	1.07	0.66	0.05	0.07	0.06
	Climb out	13730	30.98	1.07	0.44	0.01	0.08	0.08
	Takeoff	16746	40.55	1.07	0.18	0.02	0.08	0.07
Notes: c(2), e, f, h, k(8)								
Trent 556-61	Idle (Taxi)	1825	6.09	1.07	9.96	0.15	0.06	0.05
	Approach	4921	11.68	1.07	0.54	0.05	0.07	0.06
	Climb out	14524	33.25	1.07	0.38	0.01	0.08	0.08
	Takeoff	17778	44.77	1.07	0.17	0.02	0.08	0.08
Notes: c(2), e, f, h, k(8)								
Trent 768	Idle (Taxi)	2056	4.46	1.07	26.94	3.67	0.09	0.08
	Approach	6198	10.12	1.07	1.71	0.05	0.07	0.06
	Climb out	18849	24.90	1.07	0.49	0.01	0.09	0.08
	Takeoff	23072	32.01	1.07	0.35	0.00	0.08	0.07
Notes: c(2), e, f, h, k(8)								
Trent 772	Idle (Taxi)	2143	4.66	1.07	23.97	2.83	0.08	0.07
	Approach	6516	10.42	1.07	1.56	0.05	0.07	0.07
	Climb out	20079	26.82	1.07	0.49	0.01	0.09	0.08
	Takeoff	24913	35.56	1.07	0.21	0.01	0.08	0.07
Notes: c(2), e, f, h, k(8)								
Trent 875	Idle (Taxi)	2222	4.64	1.07	19.66	2.05	0.07	0.06
	Approach	6984	10.43	1.07	0.86	0.00	0.07	0.06
	Climb out	20397	26.55	1.07	0.16	0.00	0.09	0.08
	Takeoff	24603	33.32	1.07	0.19	0.00	0.09	0.08
Notes: c(2), e, f, h, k(8)								
Trent 877	Idle (Taxi)	2222	4.75	1.07	18.42	1.78	0.06	0.06
	Approach	7143	10.59	1.07	0.80	0.00	0.07	0.06
	Climb out	21111	27.59	1.07	0.16	0.00	0.09	0.08
	Takeoff	25476	34.76	1.07	0.20	0.00	0.08	0.07
Notes: c(2), e, f, h, k(8)								
Trent 884	Idle (Taxi)	2460	5.04	1.07	15.19	1.15	0.06	0.05
	Approach	7698	11.07	1.07	0.65	0.00	0.07	0.07
	Climb out	22937	30.63	1.07	0.18	0.00	0.09	0.08
	Takeoff	28254	40.05	1.07	0.24	0.00	0.08	0.07
Notes: c(2), e, f, h, k(8)								
Trent 892	Idle (Taxi)	2381	5.33	1.07	13.07	0.81	0.06	0.05
	Approach	7937	11.58	1.07	0.57	0.00	0.08	0.07
	Climb out	24603	33.30	1.07	0.20	0.00	0.09	0.08
	Takeoff	31032	45.70	1.07	0.28	0.01	0.08	0.07
Notes: c(2), e, f, h, k(8)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
Trent 895	Idle (Taxi)	2619	5.11	1.07	14.71	1.02	0.06	0.05
	Approach	8333	11.39	1.07	0.54	0.00	0.07	0.07
	Climb out	25318	34.29	1.07	0.19	0.00	0.09	0.08
	Takeoff	31984	47.79	1.07	0.27	0.02	0.08	0.07
Notes: c(2), e, f, h, k(8)								
Trent 970-84	Idle (Taxi)	2381	5.10	1.07	15.10	0.23	0.06	0.05
	Approach	5556	11.40	1.07	1.40	0.00	0.09	0.08
	Climb out	17460	29.10	1.07	0.20	0.00	0.11	0.10
	Takeoff	20638	37.20	1.07	0.40	0.00	0.09	0.09
Notes: c(2), e, f, h, k(8)								
Trent 972-84	Idle (Taxi)	2048	5.51	1.07	13.00	0.05	0.06	0.05
	Approach	5833	12.23	1.07	1.10	0.08	0.09	0.08
	Climb out	17540	30.36	1.07	0.31	0.13	0.11	0.10
	Takeoff	21206	39.78	1.07	0.32	0.01	0.09	0.08
Notes: c(2), e, f, h, k(8)								
Trent 1000-A	Idle (Taxi)	1881	5.40	1.07	8.73	0.07	0.05	0.05
	Approach	4960	13.29	1.07	0.77	0.00	0.09	0.08
	Climb out	14897	35.87	1.07	0.45	0.00	0.08	0.08
	Takeoff	18111	46.67	1.07	0.53	0.00	0.07	0.07
Notes: c(2), e, f, h, k(8)								
Trent 1000-C	Idle (Taxi)	1952	5.66	1.07	7.66	0.05	0.05	0.05
	Approach	5302	13.86	1.07	0.68	0.00	0.10	0.09
	Climb out	16254	40.33	1.07	0.48	0.00	0.08	0.07
	Takeoff	19905	53.54	1.07	0.51	0.00	0.07	0.06
Notes: c(2), e, f, h, k(8)								
Trent 1000-E	Idle (Taxi)	1762	5.06	1.07	10.63	0.10	0.06	0.05
	Approach	4524	12.54	1.07	0.92	0.00	0.08	0.08
	Climb out	13167	30.55	1.07	0.43	0.00	0.09	0.08
	Takeoff	15929	39.17	1.07	0.47	0.00	0.08	0.07
Notes: c(2), e, f, h, k(8)								
TSIO-360-A, -360-AB, -360-B, -360-BB, -360-C, -360-CB, -360-F, -360-FB, -360-JB	Idle (Taxi)	11	1.91	1.07	592.20	159.00	0.05	0.05
	Approach	61	3.77	1.07	995.10	13.01	0.04	0.04
	Climb out	99	4.32	1.07	960.80	10.98	0.07	0.06
	Takeoff	133	2.71	1.07	1082.00	10.55	0.10	0.09
Notes: c(16), e, g, h, k(8)								
V2500-A1	Idle (Taxi)	984	5.91	1.07	7.76	0.25	0.10	0.09
	Approach	2651	13.45	1.07	0.77	0.17	0.09	0.08
	Climb out	7333	30.82	1.07	0.55	0.13	0.19	0.17
	Takeoff	8833	37.13	1.07	0.55	0.12	0.20	0.18
Notes: c(2), e, f, h, k(1)								

Table 2-9. Aircraft Engine Emission Factors for Criteria Pollutants

Aircraft Engine	Power Setting ^a	Fuel Flow Rate (lb/hr)	Emission Factors (lb/1000lb fuel)					
			NO _x	SO _x ^b	CO	VOC	PM ₁₀	PM _{2.5}
V2522-A5	Taxi (Idle)	937	4.50	1.07	13.42	0.12	0.22	0.20
	Approach	2468	8.70	1.07	2.60	0.07	0.34	0.31
	Climb out	6484	20.80	1.07	0.67	0.05	0.37	0.33
	Takeoff	7706	24.50	1.07	0.57	0.05	0.28	0.25
Notes: c(2), e, f, h, k(1)								
V2524-A5	Idle (Taxi)	976	4.70	1.07	12.64	0.12	0.22	0.20
	Approach	2603	9.00	1.07	2.37	0.07	0.36	0.32
	Climb out	6889	22.00	1.07	0.63	0.05	0.36	0.32
	Takeoff	8270	26.20	1.07	0.54	0.05	0.27	0.24
Notes: c(2), e, f, h, k(1)								
V2525-D5	Taxi (Idle)	1016	4.70	1.07	12.43	0.12	0.22	0.20
	Approach	2532	8.90	1.07	2.44	0.07	0.36	0.33
	Climb out	6984	22.30	1.07	0.62	0.05	0.36	0.32
	Takeoff	8357	26.50	1.07	0.53	0.05	0.27	0.24
Notes: c(2), e, f, h, k(1)								
V2527-A5	Idle (Taxi)	1016	4.70	1.07	12.43	0.12	0.22	0.20
	Approach	2532	8.90	1.07	2.44	0.07	0.36	0.33
	Climb out	6984	22.30	1.07	0.62	0.05	0.36	0.32
	Takeoff	8357	26.50	1.07	0.53	0.05	0.27	0.24
Notes: c(2), e, f, h, k(1)								
V2528-D5	Taxi (Idle)	1063	4.90	1.07	11.53	0.12	0.19	0.17
	Approach	2802	9.60	1.07	2.03	0.07	0.38	0.34
	Climb out	7905	25.10	1.07	0.56	0.05	0.33	0.30
	Takeoff	9595	30.50	1.07	0.47	0.05	0.25	0.23
Notes: c(2), e, f, h, k(1)								
V2530-A5	Idle (Taxi)	1095	5.00	1.07	10.95	0.12	0.19	0.17
	Approach	2992	10.10	1.07	1.81	0.06	0.38	0.34
	Climb out	8548	27.10	1.07	0.52	0.05	0.32	0.29
	Takeoff	10564	33.80	1.07	0.45	0.05	0.25	0.22
Notes: c(2), e, f, h, k(1)								
V2533-A5	Taxi (Idle)	1082	5.24	1.07	9.32	0.12	0.19	0.17
	Approach	3096	10.83	1.07	1.65	0.06	0.39	0.35
	Climb out	9085	28.67	1.07	0.52	0.05	0.31	0.28
	Takeoff	11318	36.48	1.07	0.46	0.05	0.23	0.21
Notes: c(2), e, f, h, k(1)								

Notes for Table 2-9:

- a. Power Settings included for both Fixed-Wing and Rotary aircraft.
- b. The emission factors for sulfur oxides assumes JP-8 used as the fuel. The value provided is the national average for sulfur content in JP-8, though when conducting an air emissions inventory (AEI), the sulfur content should be obtained directly from the fuel supplier.
- c. The emission factors were found in the following sources:
 - (1) SOURCE: *Air Pollutant Emission Factors for Military and Civil Aircraft*, EPA-450/3-78-117, October 1978.
 - (2) SOURCE: *Airport Air Quality Manual*, International Civil Aviation Organization, 2020 version 30 datasheets.
 - (3) SOURCE: *Aircraft Engine and Auxiliary Power Unit Emissions* Volume I-III, March 1999, IERA-RS-BR-TR-1999-0006.
 - (4) SOURCE: *Aircraft Engine and Auxiliary Power Unit Emissions: Testing Final Report Addendum F119-PW-100* June 2002, IERA-RS-BR-SR-2002-0006.
 - (5) SOURCE: *Engine and Hush House Emissions from a F100-PW-200 Jet Engine Tested at Kelly AFB, TX* Final Volume I February 1997.
 - (6) SOURCE: *Air Emissions Inventory Guidance Document for Mobile Sources at Air Force Installations* January 2002, IERA-RS-BR-SR-2001-0010.
 - (7) SOURCE: *Aircraft Engine Emissions Estimator*, AFESC, September 1985.
 - (8) SOURCE: *Collection and Assessment of Aircraft Emissions*, US EPA, October 1971.
 - (9) SOURCE: *Summary Tables of Gaseous and Particulate Emissions from Aircraft Engines*, Aircraft Environmental Support Office.
 - (10) SOURCE: *Clean Air Act Emission Testing of the T-38C Aircraft Engines* September 2002, IERA-RS-BR-SR-2003-001.
 - (11) SOURCE: *PT6A-68 Emissions Measurement Program Summary*, September 2002, IERA-RS-BR-SR-2003-0003.
 - (12) SOURCE: *Engine and Hush House Emissions from a TF30-P-109 Jet Engine Tested at Canon AFB, NM* Final Volume I June 1996.
 - (13) SOURCE: *Air Emissions Factor Guide to Air Force Mobile Sources*, December 2009.
 - (14) SOURCE: *Engine and Hush House Emissions from a F100-PW-100 Jet Tested at Langley Air Force Base, VA*, November 1996.
 - (15) SOURCE: *Aircraft Emissions Characterization: TF41-A2, TF30-P-103, and TF30-P-109 Engines*, December 1987.
 - (16) SOURCE: *Exhaust Emissions from In-Use General Aviation Aircraft*, The National Academies of Sciences Engineering Medicine. The National Academies Press, 2016.
 - (17) SOURCE: *Source Sampling of Aerospace Ground Equipment and Jet Engines Technical Report*, Environmental Quality Management, Inc. 1996.
 - (18) SOURCE: *Fuel Flows and Emission Indexes of the F404-GE-402 Engine Burning JP-5*, AESO Memorandum Report No. 2003-01 Revision A, September 2016.
 - (19) SOURCE: *Fuel Flows and Emission Indexes of the F414-GE-400 Engines Burning JP-5*, AESO Memorandum Report No. 9725 Revision E, September 2016.
 - (20) SOURCE: *Fuel Flows and Emission Indexes of the F405-RR-401 Engine Using JP-5*, AESO Memorandum Report No. 2006-03 Revision B, June 2017.
 - (21) SOURCE: *Guidance on the Determination of Helicopter Emissions*, Federal Office of Civil Aviation, FOCA, March 2009.
- d. Surrogate data was used for this engine. The surrogate data was found in the following sources:
 - (1) Data was calculated using values provided in the source document.
 - (2) F100-PW-220
 - (3) F101-GE-102
 - (4) F110-GE-100
 - (5) IO-360-A
 - (6) J52-P-408
 - (7) J57-P-19W
 - (8) J85-GE-13
 - (9) O-320-A2B
 - (10) J85-GE-5A

- (11) PT6A-65
 - (12) R-1820-82
 - (13) TIO-540-A1A
 - (14) LF507-1F
 - (15) PT6A-38
 - (16) PW2040
 - (17) T53-L-13
 - (18) T56-A-15
 - (19) T58-GE-5
 - (20) T64-GE-100
 - (21) TF30-P-7
 - (22) TF34-GE-100A
 - (23) TPE331-3
 - (24) F404-GE-F1D2
 - (25) O-200A
- e. Source document provided emission factors for total hydrocarbons (THC) or non-methane organic gas (NMOG). These values converted to volatile organic compounds (VOCs) using the following equations: $VOC = 1.15 * THC$ or $VOC = NMOG * 0.99$ based on the document *Recommended Best Practice for Quantifying Speciated Organic Gas Emissions from Aircraft Equipped with Turbofan, Turbojet, and Turboprop Engines*, FAA 2009.
 - f. PM data calculated using smoke numbers and the ICAO method. The PM calculated was assumed to be PM_{10} .
 - g. PM reported in the source document was assumed to be PM_{10} .
 - h. $PM_{2.5}$ calculated as 90% of PM_{10} .
 - i. For at least one setting, the emission factors reported are an average of values provided in the source document.
 - j. Percent thrust is an estimate based on tables provided in the source document.
 - k. Fuel used for emission testing:
 - (1) Jet A
 - (2) Jet A-1
 - (3) JP-4
 - (4) JP-5
 - (5) JP-8
 - (6) JP-8+100
 - (7) AVGAS
 - (8) No data on fuel used in tests, assumed to use Kerosene-Type Jet Fuel

“(S)” – Indicates that this emission factor is from a recommended surrogate engine. See note d for details.

“(C)” – Indicates that this value was calculated using data provided by the source document.

“---” Indicates No Data Available

Table 2-10. VOC and HAP Emission Factors for Select Engines**F100-PW-100**

Power Setting			Idle	Approach	Intermediate	Military	Afterburner-5
Fuel Flowrate (lb/hr)			1127	2765	7685	10996	54007
Percent Thrust/hp			3%	13%	45%	100%	134%
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	2.35E-01	1.50E-01	1.00E-02	1.00E-02	1.00E-02
Acrolein	107-02-8	X	1.11E-01	6.00E-02	ND	ND	ND
Benzaldehyde	100-52-7		2.40E-02	1.00E-02	ND	ND	ND
Benzene	71-43-2	X	4.50E-02	2.45E-03	5.25E-04	5.01E-04	2.85E-04
1,3-Butadiene	106-99-0	X	2.93E-02	ND	ND	ND	ND
2-Butanone (MEK)	78-93-3		9.00E-03	2.00E-02	0.00E+00	0.00E+00	0.00E+00
Crotonaldehyde	4170-30-3		3.40E-02	2.00E-02	ND	ND	ND
Ethylbenzene	100-41-4	X	5.93E-03	4.44E-04	ND	3.99E-04	8.38E-05
Formaldehyde	50-00-0	X	8.61E-01	6.10E-01	2.00E-02	1.00E-02	1.00E-02
Hexanal	66-25-1		2.50E-02	3.00E-02	3.00E-02	1.00E-02	0.00E+00
Naphthalene	91-20-3	X	9.50E-02	7.49E-04	4.91E-04	3.43E-04	5.40E-04
Phenol	108-95-2	X	3.99E-02	ND	ND	ND	3.38E-03
Propanal	123-38-6	X	3.90E-02	2.00E-02	1.00E-02	4.00E-02	0.00E+00
Styrene	100-42-5	X	4.09E-03	ND	ND	ND	ND
Toluene	108-88-3	X	2.20E-02	1.73E-03	9.55E-04	9.24E-04	2.98E-04
Xylenes (mixed isomers)	1330-20-7	X	5.10E-02	7.35E-03	1.92E-03	4.55E-03	9.42E-04

Notes for F100-PW-100

SOURCE: Engine and Hush House Emission from F100-PW-100 Jet Engine Tested at Langley Air Force Base, VA Volumes I-III, November 1996.

“X” Indicates that compound is a HAP.

“---” Indicates No Data Available

ND – Compound not detected at the detection limit. Compound may be present at a value less than the detection limit

Table 2-10. VOC and HAP Emission Factors for Select Engines**F100-PW-200**

Power Setting			Idle	Approach	Intermediate	Military	Afterburner-5
Fuel Flowrate (lb/hr)			1006	3251	5651	8888	40123
Percent Thrust/hp			3%	13%	45%	100%	134%
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	2.41E-01	ND	7.00E-03	1.30E-02	1.60E-02
Acrolein	107-02-8	X	8.40E-02	ND	ND	ND	ND
Benzaldehyde	100-52-7		ND	ND	ND	ND	ND
Benzene	71-43-2	X	4.73E-02	3.87E-04	1.89E-04	4.90E-04	1.82E-04
1,3-Butadiene	106-99-0	X	1.04E-02	ND	ND	ND	ND
2-Butanone (MEK)	78-93-3		4.00E-02	ND	7.00E-03	6.00E-03	8.00E-03
Crotonaldehyde	4170-30-3		3.20E-02	ND	ND	ND	ND
Ethylbenzene	100-41-4	X	2.99E-03	1.93E-04	2.70E-04	3.44E-04	4.01E-05
Formaldehyde	50-00-0	X	7.77E-01	ND	ND	2.00E-03	2.00E-02
Hexanal	66-25-1		ND	ND	ND	ND	ND
Naphthalene	91-20-3	X	3.42E-02	2.13E-04	3.96E-04	4.01E-04	4.12E-04
Phenol	108-95-2	X	1.35E-02	ND	ND	2.68E-04	1.04E-03
Propanal	123-38-6	X	4.90E-02	ND	8.00E-03	6.00E-03	7.00E-03
Styrene	100-42-5	X	5.02E-04	ND	2.78E-04	ND	ND
Toluene	108-88-3	X	1.65E-02	7.62E-04	4.34E-04	1.08E-03	8.75E-04
Xylenes (mixed isomers)	1330-20-7	X	1.83E-02	1.68E-03	1.78E-03	2.58E-03	3.17E-04

Notes for F100-PW-200 Engine:

SOURCE: *Engine and Hush House Emissions from F100-PW-200 Jet Engine Tested at Kelly Air Force Base, TX* Volumes I-III, February 1997

“X” Indicates that compound is a HAP.

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

Table 2-10. VOC and HAP Emission Factors for Select Engines**F101-GE-102**

Power Setting			Idle	Approach	Intermediate	Military	Afterburner-1
Fuel Flowrate (lb/hr)			1117	4533	6557	7828	15314
Percent Thrust/hp			5%	47%	66%	77%	106%
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	ND	ND	ND	ND	1.77E-02
Acrolein	107-02-8	X	ND	ND	ND	ND	8.23E-02
Benzaldehyde	100-52-7		ND	ND	ND	1.93E-03	4.98E-02
Benzene	71-43-2	X	1.18E-02	7.89E-04	1.32E-03	5.48E-03	2.28E-01
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		2.28E-03	ND	ND	ND	3.30E-02
Crotonaldehyde	4170-30-3		ND	ND	ND	ND	3.59E-02
Ethylbenzene	100-41-4	X	ND	ND	ND	ND	8.60E-02
Formaldehyde	50-00-0	X	1.04E-01	5.12E-03	4.64E-03	4.43E-03	3.89E-02
Hexanal	66-25-1		ND	ND	ND	ND	1.80E-02
Naphthalene	91-20-3	X	1.79E-03	AA	ND	ND	1.27E-01
Phenol	108-95-2	X	2.29E-03	1.22E-03	ND	ND	2.71E-02
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	1.08E-03	ND	3.36E-04	ND	1.21E-02
Toluene	108-88-3	X	5.55E-03	1.50E-03	1.69E-03	1.29E-03	1.26E-01
Xylenes (mixed isomers)	1330-20-7	X	9.22E-04	4.34E-04	6.65E-04	2.45E-03	2.24E-01

Notes for F101-GE-102 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**F108-CF-100**

Power Setting			Idle	Approach	Intermediate	Military	---
Fuel Flowrate (lb/hr)			1136	2547	5650	6458	---
Percent Thrust/hp			9%	30%	70%	78%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	AA	ND	ND	ND	---
Acrolein	107-02-8	X	ND	ND	ND	ND	---
Benzaldehyde	100-52-7		ND	ND	ND	4.09E-03	---
Benzene	71-43-2	X	1.39E-02	3.39E-03	8.30E-04	5.10E-04	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		5.35E-03	ND	ND	ND	---
Crotonaldehyde	4170-30-3		ND	ND	ND	ND	---
Ethylbenzene	100-41-4	X	6.84E-04	5.53E-04	ND	ND	---
Formaldehyde	50-00-0	X	9.51E-02	1.50E-02	5.58E-03	7.01E-03	---
Hexanal	66-25-1		ND	9.66E-03	ND	ND	---
Naphthalene	91-20-3	X	2.90E-03	AA	ND	ND	---
Phenol	108-95-2	X	ND	ND	ND	ND	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	1.48E-03	ND	ND	ND	---
Toluene	108-88-3	X	8.97E-03	6.23E-03	1.42E-03	1.11E-03	---
Xylenes (mixed isomers)	1330-20-7	X	1.65E-03	1.61E-03	5.42E-04	3.36E-04	---

Notes for F108-CF-100 Engine

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**F110-GE-100**

Power Setting			Idle	Approach	Intermediate	Military	Afterburner-1
Fuel Flowrate (lb/hr)			1111	5080	7332	11358	18088
Percent Thrust/hp			3%	44%	66%	100%	113%
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	6.62E-03	ND	1.65E-04	1.44E-04	1.24E-02
Acrolein	107-02-8	X	ND	ND	ND	ND	3.90E-02
Benzaldehyde	100-52-7		3.48E-02	ND	4.26E-03	3.06E-03	7.13E-02
Benzene	71-43-2	X	2.93E-02	1.77E-03	1.59E-03	1.61E-03	1.88E-01
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		2.44E-03	ND	ND	4.55E-04	2.02E-02
Crotonaldehyde	4170-30-3		ND	ND	ND	ND	6.08E-02
Ethylbenzene	100-41-4	X	2.00E-03	3.93E-04	3.68E-04	1.69E-04	4.47E-02
Formaldehyde	50-00-0	X	1.01E-01	1.00E-02	1.94E-02	1.53E-02	1.53E-02
Hexanal	66-25-1		ND	ND	ND	ND	1.14E-02
Naphthalene	91-20-3	X	3.31E-03	AA	AA	3.31E-04	9.73E-02
Phenol	108-95-2	X	2.95E-03	ND	ND	ND	6.63E-02
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	3.69E-03	2.98E-04	4.91E-04	2.65E-04	5.71E-03
Toluene	108-88-3	X	1.10E-02	1.34E-03	1.90E-03	7.41E-04	1.40E-01
Xylenes (mixed isomers)	1330-20-7	X	4.22E-03	1.12E-03	9.70E-04	5.07E-04	8.89E-02

Notes for F110-GE-100 Engine:

SOURCE: *Aircraft Engine and APU Emissions* Testing Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**F117-PW-100**

Power Setting			Idle	Approach	Intermediate	Takeoff	---
Fuel Flowrate (lb/hr)			978	4645	10408	13905 (S)	---
Percent Thrust/hp			4%	31%	68%	---	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	1.20E-02	ND	ND	4.27E-04 (C)	---
Acrolein	107-02-8	X	ND	ND	ND	2.45E-04 (C)	---
Benzaldehyde	100-52-7		ND	3.16E-03	3.68E-03	---	---
Benzene	71-43-2	X	2.25E-02	8.90E-04	6.25E-04	1.68E-04 (C)	---
1,3-Butadiene	106-99-0	X	---	---	---	1.69E-04 (C)	---
2-Butanone (MEK)	78-93-3		ND	ND	ND	---	---
Crotonaldehyde	4170-30-3		1.20E-02	ND	ND	---	---
Ethylbenzene	100-41-4	X	2.82E-03	ND	ND	1.74E-05 (C)	---
Formaldehyde	50-00-0	X	2.36E-01	1.65E-02	9.50E-03	1.23E-03 (C)	---
Hexanal	66-25-1		ND	ND	ND	---	---
Naphthalene	91-20-3	X	2.39E-03	ND	ND	5.41E-05 (C)	---
Phenol	108-95-2	X	3.79E-03	ND	ND	7.26E-05 (C)	---
Propanal	123-38-6	X	---	---	---	7.27E-05 (C)	---
Styrene	100-42-5	X	1.55E-03	ND	ND	3.09E-05 (C)	---
Toluene	108-88-3	X	6.68E-03	1.41E-03	1.12E-03	6.42E-05 (C)	---
Xylenes (mixed isomers)	1330-20-7	X	3.27E-03	6.21E-04	5.47E-04	4.48E-05 (C)	---

Notes for F117-PW-100 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"S" Indicates a surrogate engine was used for this data.

"C" indicates this value was calculated. For VOC and HAP emission factors, these values were calculated taking the product of the VOC emission factor at the specified power setting and the mass fraction for this pollutant as given in Table 2-10

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**F118-GE-100**

Power Setting			Idle	Approach	Intermediate	Military	---
Fuel Flowrate (lb/hr)			1097	3773	6350	10887	---
Percent Thrust/hp			---	---	---	---	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	7.86E-03	ND	ND	ND	---
Acrolein	107-02-8	X	ND	ND	ND	ND	---
Benzaldehyde	100-52-7		6.59E-03	1.59E-03	1.65E-03	1.94E-03	---
Benzene	71-43-2	X	2.70E-02	8.58E-04	3.71E-04	3.38E-04	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		3.01E-03	ND	ND	ND	---
Crotonaldehyde	4170-30-3		ND	ND	ND	ND	---
Ethylbenzene	100-41-4	X	1.23E-03	3.72E-04	ND	ND	---
Formaldehyde	50-00-0	X	1.80E-01	1.22E-02	1.17E-02	6.55E-03	---
Hexanal	66-25-1		ND	ND	ND	ND	---
Naphthalene	91-20-3	X	AA	ND	ND	ND	---
Phenol	108-95-2	X	1.20E-03	ND	ND	ND	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	2.25E-03	ND	ND	ND	---
Toluene	108-88-3	X	9.88E-03	1.35E-03	2.98E-04	3.85E-04	---
Xylenes (mixed isomers)	1330-20-7	X	5.26E-03	1.96E-03	2.87E-04	2.05E-04	---

Notes for F118-GE-100 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**F119-PW-100**

Power Setting			Idle	Approach	Intermediate	Military	Afterburner
Fuel Flowrate (lb/hr)			1377	2740	10110	18612	50170
Percent Thrust/hp			10%	20%	70%	100%	150%
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	1.11E-01	6.75E-03	2.61E-03	8.33E-04	7.69E-05 (C)
Acrolein	107-02-8	X	3.60E-02	ND	ND	ND	4.41E-05 (C)
Benzaldehyde	100-52-7		4.15E-02	ND	ND	ND	---
Benzene	71-43-2	X	1.06E-01	3.33E-03	6.86E-04	4.88E-04	3.03E-05 (C)
1,3-Butadiene	106-99-0	X	4.99E-02	ND	4.27E-04	ND	3.04E-05 (C)
2-Butanone (MEK)	78-93-3		3.33E-02	ND	ND	ND	---
Crotonaldehyde	4170-30-3		2.66E-02	ND	ND	ND	---
Ethylbenzene	100-41-4	X	1.64E-02	2.55E-04	4.99E-04	1.34E-04	3.13E-06 (C)
Formaldehyde	50-00-0	X	9.95E-01	3.56E-02	2.44E-02	7.58E-03	2.22E-04 (C)
Hexanal	66-25-1		ND	ND	ND	ND	---
Naphthalene	91-20-3	X	---	---	---	---	9.74E-06 (C)
Phenol	108-95-2	X	---	---	---	---	1.31E-05 (C)
Propanal	123-38-6	X	1.60E-02	ND	9.78E-04	4.10E-04	1.31E-05 (C)
Styrene	100-42-5	X	3.12E-02	2.55E-04	ND	ND	5.56E-06 (C)
Toluene	108-88-3	X	6.37E-02	2.68E-04	AA	AA	1.16E-05 (C)
Xylenes (mixed isomers)	1330-20-7	X	6.71E-02	8.81E-04	4.89E-04	3.77E-04	8.06E-06 (C)

Notes for F119-PW-100 Engine:

SOURCE: *Aircraft Engine and Auxiliary Power Unit Emissions Testing* Final Report Addendum F119-PW-100 June 2002, IERA-RS-BR-SR-2002-0006

"X" Indicates that compound is a HAP.

"C" indicates this value was calculated. For VOC and HAP emission factors, these values were calculated taking the product of the VOC emission factor at the specified power setting and the mass fraction for this pollutant as given in Table 2-11

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**F404-GE-400, -F1D2 (excluding AB for the -F1D2)**

Power Setting			Idle	Approach	Intermediate	Military	Afterburner-3
Fuel Flowrate (lb/hr)			685	3111	6464	7739	15851
Percent Thrust/hp			6%	38%	79%	91%	114%
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	5.69E-02	ND	ND	ND	3.38E-02
Acrolein	107-02-8	X	1.71E-01	ND	ND	ND	1.44E-01
Benzaldehyde	100-52-7		1.31E-01	ND	1.70E-03	ND	1.32E-01
Benzene	71-43-2	X	5.12E-01	7.56E-04	6.45E-04	7.38E-04	3.70E-01
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		2.31E-02	ND	ND	ND	2.74E-02
Crotonaldehyde	4170-30-3		9.14E-02	ND	ND	ND	8.45E-02
Ethylbenzene	100-41-4	X	7.48E-02	4.84E-04	3.53E-04	ND	4.86E-02
Formaldehyde	50-00-0	X	1.14E+00	1.67E-02	2.17E-02	9.02E-03	3.74E-02
Hexanal	66-25-1		ND	ND	ND	ND	1.26E-02
Naphthalene	91-20-3	X	1.31E-01	3.10E-04	7.04E-05	1.03E-04	7.32E-02
Phenol	108-95-2	X	1.15E-01	ND	ND	ND	6.69E-02
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	8.66E-02	ND	ND	ND	4.90E-03
Toluene	108-88-3	X	2.60E-01	8.73E-04	1.07E-03	6.61E-04	1.78E-01
Xylenes (mixed isomers)	1330-20-7	X	2.49E-01	2.64E-03	1.97E-03	1.01E-03	1.42E-01

Notes for F404-GE-400, -F1D2 Engines:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

The F404-GE-F1D2 is a non-afterburning version of the F404-GE-400 and has the same emissions (without the afterburner setting) as the F404-GE-400.

Table 2-10. VOC and HAP Emission Factors for Select Engines**GTCP85-180**

Power Setting			Constant	---	---	---	---
Fuel Flowrate (lb/hr)			270	---	---	---	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	2.09E-03	---	---	---	---
Acrolein	107-02-8	X	3.04E-04	---	---	---	---
Benzaldehyde	100-52-7		ND	---	---	---	---
Benzene	71-43-2	X	1.50E-02	---	---	---	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		9.96E-04	---	---	---	---
Crotonaldehyde	4170-30-3		5.25E-04	---	---	---	---
Ethylbenzene	100-41-4	X	1.20E-04	---	---	---	---
Formaldehyde	50-00-0	X	2.03E-02	---	---	---	---
Hexanal	66-25-1		ND	---	---	---	---
Naphthalene	91-20-3	X	AA	---	---	---	---
Phenol	108-95-2	X	1.44E-04	---	---	---	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	1.91E-04	---	---	---	---
Toluene	108-88-3	X	2.94E-03	---	---	---	---
Xylenes (mixed isomers)	1330-20-7	X	2.65E-03	---	---	---	---

Notes for GTCP85-180 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**GTCP165-1**

Power Setting			Constant	---	---	---	---
Fuel Flowrate (lb/hr)			273	---	---	---	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	5.61E-03	---	---	---	---
Acrolein	107-02-8	X	1.21E-02	---	---	---	---
Benzaldehyde	100-52-7		1.26E-02	---	---	---	---
Benzene	71-43-2	X	3.79E-02	---	---	---	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		2.77E-03	---	---	---	---
Crotonaldehyde	4170-30-3		5.83E-03	---	---	---	---
Ethylbenzene	100-41-4	X	8.63E-04	---	---	---	---
Formaldehyde	50-00-0	X	1.88E-02	---	---	---	---
Hexanal	66-25-1		ND	---	---	---	---
Naphthalene	91-20-3	X	5.54E-03	---	---	---	---
Phenol	108-95-2	X	4.48E-03	---	---	---	---
Propanal	123-38-6	X	--	---	---	---	---
Styrene	100-42-5	X	2.24E-03	---	---	---	---
Toluene	108-88-3	X	1.87E-02	---	---	---	---
Xylenes (mixed isomers)	1330-20-7	X	6.01E-03	---	---	---	---

Notes for GTCP165-1 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**J69-T-25**

Power Setting			Idle	Approach	Intermediate	Military	---
Fuel Flowrate (lb/hr)			167	568 (C)	872	1085	---
Percent Thrust/hp			4%	30%	63%	84%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	9.76E-02	5.98E-03 (C)	2.12E-03	ND	---
Acrolein	107-02-8	X	1.96E-01	3.43E-03 (C)	ND	ND	---
Benzaldehyde	100-52-7		1.04E-01	---	ND	ND	---
Benzene	71-43-2	X	1.89E-01	2.35E-03 (C)	3.47E-03	1.86E-03	---
1,3-Butadiene	106-99-0	X	---	2.36E-03 (C)	---	---	---
2-Butanone (MEK)	78-93-3		2.41E-02	---	8.70E-04	8.79E-04	---
Crotonaldehyde	4170-30-3		1.22E-01	---	ND	ND	---
Ethylbenzene	100-41-4	X	2.03E-02	2.44E-04 (C)	ND	ND	---
Formaldehyde	50-00-0	X	9.16E-01	1.72E-02 (C)	2.72E-02	1.16E-02	---
Hexanal	66-25-1		ND	---	ND	ND	---
Naphthalene	91-20-3	X	3.54E-02	7.57E-04 (C)	3.41E-04	2.22E-04	---
Phenol	108-95-2	X	2.85E-02	1.02E-03 (C)	9.86E-04	ND	---
Propanal	123-38-6	X	---	1.02E-03 (C)	---	---	---
Styrene	100-42-5	X	2.72E-02	4.33E-04 (C)	ND	ND	---
Toluene	108-88-3	X	1.12E-01	8.99E-04 (C)	1.56E-03	8.29E-04	---
Xylenes (mixed isomers)	1330-20-7	X	8.96E-02	6.27E-04 (C)	2.79E-03	4.94E-04	---

Notes for J69-T-25 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"C" indicates this value was calculated. For VOC and HAP emission factors, these values were calculated taking the product of the VOC emission factor at the specified power setting and the mass fraction for this pollutant as given in Table 2-11

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**J85-GE-5A**

Power Setting			Idle	Approach	Intermediate	Military	Afterburner-1
Fuel Flowrate (lb/hr)			434	875 (C)	950	2740	8138
Percent Thrust/hp			4%	13% (C)	15%	88%	116%
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	1.18E-01	5.60E-02 (C)	ND	ND	ND
Acrolein	107-02-8	X	2.70E-01	3.21E-02 (C)	ND	ND	ND
Benzaldehyde	100-52-7		1.10E-01	---	ND	ND	ND
Benzene	71-43-2	X	1.48E-01	2.20E-02 (C)	1.34E-01	1.14E-02	6.84E-03
1,3-Butadiene	106-99-0	X	---	2.21E-02 (C)	---	---	---
2-Butanone (MEK)	78-93-3		2.88E-02	---	9.09E-03	ND	3.27E-04
Crotonaldehyde	4170-30-3		1.34E-01	---	ND	ND	ND
Ethylbenzene	100-41-4	X	3.06E-02	2.28E-03 (C)	8.80E-03	3.75E-04	5.24E-04
Formaldehyde	50-00-0	X	2.26E-01	1.61E-01 (C)	5.45E-01	7.37E-02	2.40E-02
Hexanal	66-25-1		ND	---	ND	ND	ND
Naphthalene	91-20-3	X	9.65E-02	7.09E-03 (C)	1.28E-02	1.27E-03	8.16E-04
Phenol	108-95-2	X	7.17E-02	9.51E-03 (C)	1.24E-02	1.52E-03	9.39E-04
Propanal	123-38-6	X	---	9.52E-03 (C)	---	---	---
Styrene	100-42-5	X	4.17E-02	4.05E-03 (C)	1.29E-02	5.02E-04	2.85E-04
Toluene	108-88-3	X	1.67E-01	8.41E-03 (C)	4.91E-02	3.23E-03	1.74E-03
Xylenes (mixed isomers)	1330-20-7	X	1.37E-01	5.87E-03 (C)	3.62E-02	1.78E-03	2.78E-03

Notes for J85-GE-5A Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"C" indicates this value was calculated. For VOC and HAP emission factors, these values were calculated taking the product of the VOC emission factor at the specified power setting and the mass fraction for this pollutant as given in Table 2-11

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**J85-GE-5M**

Power Setting			Idle	Approach	Intermediate	Military	---
Fuel Flowrate (lb/hr)			525	703 (C)	1045	2550	---
Percent Thrust/hp			---	---	---	---	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	2.44E-01	6.41E-02 (C)	1.91E-02	1.57E-03	---
Acrolein	107-02-8	X	3.14E-01	3.67E-02 (C)	1.24E-02	1.18E-03	---
Benzaldehyde	100-52-7		7.81E-02	---	1.24E-02	1.18E-03	---
Benzene	71-43-2	X	3.05E-02	2.52E-02 (C)	2.34E-02	2.56E-03	---
1,3-Butadiene	106-99-0	X	1.20E-02	2.53E-02 (C)	6.02E-03	ND	---
2-Butanone (MEK)	78-93-3		3.94E-02	---	6.77E-03	9.29E-04	---
Crotonaldehyde	4170-30-3		1.18E-01	---	1.24E-02	1.18E-03	---
Ethylbenzene	100-41-4	X	7.36E-03	2.61E-03 (C)	2.38E-03	8.21E-05	---
Formaldehyde	50-00-0	X	2.27E+00	1.85E-01 (C)	3.48E-01	2.39E-02	---
Hexanal	66-25-1		7.81E-02	---	1.24E-02	1.18E-03	---
Naphthalene	91-20-3	X	8.29E-02	8.12E-03 (C)	ND	ND	---
Phenol	108-95-2	X	---	1.09E-02 (C)	---	---	---
Propanal	123-38-6	X	7.81E-02	1.09E-02 (C)	1.24E-02	1.18E-03	---
Styrene	100-42-5	X	7.88E-03	4.64E-03 (C)	2.44E-03	1.08E-04	---
Toluene	108-88-3	X	2.76E-02	9.63E-03 (C)	1.14E-02	9.14E-04	---
Xylenes (mixed isomers)	1330-20-7	X	4.04E-02	6.72E-03 (C)	1.25E-02	6.65E-04	---

Notes for J85-GE-5M Engine:

SOURCE: *Clean Air Act Emissions Testing of the T-38C Aircraft Engines* September 2002, IERA-RS-BR-SR-2003-0001

"X" Indicates that compound is a HAP.

"C" indicates this value was calculated. For VOC and HAP emission factors, these values were calculated taking the product of the VOC emission factor at the specified power setting and the mass fraction for this pollutant as given in Table 2-11

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**PT6A-68**

Power Setting			Ground Idle	Flight Idle	Descend	Approach	Max. Continuous
Fuel Flowrate (lb/hr)			156	180	328	449	612
Percent Thrust/hp			2%	3%	19%	46%	88%
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	2.99E-01	3.47E-01	8.78E-02	1.04E-02	2.17E-03
Acrolein	107-02-8	X	7.16E-01	6.00E-01	5.06E-02	ND	ND
Benzaldehyde	100-52-7		2.34E-02	1.73E-01	4.45E-02	8.01E-03	ND
Benzene	71-43-2	X	1.67E-01	5.22E-01	8.49E-02	1.04E-02	8.63E-04
1,3-Butadiene	106-99-0	X	1.49E-01	2.67E-01	1.10E-02	ND	ND
2-Butanone (MEK)	78-93-3		3.71E-01	ND	2.65E-03	ND	ND
Crotonaldehyde	4170-30-3		2.08E-01	1.73E-01	ND	ND	ND
Ethylbenzene	100-41-4	X	4.76E-02	4.94E-02	2.52E-03	2.09E-04	1.07E-04
Formaldehyde	50-00-0	X	4.81E+00	5.27E+00	2.93E+00	6.73E-01	2.21E-02
Hexanal	66-25-1		1.56E-01	ND	ND	ND	ND
Naphthalene	91-20-3	X	ND	1.16E-02	ND	ND	7.68E-02
Phenol	108-95-2	X	---	---	---	---	---
Propanal	123-38-6	X	1.30E-01	1.08E-01	ND	ND	ND
Styrene	100-42-5	X	4.68E-02	3.80E-02	8.05E-03	ND	ND
Toluene	108-88-3	X	1.65E-01	2.42E-01	2.46E-02	2.37E-03	5.18E-04
Xylenes (mixed isomers)	1330-20-7	X	1.73E-01	1.97E-01	8.95E-03	8.60E-04	1.44E-03

Notes for PT6A-68 Engine:

SOURCE: *PT6A-68 Emissions Measurement Program Summary* September 2002, IERA-RS-BR-SR-2003-0003

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**T56-A-7**

Power Setting			Idle	Approach	Intermediate	Military	---
Fuel Flowrate (lb/hr)			724	880	1742	2262	---
Percent Thrust/hp			5%	15%	61%	90%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	1.04E-02	AA	5.43E-04	1.64E-04	---
Acrolein	107-02-8	X	ND	ND	ND	ND	---
Benzaldehyde	100-52-7		1.13E-03	8.76E-04	4.67E-04	ND	---
Benzene	71-43-2	X	4.77E-03	4.45E-03	1.34E-03	7.84E-04	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		4.63E-04	3.62E-04	ND	1.75E-04	---
Crotonaldehyde	4170-30-3		ND	ND	ND	ND	---
Ethylbenzene	100-41-4	X	ND	4.06E-04	2.07E-04	1.80E-04	---
Formaldehyde	50-00-0	X	4.10E-02	3.34E-02	9.30E-03	3.81E-04	---
Hexanal	66-25-1		ND	ND	ND	ND	---
Naphthalene	91-20-3	X	1.16E-03	1.03E-03	1.77E-04	1.34E-04	---
Phenol	108-95-2	X	ND	ND	ND	ND	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	7.09E-04	3.67E-04	ND	ND	---
Toluene	108-88-3	X	2.71E-03	2.29E-03	9.61E-04	2.53E-05	---
Xylenes	1330-20-7	X	1.33E-03	1.05E-03	5.82E-04	8.75E-04	---

Notes for T56-A-7 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing Volumes I-III* March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**T64-GE-100**

Power Setting			Ground Idle	75% Normal	Normal	Military	---
Fuel Flowrate (lb/hr)			298	941	1698	1848	---
Percent Thrust/hp			2%	34%	81%	90%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	5.07E-02	1.20E-03	ND	ND	---
Acrolein	107-02-8	X	1.14E-01	1.37E-03	ND	ND	---
Benzaldehyde	100-52-7		5.90E-02	1.86E-03	ND	ND	---
Benzene	71-43-2	X	2.16E-01	1.26E-02	4.00E-03	3.88E-03	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		2.96E-02	2.33E-04	ND	ND	---
Crotonaldehyde	4170-30-3		5.07E-02	1.01E-03	ND	ND	---
Ethylbenzene	100-41-4	X	2.24E-02	3.07E-04	ND	ND	---
Formaldehyde	50-00-0	X	7.15E-02	1.17E-02	3.18E-04	1.83E-04	---
Hexanal	66-25-1		1.81E-02	3.83E-05	ND	ND	---
Naphthalene	91-20-3	X	5.44E-02	1.52E-03	4.96E-06	2.50E-03	---
Phenol	108-95-2	X	8.26E-03	ND	ND	ND	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	4.11E-02	5.12E-04	ND	ND	---
Toluene	108-88-3	X	1.02E-01	2.88E-03	1.33E-04	1.27E-04	---
Xylenes (mixed isomers)	1330-20-7	X	6.45E-02	9.68E-04	ND	ND	---

Notes for T64-GE-100 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**T700-GE-700**

Power Setting			Ground Idle	Flight Idle	Flight Max	Overspeed	---
Fuel Flowrate (lb/hr)			134	469	626	725	---
Percent Thrust/hp			4%	56%	82%	100%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	1.81E-02	3.03E-04	2.00E-04	ND	---
Acrolein	107-02-8	X	7.23E-03	9.68E-05	1.10E-05	ND	---
Benzaldehyde	100-52-7		ND	9.00E-04	4.15E-04	ND	---
Benzene	71-43-2	X	4.87E-02	2.97E-04	3.12E-04	3.00E-04	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		2.00E-03	3.26E-04	ND	ND	---
Crotonaldehyde	4170-30-3		9.93E-03	ND	ND	ND	---
Ethylbenzene	100-41-4	X	2.25E-03	2.57E-04	ND	1.99E-04	---
Formaldehyde	50-00-0	X	2.19E-01	4.09E-03	2.09E-03	4.81E-03	---
Hexanal	66-25-1		ND	ND	ND	ND	---
Naphthalene	91-20-3	X	7.33E-03	1.56E-04	6.73E-05	2.91E-05	---
Phenol	108-95-2	X	6.24E-03	ND	ND	ND	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	5.16E-03	ND	ND	ND	---
Toluene	108-88-3	X	1.28E-02	1.24E-03	AA	2.92E-04	---
Xylenes (mixed isomers)	1330-20-7	X	7.14E-03	5.69E-04	5.07E-04	1.24E-03	---

Notes for T700-GE-700 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

"X" Indicates that compound is a HAP.

"—" Indicates No Data Available

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**TF30-P-109**

Power Setting			Idle	Approach	Intermediate	Military	Afterburner
Fuel Flowrate (lb/hr)			761	1727	2921	6263	38460
Percent Thrust/hp			5%	23%	47%	99%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	4.47E-01	2.36E-01	9.00E-03	1.50E-02	6.70E-03
Acrolein	107-02-8	X	3.50E-02	2.30E-02	ND	ND	ND
Benzaldehyde	100-52-7		1.90E-02	7.00E-03	ND	ND	ND
Benzene	71-43-2	X	1.95E-01	5.16E-02	4.39E-03	3.74E-04	6.85E-04
1,3-Butadiene	106-99-0	X	8.34E-02	2.89E-02	ND	ND	ND
2-Butanone (MEK)	78-93-3		2.00E-02	3.60E-02	1.10E-02	4.00E-03	2.50E-03
Crotonaldehyde	4170-30-3		6.20E-02	3.30E-02	ND	ND	ND
Ethylbenzene	100-41-4	X	4.36E-02	4.99E-03	5.67E-04	3.65E-04	6.31E-05
Formaldehyde	50-00-0	X	1.82E+00	7.52E-01	4.70E-02	3.00E-03	2.44E-02
Hexanal	66-25-1		8.00E-02	1.85E-01	2.02E-01	1.17E-01	4.41E-02
Naphthalene	91-20-3	X	1.13E-01	2.24E-02	3.59E-03	8.94E-04	8.44E-04
Phenol	108-95-2	X	7.12E-02	1.70E-02	1.69E-03	2.37E-04	7.38E-04
Propanal	123-38-6	X	5.50E-02	2.50E-02	ND	ND	ND
Styrene	100-42-5	X	2.95E-02	1.28E-02	3.95E-04	ND	3.13E-05
Toluene	108-88-3	X	1.61E-01	2.45E-02	2.12E-03	8.63E-04	2.77E-04
Xylenes (mixed isomers)	1330-20-7	X	1.95E-01	1.77E-02	2.64E-03	1.77E-03	2.68E-04

Notes for TF30-P-109 Engine:

SOURCE: *Engine and Hush House Emissions from a TF30-P109 Jet Engine Tested at Cannon Air Force Base, NM*

"—" Indicates No Data Available

"X" Indicates that compound is a HAP.

ND - Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA - Compound detected was less than the Ambient Air concentration resulting in a negative emission factor when the Ambient Air Concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**TF33-P-7/7A**

Power Setting			Idle	Approach	Intermediate	Military	---
Fuel Flowrate (lb/hr)			1093	4884	6356	8264	---
Percent Thrust/hp			4%	45%	58%	73%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	ND	8.72E-03	ND	ND	---
Acrolein	107-02-8	X	ND	ND	ND	ND	---
Benzaldehyde	100-52-7		ND	ND	ND	ND	---
Benzene	71-43-2	X	5.23E-01	2.84E-02	6.49E-03	1.47E-03	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		1.89E-02	7.11E-03	ND	ND	---
Crotonaldehyde	4170-30-3		ND	ND	ND	ND	---
Ethylbenzene	100-41-4	X	2.00E-01	2.04E-03	5.11E-04	3.88E-04	---
Formaldehyde	50-00-0	X	2.31E+00	1.26E-01	2.80E-02	5.28E-03	---
Hexanal	66-25-1		ND	ND	ND	ND	---
Naphthalene	91-20-3	X	3.71E-01	3.13E-03	3.54E-04	AA	---
Phenol	108-95-2	X	1.67E-01	3.54E-03	1.28E-03	ND	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	2.42E-01	3.43E-03	7.46E-04	ND	---
Toluene	108-88-3	X	3.73E-01	1.01E-02	2.54E-03	2.27E-03	---
Xylenes (mixed isomers)	1330-20-7	X	4.62E-01	4.82E-03	1.34E-03	1.64E-03	---

Notes for TF33-P-7/7A Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing Volumes I-III March 1999*, IERA-RS-BR-TR-1999-0006

“X” Indicates that compound is a HAP.

“---” Indicates No Data Available

ND – Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA – Compound detected was less than the ambient air concentration resulting in a negative emission factor when the ambient air concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**TF33-P-102**

Power Setting			Idle	Approach	Intermediate	Military	---
Fuel Flowrate (lb/hr)			1114	4737	5782	7561	---
Percent Thrust/hp			5%	49%	59%	75%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	ND	ND	ND	ND	---
Acrolein	107-02-8	X	ND	ND	ND	ND	---
Benzaldehyde	100-52-7		ND	ND	ND	ND	---
Benzene	71-43-2	X	7.09E-01	1.14E-02	4.05E-03	9.53E-04	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		3.64E-02	1.59E-03	7.45E-04	ND	---
Crotonaldehyde	4170-30-3		ND	ND	ND	ND	---
Ethylbenzene	100-41-4	X	8.63E-02	8.23E-04	4.79E-04	ND	---
Formaldehyde	50-00-0	X	9.43E-01	6.65E-02	2.27E-02	ND	---
Hexanal	66-25-1		ND	ND	ND	ND	---
Naphthalene	91-20-3	X	2.15E-01	1.10E-03	7.35E-04	1.30E-04	---
Phenol	108-95-2	X	8.41E-02	1.76E-03	ND	ND	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	1.09E-01	1.18E-03	4.38E-04	ND	---
Toluene	108-88-3	X	2.65E-01	2.28E-03	2.65E-03	9.50E-04	---
Xylenes (mixed isomers)	1330-20-7	X	1.98E-01	2.40E-03	1.04E-03	1.08E-03	---

Notes for TF33-P-102 Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

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“---” Indicates No Data Available

ND – Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA – Compound detected was less than the ambient air concentration resulting in a negative emission factor when the ambient air concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**TF34-GE-100A**

Power Setting			Idle	Approach	Intermediate	Military	---
Fuel Flowrate (lb/hr)			498	933	1512	2628	---
Percent Thrust/hp			7%	28%	46%	78%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	1.27E-01	3.08E-02	ND	ND	---
Acrolein	107-02-8	X	6.10E-02	1.36E-02	5.42E-03	2.96E-03	---
Benzaldehyde	100-52-7		5.10E-02	2.03E-02	7.80E-03	5.94E-03	---
Benzene	71-43-2	X	2.81E-01	6.37E-02	9.57E-03	4.27E-03	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		1.50E-02	5.94E-03	ND	ND	---
Crotonaldehyde	4170-30-3		5.10E-02	ND	ND	ND	---
Ethylbenzene	100-41-4	X	2.62E-02	3.50E-03	ND	6.82E-04	---
Formaldehyde	50-00-0	X	1.22E+00	5.31E-01	6.61E-02	2.82E-02	---
Hexanal	66-25-1		ND	ND	ND	ND	---
Naphthalene	91-20-3	X	4.48E-02	8.51E-03	1.59E-03	3.20E-05	---
Phenol	108-95-2	X	2.73E-02	6.61E-01	ND	ND	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	4.41E-02	6.72E-03	ND	ND	---
Toluene	108-88-3	X	1.12E-01	1.40E-02	3.21E-03	1.34E-04	---
Xylenes (mixed isomers)	1330-20-7	X	8.17E-02	1.16E-02	1.52E-03	3.14E-03	---

Notes for TF34-GE-100A Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing* Volumes I-III March 1999, IERA-RS-BR-TR-1999-0006

“X” Indicates that compound is a HAP.

“---” Indicates No Data Available

ND – Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA – Compound detected was less than the ambient air concentration resulting in a negative emission factor when the ambient air concentration was removed.

Table 2-10. VOC and HAP Emission Factors for Select Engines**TF39-GE-1C**

Power Setting			Idle	Approach	Intermediate	Military	---
Fuel Flowrate (lb/hr)			1448	10477	12541	13862	---
Percent Thrust/hp			7%	76%	87%	94%	---
Compound Name	CAS Number	HAP	Emission Factors (lb/1000lb fuel burned)				
Acetaldehyde	75-07-0	X	2.12E-01	3.16E-03	2.61E-04	6.17E-04	---
Acrolein	107-02-8	X	2.06E-01	ND	ND	ND	---
Benzaldehyde	100-52-7		1.42E-01	1.15E-03	1.88E-03	1.70E-03	---
Benzene	71-43-2	X	3.58E-01	1.56E-03	1.41E-03	2.16E-03	---
1,3-Butadiene	106-99-0	X	---	---	---	---	---
2-Butanone (MEK)	78-93-3		2.59E-02	ND	1.16E-03	2.46E-04	---
Crotonaldehyde	4170-30-3		8.77E-02	ND	ND	ND	---
Ethylbenzene	100-41-4	X	2.01E-02	ND	4.99E-04	AA	---
Formaldehyde	50-00-0	X	1.42E+00	8.15E-03	4.90E-03	1.05E-02	---
Hexanal	66-25-1		ND	ND	ND	ND	---
Naphthalene	91-20-3	X	9.74E-02	AA	AA	AA	---
Phenol	108-95-2	X	4.38E-02	ND	ND	ND	---
Propanal	123-38-6	X	---	---	---	---	---
Styrene	100-42-5	X	4.49E-02	ND	ND	6.94E-04	---
Toluene	108-88-3	X	1.28E-01	AA	AA	AA	---
Xylenes (mixed isomers)	1330-20-7	X	5.82E-02	9.26E-04	2.58E-03	AA	---

Notes for TF39-GE-1C Engine:

SOURCE: *Aircraft Engine and APU Emissions Testing Volumes I-III March 1999*, IERA-RS-BR-TR-1999-0006

“X” Indicates that compound is a HAP.

“---” Indicates No Data Available

ND – Compound not detected at the detection limit. Compound may be present at a value less than the detection limit.

AA – Compound detected was less than the ambient air concentration resulting in a negative emission factor when the ambient air concentration was removed.

Table 2-11. HAP Mass Fractions in Aircraft Engine Exhaust

Compound Name	CAS	Mass Fraction
Acetaldehyde	75-07-0	0.04272
Acrolein	107-02-8	0.02449
Benzene	71-43-2	0.01681
1,3-Butadiene	106-99-0	0.01687
Ethylbenzene	100-41-4	0.00174
Formaldehyde	50-00-0	0.1231
Isopropylbenzene	98-82-8	0.00003
Methanol	67-56-1	0.01805
1-Methylnaphthalene	90-12-0	0.00247
2-Methylnaphthalene	91-57-6	0.00206
Naphthalene	91-20-3	0.00541
Phenol	108-95-2	0.00726
Propionaldehyde	123-38-6	0.00727
Styrene	100-42-5	0.00309
Toluene	108-88-3	0.00642
Xylenes - Mixed isomers	1330-20-7	0.00448

SOURCE: Recommended Best Practice for Quantifying Speciated Organic Gas Emissions from Aircraft Equipped with Turbofan, Turbojet, and Turboprop Engines, FAA, 2009

Table 2-12. Criteria Pollutant and GHG Emission Factors for APUs

APU Model	Manufacturer	Emission Factors in lb/hr of Operation						
		NO _x	CO	VOC	SO _x ^a	PM ₁₀	PM _{2.5}	CO ₂ e ^b
4501687C ^c	Hamilton Sundstrand	1.38	1.07	0.01	0.23	---	---	740.44
GTC 85-72 (200 hp) ^d	Honeywell Inc.	0.81	3.11	0.03	0.23	---	---	674.49
GTCP 30-300	Honeywell Inc.	2.85	---	0.06	0.30	---	---	---
GTCP 36-6 ^c	Honeywell Inc.	0.87	1.41	0.06	0.16	---	---	---
GTCP 36-50	Honeywell Inc.	4.25	11.65	0.05	0.15	---	---	---
GTCP 36-300 (80 hp)	Honeywell Inc.	2.85	0.58 ^f	0.06	0.30	---	---	---
GTCP 85 (200 hp)	Honeywell Inc.	1.12	---	0.24	0.25	---	---	---
GTCP 85-98ck (200 hp)	Honeywell Inc.	1.12	4.23 ^f	0.24	0.25	---	---	---
GTCP 85-98d	Honeywell Inc.	1.78	1.64	0.04	0.32	---	---	---
GTCP 85-129 (200 hp)	Honeywell Inc.	1.12	4.23 ^f	0.24	0.25	---	---	---
GTCP 85-129ck (200 hp)	Honeywell Inc.	1.12	4.23 ^f	0.24	0.25	---	---	---
GTCP 85-180 ^g	Honeywell Inc.	1.28	2.05	0.01	0.29	0.05	0.01	906.25
GTCP 95-2 (300 hp) ^d	Honeywell Inc.	1.65	0.94	0.11	0.31	---	---	948.89
GTCP 100-54 (400 hp) ^d	Honeywell Inc.	2.46	2.43	0.07	0.44	---	---	1337.86
GTCP 165-1 ^g	Honeywell Inc.	1.22	3.76	0.49	0.29	0.13	0.04	910.75
GTCP 331-200/250 (143 hp)	Honeywell Inc.	2.55	---	0.12	0.29	---	---	---
GTCP 331-200ER (143 hp)	Honeywell Inc.	2.55	1.11 ^f	0.12	0.29	---	---	---
GTCP 331-500 (143 hp)	Honeywell Inc.	7.86	0.05 ^f	0.07	0.58	---	---	---
GTCP 660-4 (300 hp)	Honeywell Inc.	4.60	7.46 ^f	0.24	0.93	---	---	---
PW901A	Pratt & Whitney	2.72	14.48 ^f	1.29	0.93	---	---	---
ST-6 ^h	United Technologies Corporation	3.92	0.02	0.01	0.47	---	---	---
T-62T-27 (100 hp) ^d	United Technologies Corporation	0.40	4.36	0.79	0.11	---	---	344.76
T-62T-47C1 ^f	United Technologies Corporation	1.01	9.46	0.04	0.25	---	---	---
TSCP 700 (142 hp)	Honeywell Inc.	2.77	---	0.08	0.35	---	---	---
TSCP 700-4B (142 hp)	Honeywell Inc.	2.77	0.48 ^f	0.08	0.35	---	---	---
WR27-1 ^d	Williams International	0.65	0.79	0.03	0.15	---	---	444.77

Notes for Table 2-12 on following page

Notes for Table 2-12:

SOURCE (unless otherwise stated): Technical Data to Support FAA's Advisory Circular on Reducing Emissions from Commercial Aviation memorandum. This document states the original source as Proposed Federal Implementation Plan for California, Docket No. A-94-09 memorandum.

- a. SO_x Emission factors assume that JP-8, with an average wt. % of 0.054 Sulfur, is used to power the APU.
- b. Greenhouse Gas (GHG) emission factors are presented in equivalent CO₂ (CO₂e). Original source document provided emission factors for CO₂ and CH₄. CH₄ emissions were then multiplied by the global warming potential (GWP) which is stated as 25 per Table A-1 to Subpart A of 40 CFR 98.
- c. SOURCE: Emission factors for this unit calculated using collected field data
- d. SOURCE: Summary Tables of Gaseous and Particulate Emissions from Aircraft Engines, June 1990.
- e. SOURCE: *Air Pollutant Emission Factors for Military and Civil Aircraft*, October 1978.
- f. SOURCE: Technical Data to Support FAA's Advisory Circular on Reducing Emissions from Commercial Aviation memorandum. This document states the original source as United Air Lines' APU Emissions Database (note: data for LAX 1991)
- g. SOURCE: Aircraft Engine and Auxiliary Power Unit Emissions Testing Volume I -III, March 1999
- h. SOURCE: Technical Data to Support FAA's Advisory Circular on Reducing Emissions from Commercial Aviation memorandum. This document states the original source as AIA Exhaust Emissions Data Sheet letter

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3.0 FLIGHTLINE GROUND SUPPORT EQUIPMENT (AGE)

3.1 Introduction

Most DAF bases operate a variety of Ground Support Equipment (GSE) or Aerospace Ground Equipment (AGE) to support flightline operations and service aircraft. Emissions from AGE or GSE vary by device type, time of operation, and fuel flow rate. For simplicity, both GSE and AGE are generically referred to as GSE in this section. Common examples of military GSE include generators, air conditioners, start carts, heaters, hydraulic test stands, portable light units, air compressors, cargo and bomb lifts, jacking units, aircraft deicers, tractor tugs, and other service equipment. GSE are designed to be mobile so that they can be used at any number of locations on the flightline and can be easily transported to support readiness and deployment activities around the world. Depending on whether the GSE is designed to be self-propelled, it can be categorized as either vehicular or non-vehicular in nature. Although essentially non-road engines, this section addresses emissions from flightline GSE only. Other non-road engines and equipment are addressed separately in this document in the NONROAD ENGINES AND EQUIPMENT (NRDE) chapter. Emissions of concern from the operation of GSE include the criteria pollutants and several HAPs that are commonly associated with fuel combustion processes (including, but not limited to: benzene, naphthalene, and 1,3-butadiene).

GSE operated on a DAF installation are powered by internal combustion engines fueled by JP-8, diesel fuel, motor gasoline (MOGAS), Compressed Natural Gas (CNG), or Liquefied Petroleum Gas (LPG). The process in which fuel ignition occurs in the engine determines whether GSE is categorized as Compression Ignition (CI) or Spark Ignition (SI) in nature. CI GSE include turbine engines fueled with JP-8, and non-turbine engines fueled with diesel. SI GSE may be fueled with MOGAS, CNG, or LPG.

Individual pollutant emissions from each type of GSE are usually calculated using operating time and/or fuel consumption information applied across an operational parameter such as an LTO cycle or over an inventory period (typically one year). Military aircraft and GSE combinations and their associated EF data are provided in Table 3-2. This information was obtained from a survey developed and distributed by Air Force Institute for Operational Health (AFIOH/RSEQ) to various flight squadrons and AGE shops throughout the DAF (Wade 2004). **These aircraft-GSE combinations are provided as a guideline though do not necessarily reflect all potential combinations.** In instances where military GSE information was unavailable, data was obtained from the FAA Emissions and Dispersion Modeling System (EDMS). Common, non-model specific GSE data from EDMS are provided in Table 3-5.

While most DAF GSE is intended to be mobile by design, there may be instances where the regular use of the equipment results in it not being moved at least once in a 12-month

period. Where the GSE is not physically moved during a 12-month consecutive period, or where it is replaced in the same location, by GSE, then the GSE is deemed a stationary source by regulation and must be reviewed for stationary permit requirements. If an air program manager is uncertain whether a piece of GSE should be considered mobile or stationary for regulatory purposes, he/she should coordinate with their Major Command for assistance and consider consulting with the Air Force Regional Environmental Offices to obtain their insight on state-specific requirements as they may apply to GSE.

3.2 Emission Factors

EFs for flightline GSE have been developed through measurement and testing and are provided in a variety of sources. EFs may be model-specific and provided in units of pounds per hour (lb/hr) as provided in Table 3-3, based on the GSE and fuel type as shown in Table 3-6. For equipment that use either diesel or JP-8, the High Heat Value (HHV) of diesel was used for unit conversions where necessary. Diesel's HHV was used because it is higher than JP-8's HHV, and thus conversion will result in more conservative estimates. EFs are selected based on the calculation method as described in the next section.

3.3 Emissions Calculation

Information commonly collected and used to calculate emissions from GSE operations include the type and model of equipment, the operating time, type and volume of fuel consumed, and engine operating load and rated power. There are multiple methods used for calculation of emissions, depending on the available information.

3.3.1 Sortie/LTO Method (Preferred Method)

The Sortie/LTO Method is the Air Force's default method and should be used for all GSE that are included in Table 3-2 and Table 3-3. This method involves applying an EF to the operating time of each GSE during a set period (e.g., an aircraft sortie or LTO cycle, annually, or another inventory period). Emissions using this method are calculated as follows:

$$E(Pol) = OT \times EF(Pol) \times N$$

Equation 3-1

Where,

- E(Pol)** = Emission of each individual pollutant for each piece of GSE (lb/yr)
- EF(Pol)** = Emission factor of each pollutant (lb/hr)
- OT** = Operating time of GSE per sortie (hr/sortie)
- N** = Number of sorties per year (sortie/yr)

The EFs and operating times for calculating emissions for GSE using the sortie/LTO method may be found in the following tables:

- Operating times per sortie/LTO for each GSE and associated aircraft are in Table 3-2.
- EFs for each GSE are found in Table 3-3.

3.3.2 Horsepower/Load Factor Method

The horsepower/load factor method is an alternative method for emissions calculations using the engine's rated hp and typical load factor. The load factor is defined as the ratio of the power an engine draws while in operation to its rated power. To calculate emissions using this method, the rated horsepower, load factor, and operating time for each GSE must be known. Emissions from common, non-model specific GSE may be calculated using the data provided in Table 3-5 and Table 3-6. The following general equation is used:

$$E(Pol) = OT \times \frac{LF}{100} \times hp_{rtd} \times \frac{1}{1000} \times EF(Pol) \times N$$

Equation 3-2

Where,

E(Pol)	= Emissions of each individual pollutant (lb/yr)
OT	= Operating time (hr/unit)
LF	= Load factor (%)
100	= Factor for converting percent to a fraction (%)
hp_{rtd}	= Engine rated hp (hp)
1000	= Factor converting from hp to 10 ³ hp (hp/10 ³ hp)
EF(Pol)	= Emission factor of each pollutant (lb/10 ³ hp-hr)
N	= Number of ground support equipment used each year (units/yr)

Table 3-5 provides average operating loads for many common GSE types, however assuming a load factor of 100% will result in more conservative emissions estimates. Alternatively, the load factor may be calculated according to the following equation if the engine horsepower and horsepower under load are known:

$$LF = \frac{hp}{hp_{rtd}}$$

Equation 3-3

Where,

hp	= Engine horsepower under load (hp)

The EFs and operating times for common GSE needed to calculate emissions using the horsepower/load factor method may be found in the following tables.

- The typical commercial GSE assignments are given in Table 3-4.
- Table 3-5 provides the average rated hp for each GSE.
- EFs for common GSE are provided in a lb/10³ hp-hr basis in Table 3-6.
- Table 3-7 provides EFs for several speciated HAPs for uncontrolled diesel reciprocating internal combustion engines.

3.3.3 Fuel Consumption Method

Another method that can be used to calculate GSE emissions involves multiplying the volume of fuel consumed by an EF that is provided in terms of a mass of pollutant emitted per volume of fuel consumed such as lb/hr or gal/hr. As with the horsepower/load factor method, the fuel consumption method also requires that the user know the operating time for each GSE. The following equation can be used as an alternative method of calculating GSE HAP emissions based exclusively on fuel consumption data:

$$E(Pol) = FC \times \frac{1}{1000} \times EF(Pol) \times N$$

Equation 3-4

Where,

FC = Fuel consumption (gal/unit)

In cases where fuel consumption data is unknown, fuel consumption may be estimated using the operating time and fuel flow rate as shown:

$$FC = OT \times FFR$$

Equation 3-5

Where,

FFR = Fuel flow rate. This may be available from the manufacturer (gal/hr)

Alternatively, fuel consumption may also be estimated using engine and operating parameters including hp (if known), hours of operation, brake-specific-fuel consumption (BSFC) factor, and the heating value of the fuel. The following equation is used:

$$FC = OT \times \frac{(hp \times BSFC)}{HV}$$

Equation 3-6

Where,

BSFC = Brake specific fuel consumption (Btu/hp-hr). **Given in Table 3-1.**

HV = Heating value of the fuel (Btu/gal). **Given in Table 3-1.**

To calculate GSE emissions using the fuel consumption method, the following tables are used:

- Table 3-5 provides typical hp for common GSE.
- Table 3-7 provides the EPAs EFs for HAPs from uncontrolled diesel reciprocating internal combustion engines.

3.3.4 Calculating SO₂ Emissions

A more precise method for estimating SO₂ emissions involves applying fuel flow rate data to derive an SO₂ EF based on pounds of pollutant emitted per hour of operation (lb/hr). There is a conservative assumption that all the sulfur in the fuel is converted to SO₂ during the combustion process. Under this assumption, and with the density and sulfur content values known, a SO₂ EF is calculated using the following equation:

$$EF(SO_2) = FFR \times \rho \times \frac{S}{100} \times 2$$

Equation 3-7

Where,

EF(SO₂) = SO₂ emission factor (lb/hr)

ρ = Density of fuel (lb/gal)

S = Weight percent sulfur content of fuel (%)

100 = Factor for converting a percent to a fraction (%)

2 = Conversion factor which is the ratio of the molecular weight of SO₂ to the molecular weight of S

The value for S typically varies from supplier to supplier and the geographic location where the fuel is produced. For enhanced accuracy of the emissions inventory, the sulfur content and density of the fuel should be obtained from the fuel supplier whenever possible. In the absence of such information, the average density and sulfur content is listed in Table 3-1. The sulfur content of JP-8 varies by region, so if the region-specific sulfur content is required, then refer to Table 2-2.

Table 3-1. Fuel Data

Fuel Type	Heating Value (Btu/unit fuel) ^a	BSFC (Btu/hp-hr) ^b	Density (lb/gal) ^c	Sulfur Content (wt. %) ^c
Diesel	138,000 Btu/gal	8,089	7.14	0.025
MOGAS	125,000 Btu/gal	7,000	6.15	0.018
JP-8	124,000 Btu/gal ^d	---	6.71 ^e	0.054 ^e
LPG	92,000 Btu/gal	10,577 ^f	4.41	Negligible
CNG	1,026 Btu/ft ³	7,858	0.046	0.001

a. SOURCE (Unless otherwise noted): Table C-1 to Subpart C of 40 CFR 98.

b. SOURCE (Unless otherwise noted): *Compendium of Greenhouse Gas Emissions Methodologies for the Oil and Natural Gas Industry*, American Petroleum Institute, 2009.

c. SOURCE (Unless otherwise noted): Department of Energy, Energy Information Administration report DOE/EIA-0464/ (2005), *Household Vehicles Energy Use: Latest Data & Trends*, Appendix C, Table C4

d. SOURCE: Defense Logistics Agency, Defense Energy Support Center, *Petroleum Quality Information System Fuels Data (2005)*, April 2006.

e. SOURCE: *Petroleum Quality Information System Fuels Data*. Defense Logistics Agency, Defense Energy Support Center, 2001 – 2013. Values were calculated as the average weighted average density for years 2001 – 2013.

f. SOURCE: *Exhaust Emission Factors for Nonroad Engine Modeling: Spark Ignition*, EPA420-R-05-019, 2005.

“---” – Indicates no data available.

3.3.5 Calculating Emissions from Synthetic Aviation Fuel

On-going DoD and DAF initiatives to reduce dependency on foreign petroleum sources are expected to result in the increased use of non-petroleum fuels in a 50-50 blend with JP-8. Testing and certification of such fuels in aircraft engines indicate the blend reduces PM emissions by an average of 35%, sulfur emissions by 50%, and CO₂ emissions by 1.8% (DAF Research Laboratory 2007). Accordingly, when collecting information on GSE operations, verify the blend percentage and whether synthetic fuel was used. If a 50-50 blend was used, apply the appropriate emission reduction factors as given in Table 2-1.

3.4 Information Resources

The base AGE shop is responsible for the operation and repair of most pieces of GSE. Therefore, they should be able to provide most, if not all, of the information needed to calculate the emissions from the GSE used on the installation. In the absence of base-specific data, default EPA information can be used. In some cases, it may be necessary to contact the GSE manufacturer to obtain necessary information.

3.5 Example Calculations

The following section provides examples of how to calculate emissions from GSE operations using the various methodologies identified above and their associated equations.

3.5.1 Problem 1 – Sortie/LTO Method

A DAF base needs to calculate annual NO_x and xylene emissions from GSE operations associated with their B-1B aircraft. The following information was obtained from the base:

B-1B Aircraft	
GSE Types	A/M32A-86D Generator, A/M32A-95 Start Cart, B-1B AC unit, MJ-40 Bomb lift, NF-2 Light Cart
Sorties/year	200

Step 1 – Record the operating times and NO_x emission factors for each GSE. Since the table above does not provide specific operating times for these GSE, the typical operating times for these GSE may be used. Table 3-2 lists the operating times for the generator as **2.20 hr**, the start cart as **0.50 hr**, the AC unit as **2.40 hr**, the bomb lift as **2.50 hr**, and the light cart as **0.50 hr**. Table 3-3 has the NO_x EFs as **6.102 lb/hr** for the generator, **1.470 lb/hr** for the start cart, **7.659 lb/hr** for the AC unit, **0.340 lb/hr** for the bomb lift, and **0.110 lb/hr** for the light cart.

Step 2 – Calculate annual NO_x emissions for each GSE. Using the information in the table above, the data collected in Step 1, and Equation 3-1, the NO_x emissions for each GSE are calculated as follows:

$$E(Pol) = OT \times EF(Pol) \times N$$

$$E(NO_x)_{A/M32A-86D} = 2.20 \frac{hr}{sortie} \times 6.102 \frac{lb}{hr} \times 200 \frac{sortie}{yr} = 2,684.88 \frac{lb}{yr}$$

$$E(NO_x)_{A/M32A-95} = 0.50 \frac{hr}{sortie} \times 1.470 \frac{lb}{hr} \times 200 \frac{sortie}{yr} = 147.00 \frac{lb}{yr}$$

$$E(NO_x)_{B-1B AC Unit} = 2.40 \frac{hr}{sortie} \times 7.659 \frac{lb}{hr} \times 200 \frac{sortie}{yr} = 3,676.32 \frac{lb}{yr}$$

$$E(NO_x)_{MJ-40} = 2.50 \frac{hr}{sortie} \times 0.340 \frac{lb}{hr} \times 200 \frac{sortie}{yr} = 170.00 \frac{lb}{yr}$$

$$E(NO_x)_{NF-2} = 0.50 \frac{hr}{sortie} \times 0.110 \frac{lb}{hr} \times 200 \frac{sortie}{yr} = 11.00 \frac{lb}{yr}$$

Step 3 – Calculate total NO_x emissions. Sum the emissions from each GSE to get the total NO_x emissions for GSE used for the B-1B.

$$E(NO_x)_{Total} = (2684.88 + 147 + 3676.32 + 170 + 11) \frac{lb}{yr}$$

$$E(NO_x)_{Total} = 6,689.2 \frac{lb}{yr}$$

Next, calculate xylene emissions.

Step 4 – Record the fuel flow rate for each GSE. Table 3-3 shows that the fuel flow rate is **6.47 gal/hr** for the generator and **17.14 gal/hr** for the AC unit. Since the fuel flow rate of the start cart, bomb lift, and light cart are not provided in the table, surrogates must be selected. Ideally, the best surrogates will be similar GSE types with similar hp. For this example, the A/M32A-86D was selected as a surrogate for the A/M32A-95, the elevator loader was selected for the MJ-40, and the generator light cart was selected for the NF-2 light cart. The fuel flow rates for the surrogate equipment are listed as **6.47 gal/hr** for the A/M32A-86D, **6.29 gal/hr** for the elevator loader, and **0.62 gal/hr** for the generator light cart.

Step 5 – Calculate the fuel consumption for each GSE. Use the operating times and fuel flow rates recorded in Step 1 and Step 4 above and Equation 3-5.

$$FC = OT \times FFR$$

$$FC_{A/M32A-86D} = 2.20 \frac{hr}{unit} \times 6.47 \frac{gal}{hr} = 14.23 \frac{gal}{unit}$$

$$FC_{A/M32A-95} = 0.50 \frac{hr}{unit} \times 6.47 \frac{gal}{hr} = 3.24 \frac{gal}{unit}$$

$$FC_{B-1B AC Unit} = 2.40 \frac{hr}{unit} \times 17.14 \frac{gal}{hr} = 41.14 \frac{gal}{unit}$$

$$FC_{MJ-40} = 2.50 \frac{hr}{unit} \times 6.29 \frac{gal}{hr} = 15.73 \frac{gal}{unit}$$

$$FC_{NF-2} = 0.50 \frac{hr}{unit} \times 0.62 \frac{gal}{hr} = 0.31 \frac{gal}{unit}$$

Step 6 – Calculate the total fuel flow rate for GSE. Sum the values calculated in Step 5 as follows:

$$FC_{GSE(Total)} = (14.23 + 3.24 + 41.14 + 15.73 + 0.31) \frac{gal}{unit} = 74.65 \frac{gal}{unit}$$

Step 7 – Record the xylene emission factor. Table 3-7 lists the total xylenes EF as **3.93E-02 lb/10³ gal**.

Step 8 – Calculate xylene emissions. With the estimated fuel consumption calculated in Step 6 and the EF data from Step 7, use Equation 3-4 to calculate xylene emissions:

$$E(Pol) = FC \times \frac{1}{1000} \times EF(Pol) \times N$$

$$E(Xylenes) = 74.65 \frac{\text{gal}}{\text{unit}} \times \frac{1}{1000} \left(\frac{10^3 \text{ gal}}{\text{gal}} \right) \times 0.0393 \frac{\text{lb}}{10^3 \text{ gal}} \times 200 \frac{\text{unit}}{\text{yr}}$$

$$E(Xylenes) = 0.587 \frac{\text{lb}}{\text{yr}}$$

3.5.2 Problem 2 – Horsepower/Load Factor Method

A DAF base periodically operates two diesel-powered baggage tractors used to transport the luggage of visiting dignitaries. Using the following information obtained from the base, calculate CO and 1,3-butadiene emissions.

GSE Type – Baggage tractor	
# of GSE	2
Operating Time	15 hr/unit

Step 1 – Record the average rated power and average operating load. This information is provided in Table 3-5. The average rated power is given as **83 hp** and the operating load is shown as **55%**.

Step 2 – Record the emission factors for this GSE for CO and 1,3-butadiene. Table 3-6 gives the EF for CO for diesel baggage tractors as **11.00 lb/10³ hp-hr**. Table 3-7 lists the EF for 1,3-butadiene as **3.16E-04 lb/10³ hp-hr**.

Step 3 – Calculate CO and 1,3-butadiene emissions. Use the data collected in Step 1 and Step 2 with Equation 3-2 to calculate the CO and 1,3-butadiene emissions:

$$E(Pol) = OT \times \frac{LF}{100} \times hp_{rtd} \times \frac{1}{1000} \times EF(Pol) \times N$$

For CO:

$$E(CO)_{Baggage} = 15 \frac{\text{hr}}{\text{unit}} \times \frac{55\%}{100\%} \times 83 \text{ hp} \times \frac{1}{1000} \left(\frac{10^3 \text{ hp}}{\text{hp}} \right) \times 11.00 \frac{\text{lb}}{10^3 \text{ hp-hr}} \times 2 \frac{\text{unit}}{\text{yr}}$$

$$E(CO)_{Baggage} = 15.06 \frac{lb}{yr}$$

For 1,3-Butadiene:

$$E(1,3 - Butadiene)_{Baggage} = 15 \frac{hr}{unit} \times \frac{55\%}{100\%} \times 83 \frac{hp}{unit} \times \frac{1}{1000} \left(\frac{10^3 hp}{hp} \right) \times 0.000316 \frac{lb}{10^3 hp-hr} \times 2 \frac{unit}{yr}$$

$$E(1,3 - Butadiene)_{Baggage} = 4.33E - 04 \frac{lb}{yr}$$

3.5.3 Problem 3 – Fuel Consumption Method

A DAF base wants to estimate total toluene emissions for the previous year resulting from the operation of air start units using JP-8. The following information was obtained from the base:

GSE Type – Air Start Units	
GSE Model	A/M32A-95
# of GSE	35
Fuel Consumption	5,000 gal/unit

Step 1 – Record the toluene emission factor. Table 3-7 provides HAP speciation for diesel-fired engines. This table lists the toluene EF as **5.64E-02 lb/10³ gal**.

Step 2 – Calculate the toluene emissions. Use the EF in Step 1, the data from the table above, and Equation 3-4.

$$E(Pol) = FC \times \frac{1}{1000} \times EF(Pol) \times N$$

$$E(Toluene) = 5000 \frac{gal}{unit} \times \frac{1}{1000} \left(\frac{10^3 gal}{gal} \right) \times 0.0564 \frac{lb}{10^3 gal} \times 35 \frac{unit}{yr}$$

$$E(Toluene) = 9.87 \frac{lb}{yr}$$

3.5.4 Problem 4 – Estimating SO₂ Emissions

A DAF base has been asked to estimate SO₂ emissions from the operation of its GSE. The following information was obtained from the base:

Equipment Data – GSE	
# of GSE	40
Fuel	JP-8
Fuel Flow Rate	18 gal/hr
Operating time	2 hours

Calculate SO₂ emissions for the AFB which is in the East Central United States.

Step 1 – Record the density and sulfur content of JP-8. Table 3-1 lists the density of JP-8 as **6.71 lb/gal**. Though Table 3-1 also provides the sulfur content, since it is known that the AFB is in the East Central portion of the United States, a more accurate value given in Table 2-2 of Chapter 2 in this document states the sulfur content of JP-8 in that particular region as **0.067%**.

Step 2 – Calculate the SO₂ emission factor. This is accomplished by using Equation 3-7.

$$EF(SO_2) = FFR \times \rho \times \frac{S}{100} \times 2$$

$$EF(SO_2) = 18 \frac{\text{gal}}{\text{hr}} \times 6.71 \frac{\text{lb}}{\text{gal}} \times \frac{0.067\%}{100\%} \times 2 = \mathbf{0.162 \frac{lb}{hr}}$$

Step 3 – Calculate SO₂ emissions. Use the EF calculated in Step 2 and Equation 3-1.

$$E(Pol) = OT \times EF(Pol) \times N$$

$$E(SO_2) = 2 \frac{\text{hr}}{\text{unit}} \times 0.162 \frac{\text{lb}}{\text{hr}} \times 40 \frac{\text{unit}}{\text{yr}}$$

$$\boxed{E(SO_2) = \mathbf{12.96 \frac{lb}{yr}}}$$

Table 3-2. Military Aircraft and GSE Assignments

Aircraft	GSE Type	GSE Model	Operating Time Per Sortie or LTO (hr)
A-3A, -3B	See Generic 2		
A-4, -4C, -4E, -4F, -4L, -4M	See Generic 2		
A-6A, -6B, -6C, -6E, -6F	See Generic 2		
A-7A, -7B, -7C, -7D, -7E, -7K	See Generic 2		
A-10, -10A, -10C	Generator Set	A/M32A-86D	1.00
	Start Cart	A/M32A-60A	1.00
		A/M32A-95	1.00
	Heater	1H1	2.00
	Hydraulic Test Stand	MJ-2A	2.00
	Light Cart	FL-1D (S)	2.00
		NF-2	2.00
	Air Compressor	MC-1A	2.00
		MC-2A (S)	1.00
	Bomb Lift	MJ-1B ^(a)	1.00 - 8.00
A-37	See Generic 2		
AC-130A, -130H, -130U, -130W	See C-130A		
AH-1G, -1J	See Generic 4		
AH-64A	See Generic 4		
AT-38B	See T-38		
AU-24	See Generic 2		
B-1A, -1B	Generator Set	A/M32A-86D	2.20
	Start Cart	A/M32A-95	0.50
	Heater/Air Conditioner	B-1B Heater/Air Conditioner	2.40
	Heater	H1	4.00
	Light Cart	FL-1D (S)	0.50
		NF-2	0.50
	Bomb Lift	MJ-40	2.50
B-2A	Generator Set	A/M32A-86D	3.00
	Start Cart	A/M32A-60A	2.00
		A/M32A-95	2.00
	Air Conditioner	Ace 401	12.00
		PD501	12.00
	Heater	H1	2.00
	Hydraulic Test Stand	MJ-2/TTU-228	1.00
		MJ-2/TTU-229	1.50
		A/M27T-13	4.00
	Light Cart	NF-2	4.00
		FL-1D (S)	4.00
	Air Compressor	MC-1A	1.50
		MC-6 (S)	5.00
		MC-7	1.50
	Bomb Lift	MJ-40	2.00
B-52D, -52G, -52H	Generator Set	A/M32A-86D	4.00
	Start Cart	A/M32A-95	1.00
	Air Conditioner	MA-3D	1.00
	Light Cart	NF-2	1.00
	Air Compressor	MC-1A	1.00
	Bomb Lift	MJ-1B	2.00
C-1, -1A	See Generic 1		
C-2, -2A	See Generic 4		

Table 3-2. Military Aircraft and GSE Assignments

Aircraft	GSE Type	GSE Model	Operating Time Per Sortie or LTO (hr)
C-5A, -5B, -5C, -5M	Generator Set	A/M32A-86D	13.00
	Start Cart	A/M32A-95	2.00
	Air Conditioner	MA-3D	3.00 - 12.00
	Heater	H1	9.00
		BT400-46HT	10.00
	Hydraulic Test Stand	MJ-1-1 ^(a)	1.00
		M32T1 (S)	1.00
		MJ-2A	1.00
	Light Cart	NF-2	16.00
	Air Compressor	MC-2A (S)	16.00
		MC-1A	7.00
		MC-7	2.00
	Pumping Unit	AF/M27M-1 ^(a)	3.00
C-9, -9A, -9B, -9C	Generator Set	A/M32A-86D	6.00
	Start Cart	A/M32A-95	0.50
	Air Conditioner	MA-3D	6.00
	Heater	H1	6.00
	Light Cart	NF-2	12.00
	Air Compressor	MC-2A (S)	2.00
		MC-1A	0.50
		MC-7	2.00
C-11A	See Generic 1		
C-12, -12A, -12C, -12D, -12F, -12J, -12L, -12R, -12S, -12T, -12U	Generator Set	A/M32A-86D	0.75
C-17A	Generator Set	A/M32A-86D	2.00
	Start Cart	A/M32A-95	2.00
	Air Conditioner	MA-3D	1.50
	Heater	BT400-46	1.50
		H1	1.50
	Light Cart	NF-2	1.50
	Air Compressor	MC-1A	0.66
		MC-2A (S)	0.66
		MC-7	0.66
	Pumping Unit	AF/M27M-1	0.50
	Bomb Lift	MJ-1B	1.50
C-18B	See Generic 1		
C-20A, -20B, -20C, -20D, -20E, -20F, -20G, -20H, -20J	Generator Set	A/M32A-86D	5.50
	Air Conditioner	Ace 802-329S ^(a)	1.00
		MA-3D	1.00
	Heater	1H1	3.00
	Light Cart	FL-1D (S)	6.00
	Air Compressor	MC-2A (S)	0.50
		MC-5	0.50
		MC-7	2.00
		MC-8	3.00
C-21A	See Generic 1		
C-22A, -22B	Generator Set	A/M32A-86D	1.50
	Start Cart	A/M32A-60A ^(a)	0.25
	Heater	H1	0.25
	Light Cart	NF-2	0.25
	Air Compressor	MC-1A	0.25
		MC-7	0.25
	Pumping Unit	AF/M27M-1	0.25
C-23A, -23B, -23C	See Generic 1		
C-26A, -26B, -26C	See Generic 1		

Table 3-2. Military Aircraft and GSE Assignments

Aircraft	GSE Type	GSE Model	Operating Time Per Sortie or LTO (hr)
C-27J		See Generic 1	
C-28A		See Generic 1	
C-32A	Generator Set	A/M32A-86D	6.00
C-37A		See Generic 1	
C-38		See Generic 1	
C-40A, -40B, -40C		See Generic 1	
C-123K		See Generic 1	
C-130A, -130B, -130D, -130E, -130F, -130H, -130J, -130T	Generator Set	A/M32A-86D Trielectron D200T 400	4.00 - 11.00 3.00
	Start Cart	MA-1A (S)	0.25
		A/M32A-60A	0.25
		A/M32A-95	0.25
	Air Conditioner	Ace 802-993 (S)	1.00
		MA-3D	1.00
	Heater	H1	1.00
	Hydraulic Test Stand	MJ-2A ^(a)	3.00
	Light Cart	NF-2	2.00 - 10.00
	Air Compressor	MC-1A	0.50 - 10.00
		MC-2A (S)	0.50 - 10.00
C-135A, -135B, -135C, -135E	Generator Set	A/M32A-86D	10.00
	Start Cart	A/M32A-60A	1.00
		A/M32A-95	0.10
	Air Conditioner	Ace 802-993 (S)	10.00
		MA-3C (S)	2.00
	Heater	H1	4.00
		1H1	5.00
	Light Cart	NF-2	2.00
	Air Compressor	MC-1A	0.33
C-137B, -137C		See Generic 1	
C-140A, -140B		See Generic 1	
C-141, -141A, -141B, -141C	Generator Set	A/M32A-86D	0.50
	Start Cart	MD-3 (S)	0.10
		A/M32A-60A	0.50
	Heater	H1	0.40
	Hydraulic Test Stand	TTU-228E (S)	0.10
		M32T1 (S)	0.10
	Light Cart	NF-2	0.50
	Air Compressor	MC-1A	0.10
		MC-2A (S)	0.10
CH-3B, -3E		See Generic 4	
CH-46, -46A, -46E		See Generic 4	
CH-53A, -53D		See Generic 4	
CT-1B		See Generic 1	
CT-39A, -39E, -39G		See Generic 1	
CT-43A		See T-43A	
CT-49A		See Generic 1	
CV-22, -22A		See Generic 1	
DC-130A		See C-130A	
E-1B		See Generic 1	
E-2, -2B, -2C, -2D		See Generic 1	
E-3A, -3B, -3C		See Generic 1	
E-4A, -4B		See Generic 1	
E-6B		See Generic 1	
E-8C		See Generic 1	
EA-3B		See Generic 1	

Table 3-2. Military Aircraft and GSE Assignments

Aircraft	GSE Type	GSE Model	Operating Time Per Sortie or LTO (hr)
EA-4F	See Generic 1		
EA-6A, -6B	See Generic 1		
EA-7L	See Generic 1		
EB-57B	See Generic 1		
EC-18B, -18D	See Generic 1		
EC-24A	See Generic 1		
EC-130E, -130H, -130J, -130SJ, -130V	See C-130A		
EC-135A, -135B, -135C, -135E, -135G, -135H, -135J, -135K, -135L, -135N, -135P, -135Y	See C-135A		
EC-137D	See Generic 1		
EF-4J	See Generic 2		
EF-111A	See Generic 2		
EH-1H, -1X	See Generic 4		
EH-60A	See Generic 4		
EKA-3B	See Generic 1		
EP-3B, -3J	See Generic 1		
ERA-3B	See Generic 2		
ES-2D	See Generic 1		
F-4, -4B, -4C, -4D, -4E, -4G, -4J, -4N, -4S	See Generic 2		
F-5A, -5B, -5E, -5F	See Generic 2		
F-8, -8J	See Generic 2		
F-14A, -14B, -14C, -14D	See Generic 2		
F-15A, -15B, -15C, -15D, -15E	Generator Set	A/M32A-86D	0.33
	Start Cart	A/M32A-60A	0.33
		A/M32A-95	0.33
	Heater	H1	0.50
	Hydraulic Test Stand	MJ-1-1	0.50
		MJ-2/TTU-228	0.50
	Light Cart	NF-2	1.00 - 8.00
	Air Compressor	MC-1A	0.33
MC-2A (S)		0.25	
MC-11 (S)		2.00	
Bomb Lift	MJ-1B	1.00	
F-16, -16A, -16B, -16C, -16D, -16N	Generator Set	A/M32A-86D	0.33
	Start Cart	A/M32A-60A	0.33
		A/M32A-95	0.33
	Heater	H1	0.50
	Hydraulic Test Stand	MJ-1-1	0.50
		MJ-2/TTU-228	0.50
	Light Cart	NF-2	1.00 - 8.00
	Air Compressor	MC-1A	0.33
MC-2A (S)		0.25	
MC-11 (S)		2.00	
Bomb Lift	MJ-1B	1.00	
F-22A, -22B	See Generic 2		
F-35A, -35B, -35C	See Generic 2		
F-100	See Generic 2		
F-106A, -106B	See Generic 2		
F-111, -111A, -111D, -111E, -111F	See Generic 2		

Table 3-2. Military Aircraft and GSE Assignments

Aircraft	GSE Type	GSE Model	Operating Time Per Sortie or LTO (hr)
F-117A	Generator Set	A/M32A-86D	2.00
	Start Cart	A/M32A-60A	2.00
		A/M32A-95	0.50
	Air Conditioner	Ace 802-329S ^(a)	2.00
	Heater	H1	1.00
	Hydraulic Test Stand	MJ-1-1	1.00
	Light Cart	NF-2	1.00
	Air Compressor	MC-1A	0.33
		MC-2A (S)	0.33
	Bomb Lift	MJ-1B	1.00 ^(b)
F/A-18A, -18B, -18C, -18D, -18E, -18F	See Generic 2		
FA-22A	See Generic 2		
FB-22A	See Generic 2		
FB-111A	See Generic 2		
HC-130H, -130J, -130N, -130P	See C-130A		
HH-1H, -1K, -1N	Generator Set	A/M32A-86D	1.00 - 16.00
	Start Cart	M24A-9 (S)	0.25
	Heater	H1	8.00
	Hydraulic Test Stand	MJ-2/TTU-229	1.00
	Light Cart	NF-2D (S)	2.00
		TF-1	2.00
	Air Compressor	MC-1A	1.00
		MC-2A (S)	1.00
HH-2D	See Generic 4		
HH-3A, -3E, -3F	See Generic 4		
HH-43	See Generic 4		
HH-46A	See Generic 4		
HH-52, -52A	See Generic 4		
HH-53	See Generic 4		
HH-60G	See Generic 4		
HV-22A, -22B	See Generic 1		
JA-6A	See Generic 2		
KA-3B	See Generic 2		
KA-6D	See Generic 2		
KC-10, -10A	Generator Set	A/M32A-86D	12.00
		90CU24P5 (S)	12.00
	Hydraulic Test Stand	9780-0023D (S)	2.00
		05-7056-3600 (S)	2.00
	Generator Light Cart	Generator Light Cart	6.00
	Air Compressor	MODP160WJDACJF (S)	6.00
KC-46A	See Generic 1		
KC-130F, -130R, -130T	See C-130A		
KC-135, -135A, -135D, -135E, -135Q, -135R, -135T	See C-135A		
KC-767A	See Generic 1		
LC-130F, -130H, -130R	See C-130A		
MC-12W	See C-12		
MC-130E, -130H, -130J, -130P, -130W	See C-130A		
MH-53J, -53M	Generator Set	A/M32A-86D	3.00
	Heater	H1	8.00
	Hydraulic Test Stand	MJ-2/TTU-228	2.00
	Light Cart	NF-2D (S)	2.00
		FL-1D (S)	2.00
	Air Compressor	MC-2A (S)	4.00
MH-60A, -60G	See Generic 4		

Table 3-2. Military Aircraft and GSE Assignments

Aircraft	GSE Type	GSE Model	Operating Time Per Sortie or LTO (hr)
MV-22A, -22B		See Generic 1	
NA-3B		See Generic 2	
NA-4E, -4F, -4M		See Generic 2	
NA-6A, -6E		See Generic 2	
NA-7A, -7C, -7E		See Generic 2	
NB-52B		See B-52D	
NC-12B		See C-12	
NC-21A		See Generic 1	
NC-130A, -130B, -130E, -130H		See C-130A	
NC-135A, -135W		See C-135A	
NC-141A		See C-141	
NCH-46A		See Generic 4	
NF-4D		See Generic 2	
NF-16A, -16D		See F-16	
NF-106B		See Generic 2	
NF/A-18A, -18B, -18C		See Generic 2	
NKC-135A, -135E		See C-135A	
NPC-3C, -3D		See Generic 1	
NRA-3B		See Generic 2	
NRH-53D		See Generic 4	
NSH-3A		See Generic 4	
NT-33A		See Generic 1	
NT-39A		See Generic 1	
NTA-4F, -4J		See Generic 1	
NUH-1E, -1N		See Generic 4	
NUP-3A		See Generic 1	
NVH-3A		See Generic 4	
O-1		See Generic 1	
O-2A, -2B		See Generic 1	
OA-4M		See Generic 2	
OA-10A		See A-10	
OA-37B		See Generic 2	
OC-135B		See C-135A	
OH-6A		See Generic 4	
OH-58A		See Generic 4	
OT-47B		See Generic 1	
OV-10A		See Generic 1	
P-3B, -3C		See Generic 1	
QF-4B, -4E, -4G		See Generic 2	
QF-106A, -106B		See Generic 2	
QRF-4C		See Generic 2	
QT-33A		See Generic 1	
RA-3B		See Generic 2	
RA-5C		See Generic 2	
RC-12D, -12G, -12H		See C-12	
RC-135M, -135S, -135T, -135U, -135V, -135W, -135X		See C-135A	
RF-4B, -4C		See Generic 2	
RF-8G		See Generic 2	
RF/A-18A		See Generic 2	
RH-53D		See Generic 4	

Table 3-2. Military Aircraft and GSE Assignments

Aircraft	GSE Type	GSE Model	Operating Time Per Sortie or LTO (hr)
RP-3D	See Generic 1		
RQ-1A, -4, -4A, -4B ^(d)	Generator Set	805 (S)	24.00
		806 (S)	24.00
	Air Conditioner	MA-3D	2.00
	Heater	H1	4.00
	Light Cart	FL-1D (S)	6.00
RU-21J	See Generic 1		
S-2, -2D, -2E, -2G	See Generic 1		
S-3A	See Generic 2		
SH-2D, -2F	See Generic 4		
SH-3A, -3G	See Generic 4		
SH-60	See Generic 4		
SV-22A	See Generic 1		
T-1A	Generator Set	Jetex (S)	0.33
	Hydraulic Test Stand	Airton (S)	0.10
T-2	See Generic 3		
T-6A	Generator Set	Jettex-40 (S)	0.50
	Start Cart	Jet Series 703D (S)	0.50
		MA-1A (S)	0.50
	Air Conditioner	MA-3D	0.75
	Hydraulic Test Stand	6X620-RDF (S)	1.00
	Light Cart	FL-2D (S)	1.00
	Tug	(See "Tug" in Table 3-4 and select appropriate size)	0.33
T-28	See Generic 3		
T-33A	See Generic 3		
T-34, -34C	See Generic 3		
T-37, -37B	Generator Set	A/M32A-86D ^(a)	0.17
	Heater	H1	0.17
	Hydraulic Test Stand	MJ-1-1	0.50
	Light Cart	TL-1D (S)	1.00
	Air Compressor	MC-1A	0.50
		MC-2A (S)	0.50
	Tug	(See "Tug" in Table 3-4 and select appropriate size)	0.33
T-38, -38A, -38C, -38N	Generator Set	A/M32A-86D	0.25
	Hydraulic Test Stand	MK1 (S)	0.75
		MK3A (S)	0.75
T-39A, -39B, -39D	See Generic 3		
T-41, -41B, -41C, -41D	See Generic 3		
T-43A	Generator Set	A/M32A-86D	2.00
		Essex B8098 (S)	2.00
	Air Conditioner	MA-3D	12.00
	Hydraulic Test Stand	HPE-45 (S)	2.00
	Light Cart	FL-1D (S)	2.00
	Air Compressor	MC-1A	1.00
T-44	See Generic 3		
T-47A	See Generic 3		
TA-3B	See Generic 2		
TA-4B, -4F	See Generic 2		
TA-7C	See Generic 2		
TC-18E, -18F	See Generic 1		
TC-130H	See C-130A		
TC-135S, -135W	See C-135A		
TE-2A, -2C	See Generic 1		
TE-8A	See Generic 1		
TF-16N	See F-16		

Table 3-2. Military Aircraft and GSE Assignments

Aircraft	GSE Type	GSE Model	Operating Time Per Sortie or LTO (hr)
TF-18A		See Generic 2	
TF/A-18A		See Generic 2	
TH-1L		See Generic 4	
TH-53A		See Generic 4	
TS-2A		See Generic 2	
TU-2S		See Generic 2	
U-2S		See Generic 2	
U-21, -21J		See Generic 1	
U-28A		See Generic 1	
UA-3B		See Generic 2	
UC-12B		See C-12	
UC-35A, -35C		See Generic 1	
UC-123K		See Generic 1	
UH-1E, -1H, -1L, -1N, -1V		See Generic 4	
UH-2C		See Generic 4	
UH-3A		See Generic 4	
UH-46A		See Generic 4	
UH-60A, -60C, -60Q	Generator Set	A/M32A-86D	1.00 - 5.00
	Start Cart	A/M32A-95	0.50
	Air Conditioner	MA-3D	2.00
	Heater	H1 ^(a)	2.00
	Hydraulic Test Stand	MJ-1-1	2.50
		MJ-2/TTU-228	1.00
	Light Cart	FL-1D (S)	0.50 - 4.00
	Air Compressor	MC-1A	1.00
		MC-2A (S)	2.50
UP-3B		See Generic 1	
US-2A, -2B, -2C, -2D		See Generic 1	
UV-18B		See Generic 1	
UV-20A		See Generic 1	
VC-25A		See C-5A	
VC-137B, -137C		See Generic 1	
VC-140B		See Generic 1	
WC-130E, -130H, -130J		See C-130A	
WC-135B, -135C, -135W		See C-135A	
X-29A		See Generic 2	
X-31A		See Generic 2	
X-44A		See Generic 2	
YA-7D		See Generic 2	
YC-14A		See Generic 1	
YE-2C		See Generic 1	
YF-4J		See Generic 2	
YF-15A, -15B		See F-15A	
YF-16A, -16B		See F-16	
YOV-10D		See Generic 2	
YP-3C		See Generic 1	
YS-2G		See Generic 2	
YSH-2E		See Generic 4	

Table 3-2. Military Aircraft and GSE Assignments

Aircraft	GSE Type	GSE Model	Operating Time Per Sortie or LTO (hr)
Generic 1 Cargo/Bomber (C-130)	Generator Set	A/M32A-86D Trielectron D200T 400	4.00 - 11.00 3.00
	Start Cart	MA-1A (S) A/M32A-60A A/M32A-95	0.25 0.25 0.25
	Air Conditioner	Ace 802-993 (S) MA-3D	1.00 1.00
	Heater	H1	1.00
	Hydraulic Test Stand	MJ-2A ^a	3.00
	Light Cart	NF-2	2.00 - 10.00
	Air Compressor	MC-1A MC-2A (S)	0.50 - 10.00 0.50 - 10.00
Generic 2 Fighter/Fighter Bomber (F-15)	Generator Set	A/M32A-86D	0.33
	Start Cart	A/M32A-60A A/M32A-95	0.33 0.33
	Heater	H1	0.50
	Hydraulic Test Stand	MJ-1-1 MJ-2/TTU-228	0.50 0.50
	Light Cart	NF-2	1.00 - 8.00
	Air Compressor	MC-1A MC-2A (S) MC-11 (S)	0.33 0.25 2.00
	Bomb Lift	MJ-1B	1.00
Generic 3 Small Trainers (T-37, -37B)	Generator Set	A/M32A-86D ^a	0.17
	Heater	H1	0.17
	Hydraulic Test Stand	MJ-1-1	0.50
	Light Cart	TL-1D (S)	1.00
	Air Compressor	MC-1A MC-2A (S)	0.50 0.50
	Tug	(See "Tug" in Table 3-4 and select appropriate size)	0.33
Generic 4 Helicopter (UH-60A)	Generator Set	A/M32A-86D	1.00 - 5.00
	Start Cart	A/M32A-95	0.50
	Air Conditioner	MA-3D	2.00
	Heater	H1	2.00
	Hydraulic Test Stand	MJ-1-1 MJ-2/TTU-228	2.50 1.00
	Light Cart	FL-1D (S)	0.50 - 4.00
	Air Compressor	MC-1A MC-2A (S)	1.00 2.50
Generic (Not otherwise specified)	Aircraft Tug	(See "Tug" in Table 3-4 and select appropriate size)	0.10
	Package Tug	(See "Tug" in Table 3-4 and select appropriate size)	1.30
	Cargo Loader	Cargo Loader	1.50
	Fuel Truck	Fuel Truck	0.60
	Deicer Truck ^c	Deicer Truck	0.15

Notes for Table 3-2 are provided on the following page.

Notes for Table 3-2:

SOURCE (unless otherwise noted): Data obtained from DAF, IERA-RS-BR-SR-2005-0001, *Flightline Emission Factors – Aircraft/Auxiliary Power Units/Aerospace Ground Support Equipment*, December 2004. Data provided by the DAF flight squadrons and associated AGE shops. When calculating GSE emissions, use the data available at the installation. These aircraft/GSE combinations should be used only in the absence of current, more accurate, data.

- a. Operating time estimated based on operating time of GSE on similar aircraft.
- b. GSE model changed from what was stated in the source document because of suspected error in source.
- c. Cold weather months and cold weather bases only.
- d. Uses GSE assignments for similar, surrogate engine provided in source document.

Note: “Generic” refers to Table 3-2.

“(S)” – Indicates that emission factors for this GSE are not found in this document. In the absence of available data, it is recommended that a similar GSE and associated emission factors be used as a surrogate.

Table 3-3. Military Aircraft GSE Emission Factors

GSE Model	GSE Type	Source of Data ^a	Engine Manufacturer	Model Number	Rated Hp	Fuel	Operational Mode	Fuel Flow Rate (gal/hr)	Emission Factors (lb/hr)						
									NO _x	SO _x ^b	CO	VOC ^c	PM ₁₀	PM _{2.5} ^d	CO ₂ e ^e
IH1	Heater	(5)	---	---	6.5	Diesel/JP-8	All Loads	0.39	0.160	0.003	0.180	0.105	0.006	0.006	8.80
A/M27T-13	Hydraulic Test Stand	(5)	---	---	30	Diesel/JP-8	All Loads	---	0.180	0.051	12.250	0.295	0.167 ^g	0.162 ^g	39.70
A/M32A-60A	Start Cart	(5)	Garrett	---	180	Diesel/JP-8	All Loads	---	1.820	0.306	5.480	0.284	0.211	0.205	238.19
A/M32A-86D	Generator Set	(2)	Detroit Diesel	4-71N	148	Diesel/JP-8	All Loads	6.47	6.102	0.047	0.457	0.294	0.091	0.089	146.06
A/M32A-95	Start Cart	(5)	Garrett	---	155	Diesel/JP-8	All Loads	---	1.470	0.264	5.860	0.074	0.110	0.107	205.11
A/M32C-18	Air Compressor	(1)	Detroit Diesel	6V71T	290	Diesel/JP-8	100% Load	16.57	7.973	0.120	1.522	0.205	0.211	0.205	374.07
Ace 401	Air Conditioner	(5)	Detroit Diesel	---	---	Diesel/JP-8	All Loads	---	7.970	0.408	1.520	0.211	0.211	0.205	337.44
Ace 802-329S	Air Conditioner	(3)	Detroit Diesel	6V71N	272	Diesel/JP-8	All Loads	6.8	2.938	0.049	0.150	0.204	0.198	0.192	153.51
AF/M27M-1	Pumping Unit	(1)	Wisconsin	VH4D	30	Gasoline	100% Load	1.78	0.177	0.004	12.262	0.276	0.167 ^g	0.162 ^g	34.56
AF/M32T-1	Cabin Pressure Tester	(7)	Hatz	4M40	---	Diesel/JP-8	All Loads	---	0.118	0.238	0.203	0.095	0.167 ^g	0.162 ^g	185.26
B-1B Heater/Air Conditioner	Heater/Air Conditioner	(1)	Detroit Diesel	6V-92TA	300	Diesel/JP-8	100% Load	17.14	7.659	0.124	1.409	0.258	0.152	0.148	386.94
BAK-13	Arresting Barrier	(1)	Wisconsin	MV-465D	64	Gasoline	100% Load	3.9	0.377	0.010	29.207	0.319	0.167 ^g	0.162 ^g	75.73
BT400-46	Heater	(1)	Lister-Petters	AC1-389548	6.5	Diesel/JP-8	All Loads	0.39	0.158	0.003	0.181	0.100	0.167 ^g	0.162 ^g	8.80
Cargo Loader	Cargo Loader	(6)	---	---	133	Diesel/JP-8	All Loads	7.28	2.554	0.053	1.862	0.420	0.279	0.271	164.35
Deicer Truck	Deicer Truck	(6)	---	---	270	Gasoline	All Loads	14.78	5.940	0.036	73.170	2.519	0.027	0.024	287.00
Elevator Loader	Elevator Loader	(1)	Detroit Diesel	3-53 Series	110	Diesel/JP-8	100% Load	6.29	3.128	0.046	1.048	0.129	0.063	0.061	142.00
EMU-15	Generator Set	(1)	Detroit Diesel	3-71	100	Diesel/JP-8	100% Load	5.71	3.505	0.041	4.905	0.095	0.115	0.111	128.91
EMU-17	Generator Set	(1)	Detroit Diesel	12V-71N	300	Diesel/JP-8	100% Load	17.14	8.863	0.124	11.078	0.337	0.185	0.180	386.94
EMU-19U	Generator Set	(1)	Lister	ST-3	30	Diesel/JP-8	All Loads	1.78	0.743	0.013	0.351	0.266	0.167 ^g	0.162 ^g	40.18
FL-1D	Light Cart	(7)	Kubota	D905	10.5	Diesel/JP-8	All Loads	---	0.030	0.018	0.025	0.008	0.167 ^g	0.162 ^g	13.89
Fuel Truck	Fuel Truck	(6)	---	---	300	Diesel/JP-8	All Loads	16.42	3.300	0.119	0.900	0.316	0.210	0.204	370.69
Generator Light Cart	Generator Light Cart	(4)	Onan	P218G-I/10876C	10.5	Diesel/JP-8	All Loads	0.62	0.181	0.004	0.139	0.022 ^f	0.167 ^g	0.162 ^g	14.00
Generator Set	Generator Set	(1)	Caterpillar	D3333T	214	Diesel/JP-8	100% Load	17.5	3.170	0.127	0.689	0.547	0.071	0.069	395.07
							62% Load	10.46	3.067	0.026	0.618	0.745	0.080	0.078	236.14
Ground Mobile Terminal Generator Set	Ground Mobile Terminal Generator Set	(1)	Detroit Diesel	4-71-T	150	Diesel/JP-8	100% Load	8.57	6.855	0.062	1.114	0.155	0.109	0.106	193.47
H1	Heater	(5)	---	---	6.5	Diesel/JP-8	All Loads	0.39	0.160	0.003	0.180	0.105	0.006	0.006	8.80
MA-3	Air Conditioner	(1)	Onan	L643T*1/1C178-C	65	Diesel/JP-8	All Loads	3.79	0.497	0.027	0.133	0.011	0.167 ^g	0.162 ^g	85.56
MA-3D	Air Conditioner	(1)	John Deere	4045T	120	Diesel/JP-8	All Loads	7.12	4.167	0.052	0.317	0.053	0.167 ^g	0.162 ^g	160.74
MA-3D	Air Conditioner	(3)	John Deere	4039T	110	Diesel/JP-8	All Loads	4.57	0.640	0.033	0.058	0.284	0.063	0.061	103.17

Table 3-3. Military Aircraft GSE Emission Factors

GSE Model	GSE Type	Source of Data ^a	Engine Manufacturer	Model Number	Rated Hp	Fuel	Operational Mode	Fuel Flow Rate (gal/hr)	Emission Factors (lb/hr)						
									NO _x	SO _x ^b	CO	VOC ^c	PM ₁₀	PM _{2.5} ^d	CO ₂ ^e
MC-1A	Air Compressor	(1)	Hatz	Z790-193	18.4	Diesel/JP-8	All Loads	1.09	0.419	0.008	0.267	0.267	0.071	0.068	24.61
MC-1A	Air Compressor	(1)	Lister Engineering Co.	ST2A/MC1A	20	Diesel/JP-8	All Loads	1.19	0.496	0.009	0.234	0.177	0.167 ^g	0.162 ^g	26.86
MC-5	Air Compressor	(3)	Deutz	F4L912 4CYL	100	Diesel/JP-8	All Loads	2.38	0.547	0.017	0.333	0.110	0.167 ^g	0.162 ^g	53.73
MC-5	Air Compressor	(1)	GMC	Series 4-53	130	Diesel/JP-8	100% Load	7.43	3.396	0.054	0.794	0.195	0.089	0.086	167.73
MC-5	Air Compressor	(1)	John Deere	4039	110	Diesel/JP-8	All Loads	6.52	2.425	0.047	0.485	0.073	0.167 ^g	0.162 ^g	147.19
MC-7	Air Compressor	(1)	John Deere	3164D	52	Diesel/JP-8	100% Load	3.3	1.285	0.024	0.642	0.057	0.167 ^g	0.162 ^g	74.50
MC-7	Air Compressor	(3)	John Deere	3179 SPEC FD16694J	48	Diesel/JP-8	All Loads	1.8	0.414	0.013	0.018	0.053	0.167 ^g	0.162 ^g	40.64
MC-8	Air Compressor	(1)	Deutz	F6L912	110	Diesel/JP-8	All Loads	6.52	2.983	0.047	0.752	0.121	0.167 ^g	0.162 ^g	147.19
MC-11	Air Compressor	(1)	Wisconsin	MVH4D	30	Gasoline	100% Load	1.78	0.177	0.004	12.262	0.276	0.167 ^g	0.162 ^g	34.56
MC-20	Air Compressor	(7)	Hatz	1B50	11	Diesel/JP-8	All Loads	---	0.025	0.019	0.045	0.016	0.012	0.012	14.56
Miller Concrete Cutter	Miller Concrete Cutter	(1)	Deutz	BF4D-1011T	75	Diesel/JP-8	All Loads	4.45	1.042	0.032	0.198	0.083	0.167 ^g	0.162 ^g	100.46
MJ-1-1	Hydraulic Test Stand	(1)	Detroit Diesel	3-53 N	97	Diesel/JP-8	All Loads	2.52	0.757	0.018	0.043	0.026	0.167 ^g	0.162 ^g	56.89
MJ-1B	Bomb Lift	(5)	Detroit Diesel	---	---	Diesel/JP-8	All Loads	---	4.780	0.219	3.040	3.201	0.800	0.776	152.18
MJ-1B/C	Bomb Lift	(7)	Deutz	F21011F	26	Diesel/JP-8	All Loads	---	0.009	0.050	0.023	0.006	0.167 ^g	0.162 ^g	34.54
MJ-2/TTU-228	Hydraulic Test Stand	(3)	Detroit Diesel	6V-53N	125	Diesel/JP-8	All Loads	4.92	0.937	0.036	0.083	0.292	0.083	0.080	111.07
MJ-2/TTU-228	Hydraulic Test Stand	(1)	Detroit Diesel	4-53	130	Diesel/JP-8	100% Load	7.43	3.396	0.054	0.794	0.195	0.089	0.086	167.73
MJ-2/TTU-229	Hydraulic Test Stand	(1)	Detroit Diesel	6V-53N	125	Diesel/JP-8	100% Load	10.86	3.858	0.079	2.466	0.193	0.083	0.080	245.17
MJ-2A	Hydraulic Test Stand	(5)	Detroit Diesel	---	---	Diesel/JP-8	All Loads	---	3.850	0.238	2.460	0.200	0.083	0.076	185.26
MJ-40	Bomb Lift	(5)	Detroit Diesel	---	---	Diesel/JP-8	All Loads	---	0.340	0.219	0.210	0.221	0.060	0.055	152.18
NF-2	Light Cart	(5)	---	---	18	Diesel/JP-8	All Loads	---	0.110	0.031	0.080	0.011	0.010	0.010	23.82
Nitrogen Cart	Nitrogen Generating Cart	(7)	Isuzu	4LE1PW14	52	Diesel/JP-8	All Loads	---	0.147	0.089	0.050	0.006	0.016	0.015	69.21
PD501	Air Conditioner	(5)	---	---	---	Diesel/JP-8	All Loads	---	7.650	0.408	1.410	0.274	0.167 ^g	0.162 ^g	337.44
PMU 27/M	Pumping Unit	(1)	Petter Diesel Engine	AC-1	6.5	Diesel/JP-8	All Loads	0.39	0.158	0.003	0.181	0.100	0.167 ^g	0.162 ^g	8.80
R-22	Pumping Unit	(1)	Detroit Diesel	3-53 Series	110	Diesel/JP-8	100% Load	6.29	3.128	0.046	1.048	0.129	0.063	0.061	142.00
TF-1	Light Cart	(5)	---	---	---	Diesel/JP-8	All Loads	---	0.170	0.043	0.130	0.026 ^f	0.160	0.155	33.08
Trilectron D200T 400	Generator Set	(3)	Detroit Diesel	8V-71T	236	Diesel/JP-8	All Loads	10.9	8.621	0.079	0.219	0.271	0.208	0.202	246.07
Tug - Large	Tug	(6)	---	---	617	Diesel/JP-8	All Loads	33.4	10.489	0.242	4.936	0.650	0.864	0.839	754.02
Tug - Medium	Tug	(6)	---	---	475	Diesel/JP-8	All Loads	25.7	8.075	0.186	3.800	0.500	0.665	0.646	580.19
Tug - Small	Tug	(6)	---	---	190	Diesel/JP-8	All Loads	10.3	3.230	0.075	1.520	0.200	0.266	0.258	232.53

Notes for Table 3-3 are provided on the following page:

Notes for Table 3-3:

- a. Sources of data include the following:
 - (1) Emission factors were obtained from the manufacturer. Fuel usage rates were based on 7,500 Btu/hp-hr.
 - (2) Emission factors were obtained from the Southwest Research Institute report titled *Exhaust Emissions from a DAF A/M32-86D Generator*.
 - (3) Emission factors were obtained from the Pacific Environmental Services report titled *Aerospace Ground Support Equipment Emissions Characterization for Edwards AFB, California*.
 - (4) Emission factors are EPA tier I Non-road engine factors.
 - (5) Emission factors were obtained from *Aircraft/Auxiliary Power Units/Ground Support Equipment Emission Factors*, December 2002
 - (6) Emission factors calculated using the emission factors in Table 3-6 using the hp stated in the table above. If no hp was given, then the average hp for that equipment type was used (Table 3-5). Fuel usage rates were based on 7,500 Btu/hp-hr.
 - (7) Emission factors calculated from on-site emissions testing.
 - b. SO_x emission factor assumes that all sulfur in the fuel reacts to form SO₂. Emission factors calculated using Equation 3-7. Sulfur content and density of the fuels taken from Table 3-1. Where the fuel flow rate was not provided, the appropriate EF was selected from Table 3-6 and multiplied by the horsepower (hp). If no hp was provided, the appropriate value was selected from Table 3-5. For equipment capable of using "Diesel/JP-8", the density and sulfur content of JP-8 were used.
 - c. Emission factors from reference (5) were converted from total hydrocarbons (THC) to VOC by multiplying by a factor of 1.053. Emission factors from reference (7) were converted from total organic gas (TOG) to VOC by multiplying by a factor 1.053 and dividing the result by 1.07. These hydrocarbon conversion factors come from "Conversion Factors for Hydrocarbon Emission Components", U.S. Environmental Protection Agency (EPA), Office of Transportation and Air Quality, July 2010.
 - d. PM_{2.5} conservatively estimated at 97% of PM₁₀ for JP-8 or diesel and 92% of PM₁₀ for gasoline (per *Exhaust and Crankcase Emission Factors for Nonroad Engine Modeling-Compression-Ignition*, EPA420-P-04-009, April 2004).
 - e. CO₂e emission factor calculated by taking the product of the default CO₂, CH₄, and N₂O emission factors from Tables C-1 and C-2 of 40 Code of Federal Regulations (CFR) part 98, subpart C and their respective global warming potentials (GWP). The GWP for CO₂, CH₄, and N₂O are 1, 28, and 265, respectively. These values were multiplied by the high heat value of the fuel from Table C-1 of 40 CFR part 98 and the fuel flow rate. In cases where the fuel flow rate was not provided, the product of the EF and GWP were multiplied by the engine hp and brake specific fuel consumption (BSFC). A BSFC value of 8089 Btu/hp-hr was used for the diesel/JP-8 equipment.
 - f. These values were not provided from test data but calculated using the hp (or hp from Table 3-5) and the appropriate emission factor from Table 3-6.
 - g. The source did not provide an EF for this pollutant. The value provided is the average of EF for this pollutant for all ground support equipment.
- “---” Indicates No Data Available.

Table 3-4. Typical Commercial Aircraft GSE Assignments

Long Haul Turbine Powered Aircraft	Short Haul/Regional Turbine Powered Aircraft	Turbo-prop Powered Aircraft	Piston Powered Aircraft
Air Conditioner (Diesel/Electric)	Aircraft Tractor (Diesel)	Aircraft Tractor (Diesel)	Fuel Truck (Diesel)
Air Start (Diesel)	Baggage Tractor (Gasoline)	Baggage Tractor (Gasoline)	
Aircraft Tractor/Tug (Diesel)	Belt Loader (Gasoline)	Belt Loader (Gasoline)	
Baggage Tractor (Gasoline)	Catering Truck (Diesel)	Catering Truck (Diesel)	
Belt Loader (Gasoline)	Fuel Truck (Diesel)	Cabin Service Truck (Diesel)	
Cabin Service Truck (Diesel)	Lavatory Truck (Diesel)	Fuel Truck (Diesel)	
Catering Truck (Diesel)	Service Truck (Diesel)	Service Truck (Diesel)	
Hydrant Truck (Diesel)		Cabin Service Truck (Diesel)	
Lavatory Truck (Diesel)			
Service Truck (Diesel)			
Water Service Truck (Diesel)			

SOURCE: FAA Emissions and Dispersion Modeling System, Version 5.02

Table 3-5. Common GSE Operating Parameters

GSE Type	Fuel Type	Average Rated Power (hp)	Average Operating Load (% Max Power)	Operating Time Per LTO (hr)
Air Conditioner	Diesel	255	75	0.50
Air Start	Diesel	613	90	0.12
	Gasoline	---	---	0.12
Aircraft Tractor/Tug	Diesel	617	80	0.13
	Diesel	475	80	0.13
	Diesel	190	80	0.13
	Diesel	88	80	0.13
	Gasoline	110	80	0.13
	CNG/LPG	124	80	0.13
Baggage Tractor	Diesel	83	55	1.20
	Gasoline	107	55	1.20
	CNG	83	55	1.20
	LPG	107	55	1.20
Belt Loader	Diesel	71	50	0.80
	Gasoline	107	50	0.80
	CNG	83	50	0.80
	LPG	107	50	0.80
Bobtail	Diesel	225	55	---
	Gasoline	124	55	---
	CNG	110	55	---
	LPG	124	55	---
Cabin Service Truck	Diesel	210	53	0.33
	Diesel	71	53	0.33
	Gasoline	260	53	0.33
	Gasoline	107	53	0.33
	CNG	360	53	0.33
	CNG	83	53	0.33
	LPG	260	53	0.33
	LPG	107	53	0.33
Cargo Loader	Diesel	133	50	1.33
	Diesel	80	50	1.33
	Gasoline	107	50	1.33
	CNG	83	50	1.33
	LPG	107	50	1.33
Cargo Tractor	Diesel	88	54	---
	Gasoline	107	54	---
	CNG	83	54	---
	LPG	88	54	---

Table 3-5. Common GSE Operating Parameters

GSE Type	Fuel Type	Average Rated Power (hp)	Average Operating Load (% Max Power)	Operating Time Per LTO (hr)
Cart (Light Cart)	Diesel	25	50	0.17
	Gasoline	25	50	0.17
	CNG/LPG	25	50	0.17
Catering Truck	Diesel	210	53	25.00
	Diesel	71	53	0.25
	Gasoline	260	53	0.25
	Gasoline	107	53	0.25
	CNG	360	53	25.00
	CNG	83	53	0.25
	LPG	260	53	0.25
	LPG	107	53	0.25
Deicer	Diesel	263	95	---
	Diesel	165	95	---
	Gasoline	270	95	---
	Gasoline	107	95	---
	CNG	83	95	---
	CNG	54	95	---
	LPG	270	95	---
	LPG	107	95	---
Forklift	Diesel	55	30	---
	Gasoline	54	30	---
	CNG/LPG	54	30	---
Fuel Truck	Diesel	300	25	0.75
	Diesel	235	25	0.54
	Diesel	175	25	0.33
	Gasoline	420	25	0.75
	Gasoline	260	25	0.54
	CNG	420	25	0.75
	CNG	360	25	0.54
	LPG	420	25	0.75
	LPG	260	25	0.54
Generator Sets	Diesel	158	82	2.00
	Gasoline	107	82	2.00
	CNG/LPG	107	82	2.00
Ground Power Unit	Diesel	194	75	0.67
	Diesel	71	75	0.67
	Gasoline	107	75	0.67
	CNG	83	75	0.67
	LPG	107	75	0.67

Table 3-5. Common GSE Operating Parameters

GSE Type	Fuel Type	Average Rated Power (hp)	Average Operating Load (% Max Power)	Operating Time Per LTO (hr)
Hydrant Truck	Diesel	235	70	0.20
	Gasoline	260	70	0.20
	CNG	360	70	0.20
	LPG	260	70	0.20
Lavatory Truck	Diesel	235	25	25.00
	Diesel	56	25	0.25
	Gasoline	260	25	0.25
	Gasoline	97	25	0.25
	CNG	360	25	25.00
	CNG	82	25	0.25
	LPG	260	25	0.25
	LPG	89	25	0.25
Lift	Diesel	115	50	0.17
	Gasoline	105	50	0.17
	CNG/LPG	132	50	0.17
Passenger Stand	Diesel	65	57	---
	Gasoline	107	57	---
	CNG	107	57	---
	LPG	83	57	---
Service Truck	Diesel	235	20	25.00
	Gasoline	260	20	0.25
	CNG	360	20	0.25
	LPG	260	20	0.25
Sweeper	Diesel	53	51	---
	Gasoline	53	51	---
	CNG/LPG	45	51	---
Water Service	Diesel	235	20	0.20
	Gasoline	260	20	0.20
	CNG	360	20	0.20
	LPG	260	20	0.20
Other	Diesel	140	50	---
	Gasoline	126	50	---
	CNG/LPG	173	50	---

SOURCE: FAA Emissions and Dispersion Modeling System, Version 5.02

“---” Indicates No Data Available

Table 3-6. Common GSE Emission Factors

GSE Type	Fuel Type	Emission Factors (lb/1000hp-hr)						
		CO	VOC ^a	NO _x	SO _x	PM ₁₀ ^b	PM _{2.5} ^c	CO ₂ e ^d
Air Conditioner	Diesel	5.00	1.05	16.40	1.60	1.00	0.97	1330.36
Air Start	Diesel	6.00	1.05	19.30	1.60	1.20	1.16	1330.36
	Gasoline	271.00	9.33	22.00	0.40	0.10	0.09	1092.89
Aircraft Tractor/Tug	Diesel	8.00	1.05	17.00	1.70	1.40	1.36	1330.36
	Gasoline	393.00	12.13	23.20	0.40	0.10	0.09	1092.89
	CNG/LPG	---	---	---	---	---	---	1457.97
Baggage Tractor	Diesel	11.00	2.11	13.70	1.80	2.10	2.04	1330.36
	Gasoline	395.00	12.13	22.30	0.40	0.20	0.18	1092.89
	CNG/LPG	107.00	6.00	26.90	0.00	0.10	0.10	1457.97
Belt Loader	Diesel	8.00	2.11	14.80	1.80	1.70	1.65	1330.36
	Gasoline	275.00	9.33	22.30	0.40	0.20	0.18	1092.89
	CNG	275.00	10.00	22.30	0.00	0.10	0.10	2139.99
	LPG	74.00	4.00	26.90	0.00	0.00	0.00	1457.97
Bobtail	Diesel	8.00	1.05	16.70	1.70	1.30	1.26	1330.36
	Gasoline	398.00	12.13	22.30	0.40	0.20	0.18	1092.89
	CNG/LPG	---	---	---	---	---	---	1457.97
Cabin Service Truck	Diesel	2.00	1.05	10.30	1.60	0.30	0.29	1330.36
	Gasoline	24.00	3.73	10.70	0.30	0.10	0.09	1092.89
	CNG/LPG	107.00	6.00	26.90	0.00	0.10	0.10	1457.97
Cargo Loader	Diesel	14.00	3.16	19.20	1.90	2.10	2.04	1330.36
	Gasoline	400.00	12.13	22.30	0.40	0.20	0.18	1092.89
	CNG/LPG	106.00	5.00	26.80	0.00	0.10	0.10	1457.97
Cargo Tractor	Diesel	12.00	2.11	17.00	1.80	2.40	2.33	1330.36
	Gasoline	404.00	12.13	22.40	0.40	0.20	0.18	1092.89
	CNG/LPG	107.00	6.00	26.90	0.00	0.10	0.10	1457.97
Cart (Light Cart)	Diesel	---	---	---	---	---	---	1330.36
	Gasoline	392.00	12.13	22.30	0.40	0.10	0.09	1092.89
	CNG/LPG	---	---	---	---	---	---	1457.97
Catering Truck	Diesel	2.00	1.05	10.30	1.60	0.30	0.29	1330.36
	Gasoline	24.00	3.73	10.70	0.30	0.10	0.09	1092.89
	CNG/LPG	107.00	6.00	27.00	0.00	0.10	0.10	1457.97
Deicer	Diesel	---	---	---	---	---	---	1330.36
	Gasoline	271.00	9.33	22.00	0.40	0.10	0.09	1092.89
	CNG/LPG	---	---	---	---	---	---	1457.97
Forklift	Diesel	15.00	4.21	22.00	1.90	2.70	2.62	1330.36
	Gasoline	392.00	12.13	22.00	0.40	0.10	0.09	1092.89
	CNG/LPG	108.00	6.00	27.00	0.00	0.10	0.10	1457.97

Table 3-6. Common GSE Emission Factors

GSE Type	Fuel Type	Emission Factors (lb/1000hp-hr)						
		CO	VOC ^a	NO _x	SO _x	PM ₁₀ ^b	PM _{2.5} ^c	CO _{2e} ^d
Fuel Truck	Diesel	3.00	1.05	11.00	1.60	0.70	0.68	1330.36
	Gasoline	37.00	4.67	11.00	0.30	0.10	0.09	1092.89
	CNG/LPG	106.00	5.00	27.00	0.00	0.10	0.10	1457.97
Generator	Diesel	6.00	2.11	20.00	1.60	1.40	1.36	1330.36
	Gasoline	271.00	9.33	22.00	0.40	0.10	0.09	1092.89
	CNG/LPG	---	---	---	---	---	---	1457.97
Ground Power Unit	Diesel	5.00	1.05	17.00	1.60	1.00	0.97	1330.36
	Gasoline	271.00	9.33	22.00	0.40	0.10	0.09	1092.89
	CNG/LPG	---	---	---	---	---	---	1457.97
Hydrant Truck	Diesel	4.00	1.05	12.00	1.60	1.60	1.55	1330.36
	Gasoline	26.00	3.73	11.00	0.30	0.10	0.09	1092.89
	CNG/LPG	---	---	---	---	---	---	1457.97
Lavatory Truck	Diesel	4.00	1.05	12.00	1.60	1.30	1.26	1330.36
	Gasoline	18.00	3.73	11.00	0.30	0.10	0.09	1092.89
	CNG/LPG	106.00	5.00	27.00	0.00	0.10	0.10	1457.97
Lift	Diesel	15.00	4.21	22.00	1.90	2.70	2.62	1330.36
	Gasoline	397.00	12.13	22.00	0.40	0.20	0.18	1092.89
	CNG/LPG	106.00	5.00	27.00	0.00	0.10	0.10	1457.97
Passenger Stand	Diesel	4.00	1.05	12.00	1.60	1.60	1.55	1330.36
	Gasoline	46.00	4.67	11.00	0.30	0.10	0.09	1092.89
	CNG/LPG	106.00	5.00	27.00	0.00	0.10	0.10	1457.97
Service Truck	Diesel	3.00	1.05	11.00	1.60	0.90	0.87	1330.36
	Gasoline	46.00	4.67	11.00	0.30	0.10	0.09	1092.89
Sweeper	Diesel	12.00	2.11	17.00	1.80	2.40	2.33	1330.36
	Gasoline	393.00	12.13	22.00	0.40	0.10	0.09	1092.89
	CNG/LPG	108.00	6.00	27.00	0.00	0.10	0.10	1457.97
Water Service	Diesel	---	---	---	---	---	---	1330.36
	Gasoline	46.00	4.67	11.00	0.30	0.10	0.09	1092.89
	CNG/LPG	---	---	---	---	---	---	1457.97
Other	Diesel	8.00	1.05	17.00	1.70	1.30	1.26	1330.36
	Gasoline	396.00	12.13	22.00	0.40	0.20	0.18	1092.89
	CNG/LPG	106.00	5.00	27.00	0.00	0.10	0.10	1457.97

SOURCE: FAA Emission and Dispersion Modeling System, Version 5.02 for model year 2000 GSE and converted from g/hp-hr to lb/10³ hp-hr.

- Reported as HC in EDMS. All values assumed to be equal to total hydrocarbons (THC) and converted into VOC. For diesel engines, THC was converted to VOC by multiplying THC value by 1.053. All gasoline engines were assumed to be 4-stroke. For gasoline engines, THC was converted to VOC by multiplying the THC value by 0.933. THC values were assumed to equal VOC emissions for CNG and LPG-fired engines. Hydrocarbon conversion factors come from *Conversion Factors for Hydrocarbon Emission Components*, U.S. Environmental Protection Agency (EPA), July 2010.
- Reported as PM in EDMS. All PM assumed to be PM₁₀.
- Using assumptions and factors applied by EPA in its NONROAD model, PM_{2.5} emissions conservatively estimated as 97% of JP-8 or diesel PM₁₀ emissions, 92% of gasoline PM₁₀ emissions, and 100% of CNG or LPG PM₁₀ emissions.
- CO_{2e} is the sum of emission factors for CO₂, CH₄, and N₂O. The emission factors are presented in equivalent CO₂ (CO_{2e}) using global warming potentials of 28 and 265 for CH₄ and N₂O, respectively. The emission factors were provided by the EPA's Emission Factors for Greenhouse Gas Inventories. When "CNG/LPG" is provided as the fuel used, then the greenhouse gas emission factor provided was calculated using the more conservative estimate from LPG. The emission factors for N₂O and CH₄ for CNG and LPG were assumed to be equal to those for gasoline. Calculations were made using the heating values and fuel usage rates provided in Table 3-1.

“---” Indicates No Data Available.

Table 3-7. Speciated HAP Emission Factors for Uncontrolled Diesel Reciprocating Internal Combustion Engines

Compound	Emission Factors	
	lb/10 ³ gal	lb/10 ³ hp-hr
1,3-Butadiene	5.40E-03	3.16E-04
Acenaphthene	1.96E-04	1.15E-05
Acenaphthylene	6.98E-04	4.09E-05
Acetaldehyde	1.06E-01	6.20E-03
Acrolein	1.28E-02	7.48E-04
Anthracene	2.58E-04	1.51E-05
Benz(a)anthracene	2.32E-04	1.36E-05
Benzene	1.29E-01	7.55E-03
Benzo(a)pyrene	2.59E-05	1.52E-06
Benzo(b)fluoranthene	1.37E-05	8.02E-07
Benzo(g,h,i)perylene	6.75E-05	3.96E-06
Benzo(k)fluoranthene	2.14E-05	1.25E-06
Chrysene	4.87E-05	2.86E-06
Dibenz(a,h)anthracene	8.05E-05	4.72E-06
Fluoranthene	1.05E-03	6.16E-05
Fluorene	4.03E-03	2.36E-04
Formaldehyde	1.63E-01	9.55E-03
Indeno(1,2,3-c,d)pyrene	5.18E-05	3.03E-06
Naphthalene	1.17E-03	6.86E-05
Phenanthrene	4.06E-03	2.38E-04
Pyrene	6.60E-04	3.87E-05
Toluene	5.64E-02	3.31E-03
Xylenes	3.93E-02	2.31E-03

SOURCE: *Compilation of Air Pollutant Emission Factors Volume I: Stationary Point and Area Sources* fifth edition, January 1995. Section 3.3. Where necessary, the average brake specific fuel consumption (BSFC) and heating value from Table 3-1 were used for unit conversion.

3.6 References

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4.0 NONROAD ENGINES AND EQUIPMENT (NRDE)

4.1 Introduction

Air emissions at DAF installations result not only from military operations, but also from day-to-day activities involving nonroad engines and equipment (NRDE). The full federal definition of a nonroad engine can be found in 40 CFR 1068.30. Examples of NRDE that are commonly operated on DAF installations include: industrial equipment (e.g., forklifts, aerial lifts, sweepers, etc.); lawn and garden equipment (e.g., lawn mowers, trimmers, leaf blowers, snow blowers, etc.); agricultural equipment (e.g., sprayers, agricultural tractors, agricultural mowers, etc.); commercial equipment (e.g., pumps, air compressors, etc.); recreational vehicles (e.g., off-road motorcycles, all-terrain vehicles, including utility vehicles, snowmobiles, golf carts, etc.); and logging equipment (e.g., shredders). Portable generators are nonroad engines but as internal combustion (ICOM) units, their emissions are covered in the appropriate sections of either the *Air Emissions Guide for Air Force Stationary Sources* or *Transitory Sources*. Similarly, AGE and GSE are also nonroad engines that are widely used on DAF installations, but are addressed separately in the “Flightline Ground Support Equipment” section of this Guide. Emissions of concern from the operation of NRDE include criteria pollutants and HAPs associated with fuel combustion processes.

NRDE are typically powered by either a reciprocating internal combustion engine or a small gas turbine. For reciprocating engines, a piston moves inside a cylinder to compress an air/fuel mixture. The air/fuel mixture combusts and expands, pushing the piston through the cylinder. The piston returns, pushing out the exhaust gases, and the cycle is repeated. For gas turbines, ambient air is pressurized with a compressor. Fuel is introduced to this compressed air and is ignited. The high temperature, high pressure air flows through a turbine where it expands, producing shaft energy that is used to drive both the compressor and the electric generator.

Reciprocating engines may differ in design by the diameter of the cylinders in the engine, known as the bore, and the length of the linear movement of the piston in each cylinder, known as the stroke. The size of the engine is related to its displacement per cylinder, which is a measure of the volume of the cylinder multiplied by the length of the stroke. A reciprocating engine may be classified as either 4-stroke or 2-stroke. For a 4-stroke engine, the combustion cycle involves two revolutions of the crankshaft, to which the pistons are connected, and the cycle consists of four stages. The induction stroke occurs when the piston moves down within the cylinder, creating a vacuum and drawing in air or an air/fuel mixture. During the compression stroke, the piston moves up to pressurize the air or air/fuel mixture which then ignites. The heated air expands generating a force on the piston such that it is forced downward again in what is called the power stroke. Finally, the piston moves upward again to force the exhaust gas out of the cylinder during the exhaust stroke and returns to the starting position of the induction stroke so

the cycle may be repeated. 2-stroke engines can operate with just one revolution of the crankshaft because induction of the air or air/fuel mixture occurs concurrently with the release of the exhaust gas.

Detonation of the air/fuel mixture during the compression stroke may occur through either compression or spark ignition (CI or SI). In a CI engine, air is first compressed by the piston in the cylinder, which causes the temperature of the air to rise. Fuel is added to the heated air and combusts due to the temperature of the air being above the auto-ignition temperature of the fuel. Reciprocating CI engines are powered either by diesel fuel or JP-8. SI engines, which use gasoline, natural gas, or LPG differ from CI engines in that the fuel/air mixture does not ignite spontaneously, but rather by a spark. Emissions from nonroad engines will vary due to operating conditions such as temperature, humidity, torque, ignition timing, or even air/fuel mixture. Even slight variations in the air/fuel mixture will dramatically affect pollutant emissions.

While most NRDE are powered by either diesel or gasoline fuel, engines fueled with JP-8 are becoming increasingly more common. Presently, there are few EPA-approved NRDE EFs developed specifically for JP-8. However, since the combustion characteristics between JP-8 and diesel fuel are similar, **emissions from JP-8 fueled NRDE are typically calculated using diesel EFs.**

Gas turbines are composed of three major components: a compressor, a combustor, and a power turbine. In a gas turbine, ambient air is drawn in at the front of the engine with a fan, and the pressure is raised up to 30 times the ambient pressure via a compressor. The compressed air is directed into the combustor section where it is sprayed with fuel and ignited with an electric spark. The burning gases expand, and the high-pressure, high-velocity gas stream passes through a turbine area, driving the movement of an output shaft that converts the energy to useful power. Typically, more than half of the shaft energy produced is needed to drive the internal compressor, with the balance available to drive an external load such as an electric generator or water pump. Gas turbines may be more advantageous than reciprocating engines because of their lower operational cost, lower levels of CO and VOC emissions, and potential for use in cogeneration systems. However, the large initial cost of a gas turbine engine means that they are not likely to be a part of NRDE.

4.2 Emission Factors

Emission factors for NRDE are provided at the end of this section. They have been developed for specific equipment and are in units of lb/10³ hp-hr. The appropriate EF should be selected based on the fuel the engine uses and whether the equipment is a 2-stroke or 4-stroke engine, if applicable. The tables also provide typical load factors and calculated BSFC values which may be needed for emissions calculations as described later in this chapter.

4.2.1 Alternative Fuels and Emissions Reduction

Increasingly stringent regulatory requirements mean that some DAF installations may be encouraged to operate non-road engines and equipment on alternative fuels such as ethanol based E85 (a blend of 85% ethanol and 15% gasoline) or B20 (a blend of 20% biodiesel and 80% petroleum diesel). While there are currently no NRDE that use these alternative fuels, there are on-highway flexible fuel vehicles (FFVs) that can operate on E85 and are required to meet EPA's Tier II vehicle emission standards regardless of the fuel type. Some research suggests evidence of potential emission reduction benefits from the use of E85, although testing has been limited and emissions impacts have not been fully characterized. While some reduction in evaporative emissions is expected due to the displacement of gasoline, emissions are believed to be generally similar to gasoline emissions. Note, however, that data indicates that some HAP emissions are reduced while others are increased. Accordingly, EPA does not support the use of emission reduction factors for engines using E85 fuels.

A somewhat similar situation exists regarding information on the emissions impact of B20 fuels. In October 2002, the EPA issued its technical report on biodiesel emissions (USEPA 2002). This report was developed using various statistical analysis tools to compile and assess the results of 39 studies regarding the impact of B20 use on vehicle emissions. Relative to conventional, on-highway diesel fuel (i.e., conventional low-sulfur diesel with sulfur content < 500 ppm), B20 showed a +2% impact on NO_x emissions, a -10% impact on PM emissions, a -21% impact on HC emissions, and a -11% impact on CO emissions. Since the time of the study, however, ultra-low sulfur diesel (ULSD) regulations limiting the sulfur content of on-highway diesel fuel to 15 ppm have been enacted. Since June 2007, the sulfur content of nonroad diesel fuel has been limited to 500 ppm which was then further reduced to 15 ppm effective June 2010. Another study was conducted under the auspices of the DoD Environmental Security Technology Certification Program (ESTCP). This study sought to measure the impact of B20 on CO, NO_x, PM, HC, and HAP emissions from engines used in on-road and portable power generation applications (Environmental Security Technology Certification Program 2006). Using primarily a B20 biodiesel/ULSD blend, the study showed no significant differences in emissions between the B20 blended with ULSD and the ULSD by itself. No consistent trend was observed with regards to HAP emissions.

These examples indicate that efforts to apply emission reduction factors to estimate emissions from alternatively fueled NRDE should be attempted only after careful review of the most current, validated information available. Information can be obtained from either the EPA, the Department of Energy (DoE), the DoD, and Service Engineering and Research Organizations. Application of the B20 EFs developed by the EPA should only be considered if an installation is confident that the nonroad diesel fuel it is replacing has a sulfur concentration of 500 ppm or less. It is important to note that should the sulfur content exceed 500 ppm, potential emissions

benefits of B20 may be underreported because, to date, emission impacts studies have generally not focused on nonroad engines and fuels.

4.3 Emissions Calculation

This section describes several methodologies available for calculating emissions from nonroad engines and equipment using either the EPA's NONROAD emissions estimating software model, or the underlying EFs in the NONROAD model and manual calculation procedures. Regardless of which approach is chosen, the methodology is applied to each individual piece of NRDE for each pollutant for which emissions are being calculated. The methodologies are briefly described in the following paragraphs.

4.3.1 Emissions Estimation Using the EPA NONROAD Model

The EPA recommends use of its NONROAD modeling software for estimating emissions from the operation of nonroad vehicles and equipment. The software was developed to provide consistent means of generating emissions data required by the CAA. The current NONROAD model predicts emissions of six exhaust pollutants (HC, NO_x, CO, CO₂, SO_x, and PM) for more than 80 basic and 260 specific types of NRDE across a variety of model years that use gasoline, diesel, CNG, or LPG. The model allows PM to be reported as PM₁₀ or PM_{2.5}. **As of June 2014, the NONROAD model was integrated into the Motor Vehicle Emissions Simulator (MOVES 2014) model as an additional module and can now be run within the MOVES software. On December 2024, the MOVES5 model became the official version of MOVES, which continues to include and support the NONROAD model.**

A major benefit of the NONROAD model is that it recognizes that an engine's performance degrades over time due to normal operation and use. Engine deterioration not only increases exhaust emissions, but usually leads to a loss of combustion efficiency, and may increase non-exhaust emissions. EPA believes there is insufficient information to justify the use of adjustment factors for small SI engines. Therefore, the NONROAD model uses EFs based on unadjusted steady-state test results, and applies an adjustment factor only to SI engines with a power rating greater than 25 hp. In terms of CI engines, the NONROAD model addresses the effects of deterioration by multiplying a zero-hour EF for each category of engine by a deterioration factor to reflect degraded performance as the engine ages.

While the core model for NONROAD is written in FORTRAN and can be operated as a standalone application in a DOS environment, the graphical user interface will generate scenarios for only one specified set of conditions. If the user requires multiple scenarios in a single model run, the scenarios must be generated in a DOS environment. The NONROAD reporting utility is written in Microsoft Access and operated similarly to the graphical user

interface. The reporting utility is a standalone application and knowledge of Access is not required to generate reports.

EFs for NRDE manufactured prior to Model Year 1998 have been derived from the NONROAD model and its underlying data sets by the EPA Office of Transportation Air Quality. EFs are provided in Table 4-1 through Table 4-5 and serve as the basis for estimating emissions manually using the methodologies discussed in the following subsections.

4.3.2 Horsepower/Load Factor Method

The most common approach for calculating emissions from NRDE is essentially the same as the method incorporated into the NONROAD model and the horsepower/load factor method used in the “FLIGHTLINE GROUND SUPPORT EQUIPMENT (AGE)” section. Emissions are estimated based on the engine’s rated power output, a load factor, and annual operating time. Generally, for calculating emissions from non-road engines, a load factor of 100% is assumed and used in the following equation:

$$E(Pol) = OT \times \frac{LF}{100} \times hp_{rtd} \times \frac{1}{1000} \times EF(Pol) \times N$$

Equation 4-1

Where,

- E(Pol)** = Annual emissions of each individual pollutant (lb/yr)
- OT** = Operating time (hr/unit)
- LF** = Load factor (%). Typically assumed to be 100%, though it may be calculated using Equation 3-3 in this guide.
- 100** = Factor for converting percent to a fraction (%)
- hp_{rtd}** = Engine rated horsepower (hp)
- 1000** = Factor converting from hp to 10³ hp (hp/10³ hp)
- EF(Pol)** = Emission factor of each pollutant (lb/10³ hp-hr)
- N** = Number of nonroad engines and equipment used each year (units/yr)

The data required for calculating emissions using the horsepower/load factor method may be found in Table 4-1 through Table 4-5.

4.3.3 Fuel Consumption Method

Estimating emissions based on fuel consumption can be utilized in instances when the fuel consumption is known but the operating time of the NRDE is not. The annual fuel consumption, fuel density, BSFC values for the piece of equipment, and EF must be known to calculate emissions using this method as illustrated in the equation below:

$$E(Pol) = \frac{(FC \times \rho)}{BSFC} \times EF(Pol) \times N$$

Equation 4-2

Where,

- E(Pol)** = Annual emissions of each individual pollutant (lb/yr)
- FC** = Annual fuel consumption (gal/unit). If the total fuel consumed is unknown, the fuel consumed may be calculated using Equation 3-5 or Equation 3-6
- ρ** = Fuel density (lb/gal)
- BSFC** = Brake-specific fuel consumption for the engine (lb/10³ hp-hr)
- EF(Pol)** = Emission factor for each pollutant (lb/10³ hp-hr)
- N** = Number of equipment used each year (units/yr)

When performing emissions calculations using the fuel consumption method, enhanced accuracy may be achieved by using the density of the fuel as provided by the fuel supplier, and the BSFC for the engine provided directly from the engine manufacturer. If this data is unavailable, then suggested values for these variables may be found in the following tables:

- Table 3-1 provides the average density for nonroad fuels.
- Table 4-1 through Table 4-6 provides the EFs and BSFC for specific equipment types in lb/10³ hp-hr.

4.3.4 VOC and HAP Speciation

There is little data available for the speciation of VOCs for nonroad engines. Whenever the quantity of speciated compounds is required to be calculated, the average percentage of each species within the total VOC may be used as a gross estimate of the emissions of that compound. This section should only be used if no acceptable speciated EFs are available for the engine in question. Speciated VOCs are calculated by taking the product of the total VOCs and the weighted percentage of the individual VOC as follows:

$$E(Pol) = E(VOC) \times \frac{P(Pol)}{100}$$

Equation 4-3

Where,

- E(Pol)** = Emissions of speciated VOC (lb/yr)
- E(VOC)** = Emissions of total VOC (lb/yr)
- P(Pol)** = Weight percent of a given pollutant (%). These are provided in Table 4-7
- 100** = Factor for converting percent to a fraction (%)

The weight percent of individual pollutants were calculated for engines combusting diesel, gasoline, natural gas (which is further subdivided into 2- and 4-stroke lean burn and 4-stroke rich burn), and LPG. The values provided in Table 4-7 were calculated using the equation below. The EF data used in these calculations are from several sources including *Compilation of Air Pollutant Emission Factors* (AP-42), the Mojave Desert Air Quality Management District, and the EPAs *SPECIATE* database. Since the available data regarding mobile NRDE EFs is limited, the factors presented in these sources were assumed to be representative of all non-road engines.

$$P_{(Pol)} = \frac{EF(Pol)}{EF(VOC)_{Total}}$$

Where,

- P(Pol)** = Weight percent of a given pollutant (%)
EF(Pol) = Individual pollutant emission factor (lb/10³ hp-hr)
EF(VOC)_{Total} = Total VOC emission factor (lb/10³ hp-hr)

In addition to the weight percent pollutant speciation values provided in Table 4-7, most equipment manufacturers have data on emissions specific to their product, and many are willing to provide it upon request. HAP emissions may be calculated using the following tables:

- Table 3-7 provides EFs for uncontrolled diesel reciprocating internal combustion engines in a lb/1000 hp-hr format and may be used to calculate HAPs directly using Equation 4-1.
- Table 4-7 gives the weight percent VOC and HAP speciation of emissions for estimating specific VOCs/HAPs using Equation 4-3 above.

4.4 Information Resources

The primary source of information for most NRDE is the Transportation Squadron. The Transportation Vehicle Operations Flight and/or the Transportation Vehicle Maintenance Flight typically maintain records on most DAF-owned NRDE. Records include information such as the identity of the shops/organizations operating the vehicles/equipment, hp rating of the vehicles/equipment, and hours of operation. In some cases, it may be necessary to contact the actual organizations/shops using the vehicle/equipment to obtain information that Transportation may not have. For example, for construction equipment and lawn/garden equipment, it will probably be necessary to contact the Civil Engineering (CE) Operations Flight, the CE Flight and the CE Housing Flight, or a similar organization if base housing has been privatized.

It is important to note that many of the construction and lawn care activities at DAF installations are performed by contractors, and therefore it may be necessary to contact the contractors

directly to obtain the necessary information on their equipment. The contracts section of the CE Engineering Flight should be able to provide information on what equipment was used to perform construction and lawn care activities on base during the year.

In addition, some NRDE (such as leaf blowers, trimmers/edgers, snow blowers, etc.) operated on DAF installations may be owned by personnel who live on base. Since this equipment is privately owned, obtaining this information is usually more difficult than for DAF-owned equipment. One approach to obtaining the necessary information is to work with the CE Housing Flight to identify the types of NRDE used on base housing, estimate the number of each different equipment type, estimate the average hp of each equipment type, and estimate the average operating time (hours per year) for each equipment type. If adequate resources and time are available, a more comprehensive approach would be to survey a representative number of housing units to determine the type and size of equipment used and their associated estimated usage. For NRDE in which emissions are calculated using EFs based on fuel usage (i.e., using “g/gal” EFs), Fuels Supply may be a source of information regarding fuel consumption.

4.5 Example Calculations

The following section provides examples of how the equations and methodologies discussed earlier can be applied to calculate emissions from non-road vehicle and equipment operations. The procedures are applied to each individual NRDE and for each pollutant for which emissions must be calculated. Emissions for all NRDE and pollutants are then summed to obtain the pollutant-specific, base-wide totals. Load factors, BSFCs, and EFs necessary for calculating emissions were obtained from Table 4-1 through Table 4-7.

4.5.1 Problem 1 – Estimating Emissions Using the Horsepower/Load Factor Method

A DAF base has collected information on the NRDE operating on the base for CY 2025. Calculate the CO emissions associated with the operation of diesel-powered forklifts on base. The following information was obtained from the base:

Equipment Type – Diesel powered forklift (SCC-2270003020)	
# of pieces	6
Power Rating	85 hp
Operating Time	200 hr/unit

Step 1 – Record the CO emission factor and load factor. The EF and typical load factor are given in Table 4-3 as **0.186 lb/10³ hp-hr** and **59%** respectively.

Step 2 – Calculate the annual emissions for the six forklifts. Using the information in the table above and the values recorded in Step 1, the annual CO emissions for the six forklifts can be calculated using Equation 4-1:

$$E(Pol) = OT \times \frac{LF}{100} \times hp \times \frac{1}{1000} \times EF(Pol) \times N$$

$$E(CO) = 200 \frac{hr}{unit} \times \frac{59\%}{100\%} \times 85(\cancel{hp}) \times \frac{1}{1000} \left(\frac{10^3 \cancel{hp}}{\cancel{hp}} \right) \times 0.186 \frac{lb}{10^3 \cancel{hp-hr}} \times 6 \frac{unit}{yr}$$

$$E(CO) = 11.19 \frac{lb}{yr}$$

4.5.2 Problem 2 – Estimating Emissions Using Fuel Consumption

A DAF base operates gasoline fueled commercial lawn mowers to maintain the appearance of public areas on base. Calculate the VOC and formaldehyde emissions associated with operation of the lawnmowers on base for CY 2025. The following information was obtained from the base:

Equipment Type – 4-stroke gasoline lawnmower (SCC 2265004011)	
# of pieces	25
Power rating	5 hp
Fuel Consumption	40 gal each

Step 1 – Record the fuel density, VOC emission factor, and appropriate BSFC. The fuel density is provided in Table 3-1 and the VOC EF and BSFC value for gas powered commercial lawn mowers are provided in Table 4-3. The fuel density is given as **6.15 lb/gal** while the VOC EF and BSFC (for 2025) are given as **14.858 and 880 lb/10³ hp-hr**, respectively.

Step 2 – Calculate annual VOC emissions. Using the data from Step 1 and Equation 4-2:

$$E(Pol) = \frac{(FC \times D)}{BSFC} \times EF(Pol) \times N$$

$$E(VOC) = \frac{\left(40 \frac{gal}{unit} \times 6.15 \frac{lb}{gal} \right)}{880 \frac{lb}{10^3 \cancel{hp-hr}}} \times 14.858 \frac{lb}{10^3 \cancel{hp-hr}} \times 25 \frac{unit}{yr}$$

$$E(VOC) = 0.2795 \frac{10^3 \cancel{hp-hr}}{unit} \times 14.858 \frac{lb}{10^3 \cancel{hp-hr}} \times 25 \frac{unit}{yr}$$

$$E(VOC) = 103.82 \frac{lb}{yr}$$

Next, calculate formaldehyde emissions.

Step 3 – Record formaldehyde weight percent VOC emissions for 4-stroke gasoline engines.

Table 4-7 lists this value as **1.32%**.

Step 4 – Calculate annual formaldehyde emissions. Using the formaldehyde weight percent recorded in Step 3 and Equation 4-3:

$$E(Pol) = E(VOC) \times \frac{P(Pol)}{100}$$

$$E(Formaldehyde) = 103.82 \frac{lb}{yr} \times \frac{1.32\%}{100\%}$$

$$E(Formaldehyde) = 103.82 \frac{lb}{yr} \times 0.0132$$

$$E(Formaldehyde) = 1.37 \frac{lb}{yr}$$

4.5.3 Problem 3 – Estimating SO_x Emissions

A DAF base needs to estimate SO_x emissions from the operation of rough terrain forklifts. The following information was obtained from the base:

Equipment Data – Rough terrain forklifts (SCC 2270002057)	
# of pieces	5
Fuel	Diesel
Power rating	80 hp
Model year	1997
Fuel Consumption	200 gal (each); 1,000 gal (total)
Hours of operation	250 hr/unit (each)

Since the model year of the forklifts are pre-1998, then the EFs applicable to these engines are found in Table 4-6. The preferred method of using the horsepower and load factor is used for the calculation of emissions.

Step 1 – Record the load factor and SO_x emission factor. According to Table 4-1, for diesel-powered rough terrain forklifts, the typical load factor is **59%** and Table 4-6 lists the SO_x EF as **0.21 lb/10³ hp-hr**.

Step 2 – Calculate the total SO_x emissions. Using these values and the data in the table above, the SO_x emissions can be calculated using Equation 4-1:

$$E(Pol) = OT \times \frac{LF}{100} \times hp \times \frac{1}{1000} \times EF(Pol) \times N$$

$$E(SO_x) = 250 \frac{hr}{unit} \times \frac{59\%}{100\%} \times 80 \cancel{hp} \times \frac{1}{1000} \left(\frac{10^3 \cancel{hp}}{\cancel{hp}} \right) \times 0.21 \frac{lb}{10^3 \cancel{hp-hr}} \times 5 \frac{unit}{yr}$$

$$E(SO_x) = 12.39 \frac{lb}{yr}$$

4.5.4 Problem 4 – Estimating Emissions from the Use of B20

A DAF base has been blending B20 biodiesel into the non-road fuel used to power its off-highway trucks. The normal sulfur content of the non-road diesel is 500 ppm. The following information was obtained from the base.

Equipment Data – Off-Highway Trucks (SCC 2270002051)	
# of pieces	10
Fuel	B20/nonroad diesel (500 ppm blend)
Power rating	250 hp
Model year	2001
Hours of operation	200 hours (each); 2,000 hours (total)

Estimate the NO_x and PM₁₀ emissions from the operation of the vehicles.

Step 1 – Record the NO_x emission factor and load factor. Table 4-3 gives the EF and load factor (for 2025) as **3.104 lb/10³ hp-hr** and **59%** respectively.

Step 2 – Calculate annual NO_x emissions. Use the EF and load factor recorded in Step 1, the data provided in the table, and Equation 4-1 as follows:

$$E(Pol) = OT \times \frac{LF}{100} \times hp \times \frac{1}{1000} \times EF(Pol) \times N$$

$$E(NO_x) = 200 \frac{hr}{unit} \times \frac{59\%}{100\%} \times 250 \cancel{hp} \times \frac{1}{1000} \left(\frac{10^3 \cancel{hp}}{\cancel{hp}} \right) \times 3.104 \frac{lb}{10^3 \cancel{hp-hr}} \times 10 \frac{unit}{yr} = 915.68 \frac{lb}{yr}$$

Step 3 – Adjust the estimated emissions to reflect the expected 2% increase in NO_x attributable to the use of B20.

$$E(NO_X) = 915.68 \frac{lb}{yr} \times \left(1 + \frac{2\%}{100\%}\right)$$

$$E(NO_X) = 915.68 \frac{lb}{yr} \times (1.02)$$

$$E(NO_X) = 933.99 \frac{lb}{yr}$$

Step 4 – Record the PM₁₀ emission factor. Table 4-3 lists this value as **0.045 lb/10³ hp-hr**.

Step 5 – Calculate annual PM₁₀ emissions. Use Equation 4-1, the EF recorded in Step 4, and the data provided in the table above as follows:

$$E(Pol) = OT \times \frac{LF}{100} \times hp \times \frac{1}{1000} \times EF(Pol) \times N$$

$$E(PM_{10}) = 200 \frac{hr}{unit} \times \frac{59\%}{100\%} \times 250 \cancel{hp} \times \frac{1}{1000} \left(\frac{10^3 \cancel{hp}}{\cancel{hp}} \right) \times 0.045 \frac{lb}{10^3 \cancel{hp-hr}} \times 10 \frac{unit}{yr} = 13.28 \frac{lb}{yr}$$

Step 6 – Adjust the estimated emissions to reflect the expected 10% decrease in PM emissions attributable to the use of B20 fuel:

$$E(PM_{10}) = 13.28 \frac{lb}{yr} \times \left(1 - \frac{10\%}{100\%}\right)$$

$$E(PM_{10}) = 13.28 \frac{lb}{yr} \times (0.9)$$

$$E(PM_{10}) = 11.95 \frac{lb}{yr}$$

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260001010	2 Stroke Motorcycles: Off-Road ^c	100	260	78.732	69.691	0.922	0.003	2.551	2.347	573.000
2260001020	2 Stroke Snowmobiles	34	1640	132.426	175.450	5.990	0.012	1.607	1.479	2105.580
2260001030	2 Stroke ATVs ^c	100	210	82.177	15.107	0.942	0.003	0.406	0.373	501.717
2260001060	2 Stroke Specialty Vehicles/Carts	58	1000	575.914	20.587	4.630	0.013	0.296	0.272	2348.316
2260002006	2 Stroke Tampers/Rammers	55	680	560.570	134.770	3.366	0.008	20.412	18.779	1596.022
2260002009	2 Stroke Plate Compactors	55	830	490.658	110.085	5.246	0.013	16.835	15.489	2440.287
2260002021	2 Stroke Paving Equipment	59	830	494.394	109.698	5.246	0.013	16.949	15.593	2437.570
2260002027	2 Stroke Signal Boards/Light Plants	72	830	512.954	128.849	5.246	0.013	17.574	16.168	2422.471
2260002039	2 Stroke Concrete/Industrial Saws	78	630	580.948	136.956	3.517	0.009	21.176	19.482	1645.706
2260002054	2 Stroke Crushing/Proc. Equipment	85	830	512.954	112.858	5.246	0.013	17.574	16.168	2422.470
2260003030	2 Stroke Sweepers/Scrubbers	71	820	512.953	115.390	5.246	0.013	17.574	16.168	2422.469
2260003040	2 Stroke Other General Industrial Equipment	54	830	512.953	113.920	5.246	0.013	17.574	16.168	2422.469
2260004015	2 Stroke Rotary Tillers < 6 HP (Residential)	40	940	455.120	108.327	5.259	0.013	16.271	14.969	2454.502
2260004016	2 Stroke Rotary Tillers < 6 HP (Commercial)	40	900	459.895	94.306	5.259	0.013	16.408	15.095	2451.195
2260004020	2 Stroke Chain Saws < 6 HP (Residential)	70	900	470.395	108.616	5.246	0.013	16.250	14.950	2454.278
2260004021	2 Stroke Chain Saws < 6 HP (Commercial)	70	650	577.069	133.544	3.616	0.009	20.971	19.293	1690.024
2260004025	2 Stroke Trimmers/Edgers/Brush Cutter (Residential)	91	890	434.296	110.004	5.296	0.013	16.888	15.537	2441.523
2260004026	2 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	810	494.612	103.040	4.976	0.012	17.170	15.797	2323.489
2260004030	2 Stroke Leaf blowers/Vacuums (Residential)	94	890	460.603	130.463	5.259	0.013	16.428	15.113	2450.712
2260004031	2 Stroke Leaf blowers/Vacuums (Commercial)	94	760	520.116	113.799	4.354	0.011	18.424	16.950	2042.139
2260004035	2 Stroke Snow blowers (Residential)	35	870	530.459	401.579	1.774	0.006	5.897	5.425	1239.587
2260004036	2 Stroke Snow blowers (Commercial)	35	870	619.164	231.267	2.069	0.007	6.881	6.331	1446.110

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260004071	2 Stroke Commercial Turf Equipment	60	840	481.741	98.316	5.246	0.013	16.571	15.246	2446.606
2260005035	2 Stroke Sprayers	65	840	423.969	107.817	5.318	0.013	17.367	15.978	2430.965
2260006005	2 Stroke Generator Sets	68	830	483.463	131.458	5.251	0.013	16.808	15.464	2441.149
2260006010	2 Stroke Pumps	69	830	461.411	136.148	5.276	0.013	18.336	16.869	2396.367
2260006015	2 Stroke Air Compressors	56	830	512.954	134.653	5.246	0.013	17.574	16.168	2422.472
2260006035	2 Stroke Hydro Power Units	56	830	512.954	141.762	5.246	0.013	17.574	16.168	2422.470
2260007005	2 Stroke Chain Saws > 6 HP	70	620	586.887	137.090	3.366	0.008	21.491	19.772	1577.859
2265001010	4 Stroke Motorcycles: Off- Road	100	160	58.517	6.898	1.237	0.003	0.147	0.135	504.310
2265001030	4 Stroke ATVs	100	170	80.824	8.047	0.961	0.003	0.147	0.135	532.985
2265001050	4 Stroke Golf Carts	46	740	587.436	13.470	4.915	0.013	0.301	0.277	2345.372
2265001060	4 Stroke Specialty Vehicles/Carts	58	820	584.215	19.695	7.051	0.013	0.240	0.221	2309.831
2265002003	4 Stroke Pavers	66	700	434.559	9.498	4.296	0.012	0.257	0.236	2156.830
2265002006	4 Stroke Tampers/Rammers	55	760	572.517	12.595	4.534	0.013	0.250	0.230	2345.279
2265002009	4 Stroke Plate Compactors	55	830	488.542	15.027	5.119	0.014	0.516	0.475	2584.954
2265002015	4 Stroke Rollers	62	690	448.720	9.937	4.301	0.012	0.254	0.233	2152.867
2265002021	4 Stroke Paving Equipment	59	780	531.498	14.125	4.784	0.013	0.346	0.318	2416.100
2265002024	4 Stroke Surfacing Equipment	49	750	535.852	13.424	4.829	0.013	0.359	0.330	2389.483
2265002027	4 Stroke Signal Boards/Light Plants	72	780	525.744	13.414	5.090	0.014	0.464	0.427	2495.238
2265002030	4 Stroke Trenchers	66	710	417.021	10.356	4.436	0.012	0.323	0.297	2203.365
2265002033	4 Stroke Bore/Drill Rigs	79	790	367.050	14.581	7.043	0.013	0.490	0.450	2408.597
2265002039	4 Stroke Concrete/Industrial Saws	78	710	519.777	11.418	4.626	0.012	0.279	0.257	2250.915
2265002042	4 Stroke Cement & Mortar Mixers	59	820	535.695	18.152	4.829	0.013	0.351	0.323	2451.316

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265002045	4 Stroke Cranes	47	590	104.046	3.715	4.692	0.009	0.161	0.149	1651.204
2265002054	4 Stroke Crushing/Proc. Equipment	85	740	496.672	12.098	4.786	0.013	0.326	0.300	2312.256
2265002057	4 Stroke Rough Terrain Forklifts	63	570	36.079	1.772	3.156	0.009	0.153	0.141	1557.782
2265002060	4 Stroke Rubber Tire Loaders	71	550	24.332	1.389	2.722	0.009	0.153	0.141	1544.026
2265002066	4 Stroke Tractors/Loaders/ Backhoes	48	730	543.027	11.340	4.565	0.013	0.263	0.242	2293.835
2265002072	4 Stroke Skid Steer Loaders	58	640	248.464	6.281	4.566	0.010	0.190	0.174	1865.682
2265002078	4 Stroke Dumpers/Tenders	41	800	550.525	17.661	5.061	0.013	0.281	0.259	2367.958
2265002081	4 Stroke Other Construction Equipment	48	580	58.483	3.078	5.429	0.009	0.149	0.137	1580.964
2265003010	4 Stroke Aerial Lifts	46	630	174.701	5.003	4.561	0.010	0.174	0.160	1756.142
2265003020	4 Stroke Forklifts	30	560	24.006	1.346	2.705	0.009	0.152	0.140	1544.026
2265003030	4 Stroke Sweepers/Scrubbers	71	610	202.600	5.244	3.451	0.010	0.219	0.202	1822.910
2265003040	4 Stroke Other General Industrial Equipment	54	760	441.486	13.779	5.056	0.013	0.533	0.490	2400.478
2265003050	4 Stroke Other Material Handling Equipment	53	640	203.342	5.246	4.005	0.010	0.182	0.168	1802.680
2265003060	4 Stroke AC/Refrigeration	46	740	575.255	12.569	4.604	0.013	0.260	0.239	2345.291
2265003070	4 Stroke Terminal Tractors	78	520	24.452	1.358	2.728	0.009	0.154	0.142	1544.026
2265004010	4 Stroke Lawn mowers (Residential)	33	900	423.059	24.112	5.355	0.015	0.642	0.591	2759.982
2265004011	4 Stroke Lawn mowers (Commercial)	33	880	427.369	14.858	5.557	0.015	0.717	0.659	2759.982
2265004015	4 Stroke Rotary Tillers < 6 HP (Residential)	40	910	422.946	20.986	5.355	0.015	0.643	0.591	2760.134
2265004016	4 Stroke Rotary Tillers < 6 HP (Commercial)	40	890	423.798	13.409	5.395	0.015	0.658	0.605	2760.141
2265004025	4 Stroke Trimmers/Edgers/Brush Cutter HP (Residential)	91	900	423.901	20.269	5.400	0.015	0.660	0.607	2760.146
2265004026	4 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	820	496.859	12.439	5.116	0.014	0.500	0.460	2566.413
2265004030	4 Stroke Leaf blowers/Vacuums (Residential)	94	900	423.918	27.587	5.401	0.015	0.660	0.607	2760.145

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265004031	4 Stroke Leaf blowers/Vacuums (Commercial)	94	700	434.998	8.493	4.272	0.012	0.249	0.229	2155.291
2265004035	4 Stroke Snow blowers (Residential)	35	940	605.498	232.016	4.734	0.008	0.126	0.116	1506.663
2265004036	4 Stroke Snow blowers (Commercial)	35	940	710.190	33.889	5.385	0.009	0.147	0.135	1757.282
2265004040	4 Stroke Rear Engine Riding Mowers (Residential)	38	760	571.689	22.433	4.529	0.013	0.247	0.228	2346.431
2265004041	4 Stroke Rear Engine Riding Mowers (Commercial)	38	740	574.505	11.400	4.594	0.013	0.259	0.238	2346.059
2265004046	4 Stroke Front Mowers	65	790	573.599	12.715	4.887	0.013	0.243	0.223	2342.084
2265004051	4 Stroke Shredders < 6 HP	80	890	423.374	13.951	5.375	0.015	0.651	0.599	2760.138
2265004055	4 Stroke Lawn & Garden Tractors (Residential)	44	760	571.456	16.888	4.517	0.013	0.247	0.227	2345.592
2265004056	4 Stroke Lawn & Garden Tractors (Commercial)	44	740	574.674	10.813	4.593	0.013	0.258	0.238	2345.581
2265004066	4 Stroke Chippers/Stump Grinders	78	640	292.398	6.264	3.692	0.011	0.213	0.196	1930.389
2265004071	4 Stroke Commercial Turf Equipment	60	730	487.196	10.457	4.536	0.013	0.315	0.290	2309.798
2265004075	4 Stroke Other Lawn & Garden Equipment	58	850	500.240	24.026	5.206	0.014	0.446	0.410	2557.740
2265004076	4 Stroke Other Lawn & Garden Equipment	58	850	498.182	22.242	5.239	0.014	0.445	0.409	2552.252
2265005010	4 Stroke 2-Wheel Tractors	62	740	577.380	11.894	4.658	0.013	0.267	0.245	2345.308
2265005015	4 Stroke Agricultural Tractors	62	580	105.786	2.876	3.013	0.009	0.170	0.156	1661.918
2265005020	4 Stroke Combines	74	580	139.845	10.993	12.643	0.009	0.153	0.141	1664.631
2265005025	4 Stroke Balers	62	580	139.921	13.446	12.648	0.009	0.153	0.141	1664.610
2265005030	4 Stroke Agricultural Mowers	48	770	571.638	12.478	4.596	0.013	0.250	0.230	2347.902
2265005035	4 Stroke Sprayers	65	740	395.816	15.509	7.838	0.012	0.299	0.275	2196.249
2265005040	4 Stroke Tillers > 6 HP	71	870	749.723	25.236	8.459	0.013	0.253	0.233	2471.814
2265005045	4 Stroke Swathers	52	580	139.921	11.043	12.648	0.009	0.153	0.141	1664.610
2265005055	4 Stroke Other Agricultural Equipment	55	620	226.934	9.422	11.015	0.010	0.175	0.161	1805.880

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265005060	4 Stroke Irrigation Sets	60	550	36.225	1.756	2.801	0.009	0.168	0.154	1571.228
2265006005	4 Stroke Generator Sets	68	780	558.465	14.801	4.668	0.013	0.287	0.264	2384.119
2265006010	4 Stroke Pumps	69	760	439.135	12.426	4.950	0.013	0.414	0.381	2360.611
2265006015	4 Stroke Air Compressors	56	700	360.493	9.580	4.294	0.012	0.336	0.309	2144.262
2265006025	4 Stroke Welders	68	710	472.989	9.939	4.388	0.012	0.259	0.238	2199.512
2265006030	4 Stroke Pressure Washers	85	800	520.754	14.104	4.904	0.014	0.415	0.382	2489.869
2265006035	4 Stroke Hydro Power Units	56	750	540.048	12.593	4.753	0.013	0.334	0.307	2370.646
2265007010	4 Stroke Shredders > 6 HP	80	800	579.858	12.652	4.767	0.013	0.246	0.226	2350.199
2265007015	4 Stroke Forest Equipment - Feller/Bunch/Skidder	70	810	492.116	14.559	5.384	0.014	0.598	0.550	2593.343
2265008005	4 Stroke Airport Ground Support Equipment	56	600	129.385	4.222	3.260	0.010	0.232	0.213	1744.054
2265010010	4 Stroke Other Oil Field Equipment	90	740	594.069	12.551	5.085	0.013	0.323	0.297	2345.418
2267001060	LPG Specialty Vehicle Carts	58	490	46.060	1.904	8.867	0.006	0.126	0.126	1297.670
2267002003	LPG Pavers	66	460	12.972	0.318	2.333	0.006	0.127	0.127	1219.228
2267002015	LPG Rollers	62	450	10.633	0.246	2.054	0.006	0.129	0.129	1216.735
2267002021	LPG Paving Equipment	59	480	25.208	0.851	4.504	0.006	0.125	0.125	1244.158
2267002024	LPG Surfacing Equipment	49	460	12.956	0.326	2.367	0.006	0.128	0.128	1219.811
2267002030	LPG Trenchers	66	460	12.959	0.313	2.311	0.006	0.127	0.127	1218.866
2267002033	LPG Bore/Drill Rigs	79	490	54.451	2.206	10.082	0.006	0.125	0.125	1309.824
2267002039	LPG Concrete/Industrial Saws	78	430	10.772	0.251	2.066	0.006	0.130	0.130	1216.744
2267002045	LPG Cranes	47	480	21.781	0.687	3.822	0.006	0.124	0.124	1236.059
2267002054	LPG Crushing/Proc. Equipment	85	480	20.247	0.619	3.546	0.006	0.125	0.125	1232.842
2267002057	LPG Rough Terrain Forklifts	63	470	13.839	0.343	2.430	0.006	0.127	0.127	1220.032

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2267002060	LPG Rubber Tire Loaders	71	460	10.548	0.243	2.046	0.006	0.128	0.128	1216.728
2267002066	LPG Tractors/Loaders/ Backhoes	48	450	10.655	0.246	2.056	0.006	0.129	0.129	1216.737
2267002072	LPG Skid Steer Loaders	58	470	20.879	0.658	3.707	0.006	0.125	0.125	1234.970
2267002081	LPG Other Construction Equipment	48	480	25.716	0.852	4.480	0.006	0.124	0.124	1243.422
2267003010	LPG Aerial Lifts	46	480	21.820	0.665	3.716	0.006	0.124	0.124	1234.184
2267003020	LPG Forklifts	30	460	10.406	0.237	2.033	0.006	0.126	0.126	1216.719
2267003030	LPG Sweepers/Scrubbers	71	440	10.557	0.243	2.047	0.006	0.128	0.128	1216.729
2267003040	LPG Other General Industrial Equipment	54	450	10.456	0.239	2.038	0.006	0.127	0.127	1216.722
2267003050	LPG Other Material Handling Equipment	53	480	16.733	0.477	2.983	0.006	0.125	0.125	1226.729
2267003070	LPG Terminal Tractors	78	430	10.599	0.244	2.051	0.006	0.128	0.128	1216.731
2267004066	LPG Chippers/Stump Grinders	78	450	10.508	0.241	2.043	0.006	0.127	0.127	1216.726
2267005055	LPG Other Agricultural Equipment	55	490	64.969	2.438	10.922	0.006	0.128	0.128	1312.994
2267005060	LPG Irrigation Sets	60	450	10.572	0.243	2.048	0.006	0.128	0.128	1216.731
2267006005	LPG Generator Sets	68	480	30.540	1.117	6.968	0.006	0.124	0.124	1274.451
2267006010	LPG Pumps	69	470	18.532	0.507	3.569	0.006	0.126	0.126	1233.345
2267006015	LPG Air Compressors	56	460	11.828	0.263	2.182	0.006	0.127	0.127	1217.849
2267006025	LPG Welders	68	460	12.399	0.287	2.208	0.006	0.127	0.127	1217.678
2267006030	LPG Pressure Washers	85	470	22.284	0.704	3.891	0.006	0.125	0.125	1236.637
2267006035	LPG Hydro Power Units	56	460	11.683	0.268	2.203	0.006	0.127	0.127	1218.242
2267008005	LPG Airport Ground Support Equipment	56	450	10.429	0.238	2.035	0.006	0.127	0.127	1216.722
2268002081	CNG Other Construction Equipment	48	480	25.623	3.065	4.541	0.006	0.124	0.124	1407.887
2268003020	CNG Forklifts	30	460	10.406	0.903	2.129	0.006	0.126	0.126	1159.473

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2268003030	CNG Sweepers/Scrubbers	71	460	10.416	0.905	2.130	0.006	0.127	0.127	1159.609
2268003040	CNG Other General Industrial Equipment	54	460	10.418	0.905	2.130	0.006	0.127	0.127	1159.637
2268003060	CNG AC\Refrigeration	46	450	11.040	0.965	2.187	0.006	0.127	0.127	1166.048
2268003070	CNG Terminal Tractors	78	430	10.598	0.930	2.147	0.006	0.128	0.128	1162.144
2268005055	CNG Other Agricultural Equipment	55	510	64.879	8.710	10.963	0.006	0.128	0.128	2057.224
2268005060	CNG Irrigation Sets	60	510	10.577	0.927	2.145	0.006	0.128	0.128	1161.855
2268006005	CNG Generator Sets	68	490	32.632	4.493	7.789	0.006	0.124	0.124	1594.412
2268006010	CNG Pumps	69	480	22.217	2.314	4.386	0.006	0.125	0.125	1328.745
2268006015	CNG Air Compressors	56	470	11.912	0.996	2.285	0.006	0.127	0.127	1170.132
2268006020	CNG Gas Compressors	85	410	11.753	1.087	2.256	0.006	0.139	0.139	1178.200
2268006035	CNG Hydro Power Units	56	470	12.619	1.072	2.410	0.006	0.126	0.126	1179.292
2268010010	CNG Other Oil Field Equipment	90	410	11.075	0.995	2.192	0.006	0.133	0.133	1168.774
2270001060	Diesel Specialty Vehicle Carts	21	450	6.160	1.564	8.053	0.005	0.929	0.901	1439.632
2270002003	Diesel Pavers	59	380	0.526	0.086	1.968	0.003	0.094	0.091	1214.341
2270002006	Diesel Tampers/Rammers	43	1000	5.691	1.829	9.387	0.005	0.583	0.565	1300.175
2270002009	Diesel Plate Compactors	43	410	4.911	1.492	9.039	0.005	0.515	0.500	1300.452
2270002015	Diesel Rollers	59	390	0.783	0.123	2.555	0.003	0.129	0.125	1233.929
2270002018	Diesel Scrapers	59	370	0.587	0.077	1.366	0.003	0.084	0.082	1183.452
2270002021	Diesel Paving Equipment	59	390	1.021	0.198	3.008	0.003	0.167	0.162	1227.270
2270002024	Diesel Surfacing Equipment	59	380	1.787	0.277	4.840	0.004	0.246	0.239	1224.318
2270002027	Diesel Signal Boards/Light Plants	43	410	2.695	0.670	7.553	0.004	0.332	0.322	1293.757
2270002030	Diesel Trenchers	59	400	1.274	0.207	4.522	0.004	0.179	0.173	1273.707

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270002033	Diesel Bore/Drill Rigs	43	370	1.688	0.429	6.324	0.004	0.310	0.301	1190.482
2270002036	Diesel Excavators	59	380	0.292	0.053	1.101	0.003	0.057	0.056	1194.764
2270002039	Diesel Concrete/Industrial Saws	59	410	1.442	0.247	4.910	0.004	0.198	0.192	1305.066
2270002042	Diesel Cement & Mortar Mixers	43	390	3.155	0.799	7.680	0.004	0.498	0.483	1244.748
2270002045	Diesel Cranes	43	370	0.446	0.100	1.830	0.003	0.081	0.078	1175.735
2270002048	Diesel Graders	59	370	0.281	0.051	0.832	0.003	0.060	0.058	1185.404
2270002051	Diesel Off-highway Trucks	59	370	0.299	0.079	3.282	0.003	0.061	0.059	1183.448
2270002054	Diesel Crushing/Proc. Equipment	43	380	0.674	0.138	2.996	0.003	0.105	0.102	1203.271
2270002057	Diesel Rough Terrain Forklifts	59	390	1.098	0.133	2.926	0.004	0.185	0.179	1255.859
2270002060	Diesel Rubber Tire Loaders	59	370	0.664	0.109	2.239	0.003	0.112	0.109	1190.478
2270002066	Diesel Tractors/Loaders/ Backhoes	21	460	3.987	0.836	5.401	0.004	0.643	0.624	1466.932
2270002069	Diesel Crawler Tractor/Dozers	59	370	0.502	0.079	1.796	0.003	0.086	0.083	1190.038
2270002072	Diesel Skid Steer Loaders	21	480	7.050	1.478	8.492	0.005	1.100	1.067	1529.379
2270002075	Diesel Off-Highway Tractors	59	370	0.836	0.139	3.637	0.003	0.121	0.118	1183.357
2270002078	Diesel Dumpers/Tenders	21	470	7.227	1.682	8.664	0.005	1.099	1.066	1508.566
2270002081	Diesel Other Construction Equipment	59	370	1.301	0.185	3.251	0.003	0.182	0.177	1185.469
2270003010	Diesel Aerial Lifts	21	480	6.395	1.382	8.515	0.005	0.888	0.862	1531.187
2270003020	Diesel Forklifts	59	400	0.225	0.047	2.341	0.003	0.034	0.033	1265.583
2270003030	Diesel Sweepers/Scrubbers	43	380	0.423	0.081	2.006	0.003	0.075	0.073	1219.326
2270003040	Diesel Other General Industrial Equipment	43	380	0.625	0.123	2.423	0.003	0.119	0.115	1205.541
2270003050	Diesel Other Material Handling Equipment	21	440	3.598	0.929	6.237	0.004	0.608	0.590	1413.916
2270003060	Diesel AC/Refrigeration	43	410	0.818	0.204	5.908	0.004	0.086	0.084	1301.600

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270003070	Diesel Terminal Tractors	59	380	0.156	0.033	0.784	0.003	0.033	0.032	1199.665
2270004031	Diesel Leaf blowers/Vacuums	43	410	5.481	1.550	10.479	0.004	0.809	0.785	1298.747
2270004036	Diesel Snow blowers	43	370	0.966	0.240	3.670	0.002	0.163	0.158	682.509
2270004046	Diesel Front Mowers	43	410	2.657	0.634	7.720	0.004	0.376	0.365	1300.971
2270004056	Diesel Lawn & Garden Tractors	43	410	3.299	0.778	8.188	0.005	0.392	0.380	1300.982
2270004066	Diesel Chippers/Stump Grinders	43	380	2.232	0.497	6.605	0.004	0.403	0.390	1215.752
2270004071	Diesel Commercial Turf Equipment	43	400	0.927	0.203	4.094	0.004	0.129	0.126	1263.293
2270004076	Diesel Other Lawn & Garden Equipment	43	410	3.542	0.798	8.604	0.004	0.592	0.574	1293.228
2270005010	Diesel 2-Wheel Tractors	59	410	5.454	1.836	9.216	0.005	0.530	0.514	1313.078
2270005015	Diesel Agricultural Tractors	59	380	2.005	0.343	4.931	0.004	0.338	0.328	1211.336
2270005020	Diesel Combines	59	370	2.468	0.583	7.094	0.004	0.520	0.504	1185.396
2270005025	Diesel Balers	59	400	4.756	0.892	8.291	0.004	0.704	0.682	1269.803
2270005030	Diesel Agricultural Mowers	59	410	5.649	0.737	7.455	0.004	0.851	0.826	1312.984
2270005035	Diesel Sprayers	59	380	2.915	0.682	6.937	0.004	0.488	0.474	1195.803
2270005040	Diesel Tillers > 6 HP	59	370	3.188	0.505	6.811	0.004	0.406	0.394	1186.605
2270005045	Diesel Swathers	59	400	5.031	0.794	8.269	0.004	0.771	0.748	1284.403
2270005055	Diesel Other Agricultural Equipment	59	380	2.615	0.504	6.121	0.004	0.467	0.453	1196.360
2270005060	Diesel Irrigation Sets	43	390	1.209	0.230	3.857	0.004	0.223	0.216	1235.212
2270006005	Diesel Generator Sets	43	390	2.488	0.595	6.777	0.004	0.410	0.398	1254.191
2270006010	Diesel Pumps	43	390	2.576	0.606	6.760	0.004	0.435	0.422	1253.246
2270006015	Diesel Air Compressors	43	400	1.144	0.196	4.140	0.004	0.184	0.179	1266.144
2270006020	Diesel Gas Compressors	43	410	0.205	0.044	2.965	0.003	0.032	0.032	1301.569

Table 4-1. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2023 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270006025	Diesel Welders	21	480	6.170	1.279	8.302	0.005	0.891	0.864	1529.655
2270006030	Diesel Pressure Washers	43	380	2.396	0.647	6.714	0.004	0.369	0.357	1224.409
2270006035	Diesel Hydro Power Units	43	400	1.263	0.239	4.567	0.004	0.196	0.191	1272.368
2270007015	Diesel Forest Equipment - Feller/Bunch/Skidder	59	370	0.174	0.034	0.575	0.003	0.037	0.036	1186.536
2270008005	Diesel Airport Ground Support Equipment	59	380	0.776	0.114	1.981	0.003	0.134	0.130	1195.476
2270009010	Diesel Other Underground Mining Equipment	21	450	8.454	2.012	11.074	0.005	1.008	0.977	1428.784
2270010010	Diesel Other Oil Field Equipment	43	370	0.612	0.133	3.287	0.003	0.095	0.093	1174.751
2282005010	2 Stroke Outboard	21	850	215.991	70.721	13.000	0.012	0.491	0.451	2241.035
2282005015	2 Stroke Personal Water Craft	21	820	252.968	20.229	13.996	0.012	0.174	0.160	2152.131
2282010005	4 Stroke Inboard/Stern drive	21	630	129.663	23.485	12.355	0.010	0.151	0.139	1855.773
2282020005	Diesel Inboard/Stern drive	35	370	2.264	0.625	9.997	0.011	0.234	0.227	1173.271
2282020010	Diesel Outboards	35	410	4.199	1.295	7.078	0.012	0.656	0.637	1299.940
2285002015	Diesel Railway Maintenance	21	440	4.146	1.018	6.770	0.004	0.732	0.710	1401.642
2285004015	4 Stroke Railway Maintenance	62	750	530.592	13.728	4.606	0.013	0.294	0.270	2343.833
2285006015	LPG Railway Maintenance	62	480	16.512	0.444	2.832	0.006	0.126	0.126	1224.261

Notes for Table 4-1 follow Table 4-5

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260001010	2 Stroke Motorcycles: Off- Road ^c	100	260	78.494	68.979	0.925	0.003	2.524	2.322	573.849
2260001020	2 Stroke Snowmobiles	34	1640	129.544	171.949	6.108	0.012	1.554	1.429	2098.727
2260001030	2 Stroke ATVs ^c	100	210	81.901	13.492	0.947	0.003	0.345	0.317	504.174
2260001060	2 Stroke Specialty Vehicles/Carts	58	1000	575.770	20.523	4.626	0.013	0.296	0.273	2348.247
2260002006	2 Stroke Tampers/Rammers	55	680	561.176	134.927	3.366	0.008	20.437	18.802	1595.599
2260002009	2 Stroke Plate Compactors	55	830	490.716	110.105	5.246	0.013	16.837	15.490	2440.244
2260002021	2 Stroke Paving Equipment	59	830	494.465	109.723	5.246	0.013	16.951	15.595	2437.505
2260002027	2 Stroke Signal Boards/Light Plants	72	830	512.953	128.849	5.246	0.013	17.574	16.168	2422.471
2260002039	2 Stroke Concrete/Industrial Saws	78	630	580.949	136.956	3.517	0.009	21.176	19.482	1645.707
2260002054	2 Stroke Crushing/Proc. Equipment	85	830	512.953	112.858	5.246	0.013	17.574	16.168	2422.469
2260003030	2 Stroke Sweepers/Scrubbers	71	820	512.953	115.390	5.246	0.013	17.574	16.168	2422.472
2260003040	2 Stroke Other General Industrial Equipment	54	830	512.954	113.920	5.246	0.013	17.574	16.168	2422.470
2260004015	2 Stroke Rotary Tillers < 6 HP (Residential)	40	940	455.101	108.322	5.259	0.013	16.270	14.968	2454.510
2260004016	2 Stroke Rotary Tillers < 6 HP (Commercial)	40	900	459.767	94.262	5.259	0.013	16.404	15.092	2451.291
2260004020	2 Stroke Chain Saws < 6 HP (Residential)	70	900	470.421	108.624	5.246	0.013	16.251	14.951	2454.258
2260004021	2 Stroke Chain Saws < 6 HP (Commercial)	70	650	577.070	133.544	3.616	0.009	20.971	19.293	1690.025
2260004025	2 Stroke Trimmers/Edgers/Brush Cutter (Residential)	91	890	434.319	110.012	5.296	0.013	16.889	15.538	2441.505
2260004026	2 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	810	494.666	103.059	4.976	0.012	17.172	15.798	2323.450
2260004030	2 Stroke Leaf blowers/Vacuums (Residential)	94	890	460.628	130.471	5.259	0.013	16.428	15.114	2450.695
2260004031	2 Stroke Leaf blowers/Vacuums (Commercial)	94	760	520.168	113.815	4.354	0.011	18.426	16.952	2042.101
2260004035	2 Stroke Snow blowers (Residential)	35	870	530.510	401.593	1.774	0.006	5.897	5.426	1239.563
2260004036	2 Stroke Snow blowers (Commercial)	35	870	618.992	231.221	2.069	0.007	6.880	6.329	1446.196

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260004071	2 Stroke Commercial Turf Equipment	60	840	481.766	98.325	5.246	0.013	16.572	15.247	2446.586
2260005035	2 Stroke Sprayers	65	840	424.082	107.860	5.318	0.013	17.371	15.981	2430.870
2260006005	2 Stroke Generator Sets	68	830	483.491	131.468	5.251	0.013	16.809	15.464	2441.125
2260006010	2 Stroke Pumps	69	830	461.345	136.117	5.276	0.013	18.336	16.869	2396.339
2260006015	2 Stroke Air Compressors	56	830	512.954	134.652	5.246	0.013	17.574	16.168	2422.471
2260006035	2 Stroke Hydro Power Units	56	830	512.953	141.762	5.246	0.013	17.574	16.168	2422.471
2260007005	2 Stroke Chain Saws > 6 HP	70	620	586.887	137.090	3.366	0.008	21.491	19.772	1577.860
2265001010	4 Stroke Motorcycles: Off- Road	100	160	58.200	6.865	1.235	0.003	0.147	0.135	504.298
2265001030	4 Stroke ATVs	100	170	80.718	8.002	0.956	0.003	0.147	0.135	532.965
2265001050	4 Stroke Golf Carts	46	740	587.436	13.470	4.915	0.013	0.301	0.277	2345.372
2265001060	4 Stroke Specialty Vehicles/Carts	58	820	573.347	18.763	6.730	0.013	0.239	0.220	2301.856
2265002003	4 Stroke Pavers	66	700	434.215	9.484	4.265	0.012	0.257	0.236	2156.460
2265002006	4 Stroke Tampers/Rammers	55	760	572.705	12.614	4.539	0.013	0.251	0.231	2345.278
2265002009	4 Stroke Plate Compactors	55	830	488.662	15.044	5.123	0.014	0.518	0.476	2584.957
2265002015	4 Stroke Rollers	62	690	448.736	9.939	4.302	0.012	0.254	0.233	2152.869
2265002021	4 Stroke Paving Equipment	59	780	531.252	14.099	4.767	0.013	0.345	0.318	2415.973
2265002024	4 Stroke Surfacing Equipment	49	750	535.814	13.423	4.826	0.013	0.359	0.330	2389.446
2265002027	4 Stroke Signal Boards/Light Plants	72	780	525.752	13.415	5.090	0.014	0.464	0.427	2495.238
2265002030	4 Stroke Trenchers	66	710	416.698	10.343	4.407	0.012	0.324	0.298	2203.024
2265002033	4 Stroke Bore/Drill Rigs	79	790	364.722	14.446	6.821	0.013	0.491	0.451	2405.562
2265002039	4 Stroke Concrete/Industrial Saws	78	710	519.778	11.418	4.625	0.012	0.279	0.257	2250.915
2265002042	4 Stroke Cement & Mortar Mixers	59	820	535.493	18.096	4.806	0.013	0.352	0.324	2451.083

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265002045	4 Stroke Cranes	47	590	100.464	3.539	4.382	0.009	0.162	0.149	1647.238
2265002054	4 Stroke Crushing/Proc. Equipment	85	740	496.271	12.079	4.751	0.013	0.327	0.300	2311.797
2265002057	4 Stroke Rough Terrain Forklifts	63	570	34.231	1.687	3.000	0.009	0.154	0.142	1555.981
2265002060	4 Stroke Rubber Tire Loaders	71	550	24.454	1.394	2.729	0.009	0.154	0.142	1544.026
2265002066	4 Stroke Tractors/Loaders/ Backhoes	48	730	543.041	11.341	4.565	0.013	0.263	0.242	2293.835
2265002072	4 Stroke Skid Steer Loaders	58	640	246.423	6.182	4.388	0.010	0.190	0.175	1863.508
2265002078	4 Stroke Dumpers/Tenders	41	800	548.837	17.486	4.982	0.013	0.282	0.259	2366.790
2265002081	4 Stroke Other Construction Equipment	48	580	53.391	2.827	5.000	0.009	0.149	0.137	1575.872
2265003010	4 Stroke Aerial Lifts	46	630	171.231	4.829	4.279	0.010	0.174	0.160	1753.271
2265003020	4 Stroke Forklifts	30	560	24.025	1.347	2.706	0.009	0.152	0.140	1544.026
2265003030	4 Stroke Sweepers/Scrubbers	71	610	202.622	5.245	3.452	0.010	0.220	0.202	1822.909
2265003040	4 Stroke Other General Industrial Equipment	54	760	441.501	13.780	5.056	0.013	0.533	0.491	2400.478
2265003050	4 Stroke Other Material Handling Equipment	53	640	201.483	5.153	3.843	0.010	0.183	0.168	1800.650
2265003060	4 Stroke AC/Refrigeration	46	740	575.270	12.571	4.605	0.013	0.260	0.239	2345.294
2265003070	4 Stroke Terminal Tractors	78	520	24.467	1.359	2.729	0.009	0.154	0.142	1544.026
2265004010	4 Stroke Lawn mowers (Residential)	33	900	423.025	24.102	5.354	0.015	0.642	0.591	2759.975
2265004011	4 Stroke Lawn mowers (Commercial)	33	880	427.374	14.859	5.557	0.015	0.717	0.659	2759.984
2265004015	4 Stroke Rotary Tillers < 6 HP (Residential)	40	910	422.906	20.974	5.353	0.015	0.643	0.591	2760.133
2265004016	4 Stroke Rotary Tillers < 6 HP (Commercial)	40	890	423.781	13.406	5.394	0.015	0.658	0.605	2760.144
2265004025	4 Stroke Trimmers/Edgers/Brush Cutter HP (Residential)	91	900	423.906	20.270	5.400	0.015	0.660	0.607	2760.147
2265004026	4 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	820	496.870	12.441	5.116	0.014	0.500	0.460	2566.415
2265004030	4 Stroke Leaf blowers/Vacuums (Residential)	94	900	423.923	27.588	5.401	0.015	0.660	0.607	2760.149

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265004031	4 Stroke Leaf blowers/Vacuums (Commercial)	94	700	434.580	8.478	4.237	0.012	0.249	0.229	2154.918
2265004035	4 Stroke Snow blowers (Residential)	35	940	605.577	232.018	4.734	0.008	0.126	0.116	1506.665
2265004036	4 Stroke Snow blowers (Commercial)	35	940	709.919	33.881	5.385	0.009	0.147	0.135	1757.280
2265004040	4 Stroke Rear Engine Riding Mowers (Residential)	38	760	571.564	22.404	4.522	0.013	0.247	0.228	2346.366
2265004041	4 Stroke Rear Engine Riding Mowers (Commercial)	38	740	574.510	11.400	4.594	0.013	0.259	0.238	2346.060
2265004046	4 Stroke Front Mowers	65	790	571.581	12.526	4.784	0.013	0.243	0.224	2341.085
2265004051	4 Stroke Shredders < 6 HP	80	890	423.362	13.949	5.375	0.015	0.651	0.598	2760.138
2265004055	4 Stroke Lawn & Garden Tractors (Residential)	44	760	571.380	16.870	4.511	0.013	0.247	0.227	2345.570
2265004056	4 Stroke Lawn & Garden Tractors (Commercial)	44	740	574.680	10.813	4.593	0.013	0.258	0.238	2345.579
2265004066	4 Stroke Chippers/Stump Grinders	78	640	292.404	6.264	3.692	0.011	0.213	0.196	1930.390
2265004071	4 Stroke Commercial Turf Equipment	60	730	487.202	10.458	4.536	0.013	0.315	0.290	2309.800
2265004075	4 Stroke Other Lawn & Garden Equipment	58	850	498.870	23.782	5.135	0.014	0.445	0.410	2557.165
2265004076	4 Stroke Other Lawn & Garden Equipment	58	850	496.636	21.992	5.162	0.014	0.444	0.409	2551.576
2265005010	4 Stroke 2-Wheel Tractors	62	740	577.417	11.897	4.659	0.013	0.267	0.245	2345.306
2265005015	4 Stroke Agricultural Tractors	62	580	105.583	2.869	3.000	0.009	0.169	0.156	1661.917
2265005020	4 Stroke Combines	74	580	131.089	10.339	11.820	0.009	0.153	0.141	1653.212
2265005025	4 Stroke Balers	62	580	131.217	12.666	11.829	0.009	0.153	0.141	1653.256
2265005030	4 Stroke Agricultural Mowers	48	770	571.204	12.411	4.564	0.013	0.249	0.229	2347.805
2265005035	4 Stroke Sprayers	65	740	391.427	15.138	7.501	0.012	0.300	0.276	2191.481
2265005040	4 Stroke Tillers > 6 HP	71	870	732.852	24.307	8.187	0.013	0.251	0.231	2458.074
2265005045	4 Stroke Swathers	52	580	131.217	10.390	11.829	0.009	0.153	0.141	1653.255
2265005055	4 Stroke Other Agricultural Equipment	55	620	219.733	8.996	10.348	0.010	0.175	0.161	1796.728

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265005060	4 Stroke Irrigation Sets	60	550	36.279	1.758	2.804	0.009	0.168	0.155	1571.227
2265006005	4 Stroke Generator Sets	68	780	558.061	14.726	4.638	0.013	0.287	0.264	2384.020
2265006010	4 Stroke Pumps	69	760	438.748	12.402	4.902	0.013	0.414	0.381	2360.059
2265006015	4 Stroke Air Compressors	56	700	360.285	9.569	4.269	0.012	0.336	0.309	2143.991
2265006025	4 Stroke Welders	68	710	472.790	9.930	4.372	0.012	0.259	0.238	2199.356
2265006030	4 Stroke Pressure Washers	85	800	520.792	14.108	4.904	0.014	0.415	0.382	2489.857
2265006035	4 Stroke Hydro Power Units	56	750	540.044	12.593	4.751	0.013	0.334	0.307	2370.617
2265007010	4 Stroke Shredders > 6 HP	80	800	576.686	12.324	4.648	0.013	0.242	0.223	2349.099
2265007015	4 Stroke Forest Equipment - Feller/Bunch/Skidder	70	810	492.127	14.560	5.384	0.014	0.598	0.551	2593.347
2265008005	4 Stroke Airport Ground Support Equipment	56	600	129.378	4.222	3.259	0.010	0.232	0.213	1744.054
2265010010	4 Stroke Other Oil Field Equipment	90	740	594.070	12.551	5.085	0.013	0.323	0.297	2345.416
2267001060	LPG Specialty Vehicle Carts	58	490	42.798	1.728	8.115	0.006	0.126	0.126	1288.197
2267002003	LPG Pavers	66	460	12.229	0.289	2.221	0.006	0.127	0.127	1218.054
2267002015	LPG Rollers	62	450	10.643	0.246	2.055	0.006	0.129	0.129	1216.735
2267002021	LPG Paving Equipment	59	480	23.358	0.769	4.163	0.006	0.126	0.126	1240.184
2267002024	LPG Surfacing Equipment	49	460	12.351	0.302	2.275	0.006	0.128	0.128	1218.847
2267002030	LPG Trenchers	66	460	12.193	0.286	2.204	0.006	0.127	0.127	1217.788
2267002033	LPG Bore/Drill Rigs	79	490	51.124	2.038	9.353	0.006	0.125	0.125	1300.875
2267002039	LPG Concrete/Industrial Saws	78	430	10.730	0.249	2.063	0.006	0.129	0.129	1216.742
2267002045	LPG Cranes	47	480	19.950	0.610	3.510	0.006	0.125	0.125	1232.518
2267002054	LPG Crushing/Proc. Equipment	85	480	18.586	0.550	3.265	0.006	0.126	0.126	1229.660
2267002057	LPG Rough Terrain Forklifts	63	470	12.831	0.307	2.286	0.006	0.127	0.127	1218.566

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2267002060	LPG Rubber Tire Loaders	71	460	10.601	0.244	2.051	0.006	0.128	0.128	1216.733
2267002066	LPG Tractors/Loaders/ Backhoes	48	450	10.647	0.246	2.055	0.006	0.129	0.129	1216.735
2267002072	LPG Skid Steer Loaders	58	470	19.208	0.593	3.446	0.006	0.125	0.125	1232.146
2267002081	LPG Other Construction Equipment	48	480	23.155	0.754	4.092	0.006	0.124	0.124	1239.326
2267003010	LPG Aerial Lifts	46	480	19.103	0.576	3.377	0.006	0.124	0.124	1231.109
2267003020	LPG Forklifts	30	460	10.415	0.238	2.034	0.006	0.127	0.127	1216.720
2267003030	LPG Sweepers/Scrubbers	71	440	10.568	0.243	2.048	0.006	0.128	0.128	1216.730
2267003040	LPG Other General Industrial Equipment	54	450	10.475	0.240	2.040	0.006	0.127	0.127	1216.724
2267003050	LPG Other Material Handling Equipment	53	480	15.431	0.424	2.771	0.006	0.125	0.125	1224.374
2267003070	LPG Terminal Tractors	78	430	10.607	0.245	2.051	0.006	0.128	0.128	1216.732
2267004066	LPG Chippers/Stump Grinders	78	450	10.517	0.241	2.043	0.006	0.128	0.128	1216.727
2267005055	LPG Other Agricultural Equipment	55	490	61.876	2.274	10.199	0.006	0.128	0.128	1303.976
2267005060	LPG Irrigation Sets	60	450	10.597	0.244	2.051	0.006	0.128	0.128	1216.733
2267006005	LPG Generator Sets	68	480	28.065	0.992	6.269	0.006	0.124	0.124	1266.047
2267006010	LPG Pumps	69	470	16.943	0.461	3.305	0.006	0.126	0.126	1230.658
2267006015	LPG Air Compressors	56	460	11.374	0.252	2.118	0.006	0.127	0.127	1217.231
2267006025	LPG Welders	68	460	11.685	0.265	2.126	0.006	0.127	0.127	1217.000
2267006030	LPG Pressure Washers	85	470	20.411	0.625	3.572	0.006	0.125	0.125	1233.047
2267006035	LPG Hydro Power Units	56	460	11.345	0.257	2.142	0.006	0.127	0.127	1217.592
2267008005	LPG Airport Ground Support Equipment	56	450	10.422	0.238	2.035	0.006	0.127	0.127	1216.719
2268002081	CNG Other Construction Equipment	48	480	23.066	2.718	4.157	0.006	0.124	0.124	1368.202
2268003020	CNG Forklifts	30	460	10.415	0.905	2.130	0.006	0.127	0.127	1159.598

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2268003030	CNG Sweepers/Scrubbers	71	460	10.427	0.906	2.131	0.006	0.127	0.127	1159.761
2268003040	CNG Other General Industrial Equipment	54	460	10.439	0.908	2.132	0.006	0.127	0.127	1159.933
2268003060	CNG AC\Refrigeration	46	450	10.812	0.939	2.160	0.006	0.127	0.127	1163.166
2268003070	CNG Terminal Tractors	78	430	10.605	0.931	2.148	0.006	0.128	0.128	1162.247
2268005055	CNG Other Agricultural Equipment	55	510	61.785	8.126	10.243	0.006	0.128	0.128	1988.150
2268005060	CNG Irrigation Sets	60	510	10.601	0.930	2.147	0.006	0.128	0.128	1162.183
2268006005	CNG Generator Sets	68	490	30.211	3.995	7.009	0.006	0.124	0.124	1533.727
2268006010	CNG Pumps	69	480	20.017	2.076	4.006	0.006	0.125	0.125	1300.376
2268006015	CNG Air Compressors	56	470	11.428	0.955	2.217	0.006	0.127	0.127	1165.289
2268006020	CNG Gas Compressors	85	410	11.753	1.087	2.256	0.006	0.139	0.139	1178.200
2268006035	CNG Hydro Power Units	56	470	12.012	1.007	2.305	0.006	0.126	0.126	1171.469
2268010010	CNG Other Oil Field Equipment	90	410	11.071	0.994	2.192	0.006	0.133	0.133	1168.724
2270001060	Diesel Specialty Vehicle Carts	21	450	5.638	1.422	7.614	0.005	0.850	0.824	1440.021
2270002003	Diesel Pavers	59	380	0.433	0.073	1.763	0.003	0.078	0.076	1214.347
2270002006	Diesel Tampers/Rammers	43	1000	5.637	1.831	9.337	0.005	0.571	0.554	1300.218
2270002009	Diesel Plate Compactors	43	410	4.867	1.490	9.002	0.005	0.507	0.492	1300.484
2270002015	Diesel Rollers	59	390	0.667	0.108	2.328	0.003	0.110	0.107	1233.941
2270002018	Diesel Scrapers	59	370	0.483	0.066	1.145	0.003	0.071	0.068	1183.459
2270002021	Diesel Paving Equipment	59	390	0.913	0.180	2.776	0.003	0.148	0.143	1227.291
2270002024	Diesel Surfacing Equipment	59	380	1.593	0.251	4.477	0.004	0.220	0.213	1224.368
2270002027	Diesel Signal Boards/Light Plants	43	410	2.614	0.650	7.425	0.004	0.315	0.306	1293.795
2270002030	Diesel Trenchers	59	400	1.105	0.184	4.312	0.004	0.152	0.147	1273.741

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270002033	Diesel Bore/Drill Rigs	43	370	1.538	0.392	5.849	0.004	0.282	0.273	1190.573
2270002036	Diesel Excavators	59	380	0.226	0.045	0.957	0.003	0.044	0.043	1194.766
2270002039	Diesel Concrete/Industrial Saws	59	410	1.272	0.226	4.755	0.004	0.171	0.166	1305.098
2270002042	Diesel Cement & Mortar Mixers	43	390	2.971	0.758	7.291	0.004	0.463	0.449	1244.878
2270002045	Diesel Cranes	43	370	0.380	0.085	1.565	0.003	0.070	0.068	1175.750
2270002048	Diesel Graders	59	370	0.218	0.042	0.685	0.003	0.047	0.046	1185.407
2270002051	Diesel Off-highway Trucks	59	370	0.230	0.070	3.183	0.003	0.052	0.050	1183.453
2270002054	Diesel Crushing/Proc. Equipment	43	380	0.573	0.119	2.716	0.003	0.089	0.086	1203.297
2270002057	Diesel Rough Terrain Forklifts	59	390	0.922	0.112	2.661	0.003	0.155	0.151	1255.884
2270002060	Diesel Rubber Tire Loaders	59	370	0.570	0.095	2.006	0.003	0.098	0.095	1190.492
2270002066	Diesel Tractors/Loaders/ Backhoes	21	460	3.369	0.699	4.797	0.004	0.548	0.532	1467.168
2270002069	Diesel Crawler Tractor/Dozers	59	370	0.410	0.068	1.607	0.003	0.071	0.069	1190.045
2270002072	Diesel Skid Steer Loaders	21	480	6.530	1.357	8.149	0.005	1.015	0.985	1529.685
2270002075	Diesel Off-Highway Tractors	59	370	0.711	0.123	3.411	0.003	0.106	0.103	1183.379
2270002078	Diesel Dumpers/Tenders	21	470	6.628	1.541	8.274	0.005	1.002	0.972	1508.952
2270002081	Diesel Other Construction Equipment	59	370	1.093	0.157	2.771	0.003	0.155	0.150	1185.509
2270003010	Diesel Aerial Lifts	21	480	5.828	1.246	8.146	0.005	0.803	0.779	1531.532
2270003020	Diesel Forklifts	59	400	0.198	0.045	2.312	0.003	0.030	0.029	1265.584
2270003030	Diesel Sweepers/Scrubbers	43	380	0.341	0.068	1.819	0.003	0.059	0.058	1219.331
2270003040	Diesel Other General Industrial Equipment	43	380	0.534	0.105	2.134	0.003	0.101	0.098	1205.559
2270003050	Diesel Other Material Handling Equipment	21	440	3.265	0.837	5.740	0.004	0.549	0.533	1414.124
2270003060	Diesel AC\Refrigeration	43	410	0.763	0.195	5.868	0.004	0.078	0.076	1301.605

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270003070	Diesel Terminal Tractors	59	380	0.123	0.029	0.710	0.003	0.027	0.026	1199.665
2270004031	Diesel Leaf blowers/Vacuums	43	410	5.197	1.468	10.116	0.004	0.751	0.728	1299.052
2270004036	Diesel Snow blowers	43	370	0.888	0.221	3.372	0.002	0.151	0.146	682.553
2270004046	Diesel Front Mowers	43	410	2.511	0.597	7.540	0.004	0.347	0.337	1301.043
2270004056	Diesel Lawn & Garden Tractors	43	410	3.237	0.764	8.123	0.005	0.381	0.370	1301.006
2270004066	Diesel Chippers/Stump Grinders	43	380	2.042	0.452	6.089	0.004	0.366	0.355	1215.862
2270004071	Diesel Commercial Turf Equipment	43	400	0.856	0.192	3.904	0.004	0.115	0.112	1263.300
2270004076	Diesel Other Lawn & Garden Equipment	43	410	3.329	0.744	8.308	0.004	0.549	0.532	1293.363
2270005010	Diesel 2-Wheel Tractors	59	410	5.453	1.841	9.219	0.005	0.530	0.514	1313.075
2270005015	Diesel Agricultural Tractors	59	380	1.794	0.306	4.542	0.004	0.303	0.294	1211.401
2270005020	Diesel Combines	59	370	2.318	0.546	6.648	0.004	0.480	0.466	1185.485
2270005025	Diesel Balers	59	400	4.484	0.829	7.966	0.004	0.654	0.634	1269.967
2270005030	Diesel Agricultural Mowers	59	410	5.202	0.664	6.952	0.004	0.774	0.751	1313.158
2270005035	Diesel Sprayers	59	380	2.724	0.630	6.531	0.004	0.451	0.437	1195.934
2270005040	Diesel Tillers > 6 HP	59	370	2.968	0.472	6.399	0.004	0.378	0.366	1186.691
2270005045	Diesel Swathers	59	400	4.766	0.744	7.874	0.004	0.718	0.697	1284.528
2270005055	Diesel Other Agricultural Equipment	59	380	2.370	0.450	5.586	0.004	0.420	0.407	1196.467
2270005060	Diesel Irrigation Sets	43	390	1.072	0.201	3.556	0.004	0.198	0.192	1235.255
2270006005	Diesel Generator Sets	43	390	2.308	0.553	6.454	0.004	0.374	0.363	1254.292
2270006010	Diesel Pumps	43	390	2.410	0.566	6.443	0.004	0.403	0.391	1253.342
2270006015	Diesel Air Compressors	43	400	0.962	0.168	3.863	0.004	0.154	0.149	1266.178
2270006020	Diesel Gas Compressors	43	410	0.205	0.044	2.965	0.003	0.032	0.032	1301.567

Table 4-2. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2024 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270006025	Diesel Welders	21	480	5.595	1.154	7.982	0.005	0.798	0.774	1529.937
2270006030	Diesel Pressure Washers	43	380	2.240	0.602	6.381	0.004	0.340	0.330	1224.530
2270006035	Diesel Hydro Power Units	43	400	1.100	0.213	4.324	0.004	0.168	0.163	1272.399
2270007015	Diesel Forest Equipment - Feller/Bunch/Skidder	59	370	0.129	0.028	0.475	0.003	0.029	0.028	1186.536
2270008005	Diesel Airport Ground Support Equipment	59	380	0.644	0.096	1.708	0.003	0.113	0.109	1195.493
2270009010	Diesel Other Underground Mining Equipment	21	450	8.335	1.984	10.976	0.005	0.986	0.957	1428.906
2270010010	Diesel Other Oil Field Equipment	43	370	0.505	0.113	3.003	0.003	0.081	0.078	1174.762
2282005010	2 Stroke Outboard	21	850	214.286	64.918	12.992	0.012	0.424	0.390	2241.265
2282005015	2 Stroke Personal Water Craft	21	820	252.756	19.458	14.032	0.012	0.160	0.147	2152.556
2282010005	4 Stroke Inboard/Sterndrive	21	630	123.548	22.334	11.450	0.010	0.151	0.139	1850.443
2282020005	Diesel Inboard/Sterndrive	35	370	2.257	0.626	9.763	0.011	0.231	0.224	1173.311
2282020010	Diesel Outboards	35	410	4.091	1.255	6.826	0.012	0.630	0.611	1300.093
2285002015	Diesel Railway Maintenance	21	440	3.805	0.931	6.272	0.004	0.671	0.651	1401.841
2285004015	4 Stroke Railway Maintenance	62	750	530.628	13.736	4.598	0.013	0.294	0.271	2343.684
2285006015	LPG Railway Maintenance	62	480	15.238	0.394	2.631	0.006	0.126	0.126	1222.096

Notes for Table 4-2 follow Table 4-5

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260001010	2 Stroke Motorcycles: Off-Road ^c	100	260	78.305	68.407	0.928	0.003	2.503	2.303	574.529
2260001020	2 Stroke Snowmobiles	34	1640	127.264	169.102	6.199	0.012	1.512	1.391	2093.481
2260001030	2 Stroke ATVs ^c	100	210	81.674	12.161	0.951	0.003	0.295	0.271	506.200
2260001060	2 Stroke Specialty Vehicles/Carts	58	1000	575.650	20.467	4.625	0.013	0.296	0.273	2348.192
2260002006	2 Stroke Tampers/Rammers	55	680	561.595	135.035	3.366	0.008	20.454	18.818	1595.313
2260002009	2 Stroke Plate Compactors	55	830	490.917	110.178	5.246	0.013	16.844	15.497	2440.078
2260002021	2 Stroke Paving Equipment	59	830	494.578	109.765	5.246	0.013	16.955	15.599	2437.421
2260002027	2 Stroke Signal Boards/Light Plants	72	830	512.954	128.849	5.246	0.013	17.574	16.168	2422.471
2260002039	2 Stroke Concrete/Industrial Saws	78	630	580.949	136.956	3.517	0.009	21.176	19.482	1645.707
2260002054	2 Stroke Crushing/Proc. Equipment	85	830	512.953	112.858	5.246	0.013	17.574	16.168	2422.472
2260003030	2 Stroke Sweepers/Scrubbers	71	820	512.954	115.390	5.246	0.013	17.574	16.168	2422.472
2260003040	2 Stroke Other General Industrial Equipment	54	830	512.953	113.920	5.246	0.013	17.574	16.168	2422.470
2260004015	2 Stroke Rotary Tillers < 6 HP (Residential)	40	940	455.086	108.317	5.259	0.013	16.270	14.968	2454.523
2260004016	2 Stroke Rotary Tillers < 6 HP (Commercial)	40	900	459.752	94.256	5.259	0.013	16.403	15.091	2451.304
2260004020	2 Stroke Chain Saws < 6 HP (Residential)	70	900	470.397	108.617	5.246	0.013	16.250	14.950	2454.272
2260004021	2 Stroke Chain Saws < 6 HP (Commercial)	70	650	577.069	133.544	3.616	0.009	20.971	19.293	1690.024
2260004025	2 Stroke Trimmers/Edgers/Brush Cutter (Residential)	91	890	434.298	110.005	5.296	0.013	16.888	15.537	2441.520
2260004026	2 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	810	494.613	103.041	4.976	0.012	17.170	15.797	2323.487
2260004030	2 Stroke Leaf blowers/Vacuums (Residential)	94	890	460.606	130.464	5.259	0.013	16.428	15.114	2450.710
2260004031	2 Stroke Leaf blowers/Vacuums (Commercial)	94	760	520.118	113.800	4.354	0.011	18.424	16.950	2042.137
2260004035	2 Stroke Snow blowers (Residential)	35	870	530.439	401.574	1.774	0.006	5.897	5.425	1239.598
2260004036	2 Stroke Snow blowers (Commercial)	35	870	618.956	231.209	2.069	0.007	6.879	6.329	1446.217

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260004071	2 Stroke Commercial Turf Equipment	60	840	481.730	98.312	5.246	0.013	16.571	15.245	2446.614
2260005035	2 Stroke Sprayers	65	840	424.230	107.921	5.318	0.013	17.376	15.986	2430.731
2260006005	2 Stroke Generator Sets	68	830	483.510	131.475	5.251	0.013	16.810	15.465	2441.109
2260006010	2 Stroke Pumps	69	830	461.294	136.093	5.275	0.013	18.336	16.869	2396.321
2260006015	2 Stroke Air Compressors	56	830	512.953	134.652	5.246	0.013	17.574	16.168	2422.472
2260006035	2 Stroke Hydro Power Units	56	830	512.954	141.762	5.246	0.013	17.574	16.168	2422.474
2260007005	2 Stroke Chain Saws > 6 HP	70	620	586.888	137.090	3.366	0.008	21.491	19.772	1577.861
2265001010	4 Stroke Motorcycles: Off- Road	100	160	57.946	6.838	1.233	0.003	0.147	0.135	504.293
2265001030	4 Stroke ATVs	100	170	80.631	7.967	0.951	0.003	0.147	0.135	532.952
2265001050	4 Stroke Golf Carts	46	740	587.435	13.470	4.915	0.013	0.301	0.277	2345.373
2265001060	4 Stroke Specialty Vehicles/Carts	58	820	564.133	17.901	6.431	0.013	0.238	0.219	2295.176
2265002003	4 Stroke Pavers	66	700	434.070	9.482	4.247	0.012	0.257	0.237	2156.232
2265002006	4 Stroke Tampers/Rammers	55	760	572.805	12.623	4.542	0.013	0.251	0.231	2345.279
2265002009	4 Stroke Plate Compactors	55	830	488.766	15.060	5.127	0.014	0.519	0.477	2584.958
2265002015	4 Stroke Rollers	62	690	448.784	9.944	4.303	0.012	0.254	0.234	2152.867
2265002021	4 Stroke Paving Equipment	59	780	531.075	14.084	4.755	0.013	0.345	0.318	2415.866
2265002024	4 Stroke Surfacing Equipment	49	750	535.838	13.427	4.825	0.013	0.359	0.330	2389.411
2265002027	4 Stroke Signal Boards/Light Plants	72	780	525.803	13.420	5.091	0.014	0.464	0.427	2495.239
2265002030	4 Stroke Trenchers	66	710	416.508	10.338	4.387	0.012	0.324	0.298	2202.786
2265002033	4 Stroke Bore/Drill Rigs	79	790	362.358	14.315	6.599	0.013	0.492	0.452	2402.441
2265002039	4 Stroke Concrete/Industrial Saws	78	710	519.799	11.420	4.626	0.012	0.279	0.257	2250.915
2265002042	4 Stroke Cement & Mortar Mixers	59	820	535.121	18.034	4.783	0.013	0.353	0.324	2450.899

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265002045	4 Stroke Cranes	47	590	97.598	3.397	4.132	0.009	0.163	0.150	1643.999
2265002054	4 Stroke Crushing/Proc. Equipment	85	740	495.998	12.070	4.722	0.013	0.327	0.301	2311.409
2265002057	4 Stroke Rough Terrain Forklifts	63	570	32.940	1.628	2.891	0.009	0.154	0.142	1554.735
2265002060	4 Stroke Rubber Tire Loaders	71	550	24.468	1.394	2.729	0.009	0.154	0.142	1544.025
2265002066	4 Stroke Tractors/Loaders/ Backhoes	48	730	543.112	11.348	4.567	0.013	0.264	0.243	2293.835
2265002072	4 Stroke Skid Steer Loaders	58	640	244.782	6.102	4.244	0.010	0.191	0.175	1861.658
2265002078	4 Stroke Dumpers/Tenders	41	800	547.148	17.313	4.900	0.013	0.281	0.259	2365.760
2265002081	4 Stroke Other Construction Equipment	48	580	49.470	2.631	4.661	0.009	0.150	0.138	1571.559
2265003010	4 Stroke Aerial Lifts	46	630	168.416	4.689	4.049	0.010	0.174	0.160	1750.876
2265003020	4 Stroke Forklifts	30	560	24.055	1.348	2.708	0.009	0.152	0.140	1544.026
2265003030	4 Stroke Sweepers/Scrubbers	71	610	202.641	5.246	3.453	0.010	0.220	0.202	1822.911
2265003040	4 Stroke Other General Industrial Equipment	54	760	441.503	13.780	5.056	0.013	0.533	0.491	2400.477
2265003050	4 Stroke Other Material Handling Equipment	53	640	199.897	5.073	3.708	0.010	0.183	0.168	1798.998
2265003060	4 Stroke AC/Refrigeration	46	740	575.282	12.572	4.605	0.013	0.260	0.239	2345.293
2265003070	4 Stroke Terminal Tractors	78	520	24.498	1.360	2.731	0.009	0.154	0.142	1544.027
2265004010	4 Stroke Lawn mowers (Residential)	33	900	422.998	24.096	5.353	0.015	0.642	0.591	2759.966
2265004011	4 Stroke Lawn mowers (Commercial)	33	880	427.368	14.858	5.557	0.015	0.717	0.659	2759.983
2265004015	4 Stroke Rotary Tillers < 6 HP (Residential)	40	910	422.890	20.969	5.353	0.015	0.643	0.591	2760.131
2265004016	4 Stroke Rotary Tillers < 6 HP (Commercial)	40	890	423.778	13.405	5.394	0.015	0.658	0.605	2760.144
2265004025	4 Stroke Trimmers/Edgers/Brush Cutter HP (Residential)	91	900	423.903	20.269	5.400	0.015	0.660	0.607	2760.145
2265004026	4 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	820	496.861	12.440	5.116	0.014	0.500	0.460	2566.415
2265004030	4 Stroke Leaf blowers/Vacuums (Residential)	94	900	423.919	27.587	5.401	0.015	0.660	0.607	2760.143

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265004031	4 Stroke Leaf blowers/Vacuums (Commercial)	94	700	434.252	8.465	4.211	0.012	0.249	0.229	2154.673
2265004035	4 Stroke Snow blowers (Residential)	35	940	605.467	232.015	4.734	0.008	0.126	0.116	1506.664
2265004036	4 Stroke Snow blowers (Commercial)	35	940	709.869	33.879	5.385	0.009	0.147	0.135	1757.278
2265004040	4 Stroke Rear Engine Riding Mowers (Residential)	38	760	571.481	22.387	4.518	0.013	0.247	0.228	2346.314
2265004041	4 Stroke Rear Engine Riding Mowers (Commercial)	38	740	574.507	11.400	4.594	0.013	0.259	0.238	2346.061
2265004046	4 Stroke Front Mowers	65	790	570.140	12.402	4.720	0.013	0.243	0.224	2340.323
2265004051	4 Stroke Shredders < 6 HP	80	890	423.361	13.949	5.375	0.015	0.651	0.598	2760.139
2265004055	4 Stroke Lawn & Garden Tractors (Residential)	44	760	571.345	16.862	4.508	0.013	0.247	0.227	2345.561
2265004056	4 Stroke Lawn & Garden Tractors (Commercial)	44	740	574.676	10.813	4.593	0.013	0.258	0.238	2345.580
2265004066	4 Stroke Chippers/Stump Grinders	78	640	292.419	6.265	3.693	0.011	0.213	0.196	1930.390
2265004071	4 Stroke Commercial Turf Equipment	60	730	487.196	10.457	4.536	0.013	0.315	0.290	2309.799
2265004075	4 Stroke Other Lawn & Garden Equipment	58	850	497.922	23.599	5.083	0.014	0.445	0.410	2556.772
2265004076	4 Stroke Other Lawn & Garden Equipment	58	850	495.490	21.794	5.101	0.014	0.444	0.408	2551.093
2265005010	4 Stroke 2-Wheel Tractors	62	740	577.450	11.901	4.660	0.013	0.267	0.246	2345.308
2265005015	4 Stroke Agricultural Tractors	62	580	105.653	2.873	3.003	0.009	0.170	0.156	1661.917
2265005020	4 Stroke Combines	74	580	122.039	9.670	10.981	0.009	0.154	0.141	1641.595
2265005025	4 Stroke Balers	62	580	122.196	11.865	10.993	0.009	0.154	0.141	1641.699
2265005030	4 Stroke Agricultural Mowers	48	770	571.139	12.393	4.550	0.013	0.250	0.230	2347.748
2265005035	4 Stroke Sprayers	65	740	386.869	14.741	7.146	0.012	0.300	0.276	2186.748
2265005040	4 Stroke Tillers > 6 HP	71	870	715.869	23.375	7.903	0.013	0.250	0.230	2444.695
2265005045	4 Stroke Swathers	52	580	122.195	9.720	10.993	0.009	0.154	0.141	1641.698
2265005055	4 Stroke Other Agricultural Equipment	55	620	212.357	8.567	9.671	0.010	0.175	0.161	1787.440

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265005060	4 Stroke Irrigation Sets	60	550	36.275	1.758	2.804	0.009	0.168	0.155	1571.228
2265006005	4 Stroke Generator Sets	68	780	557.892	14.686	4.621	0.013	0.287	0.264	2383.963
2265006010	4 Stroke Pumps	69	760	438.425	12.382	4.863	0.013	0.414	0.381	2359.622
2265006015	4 Stroke Air Compressors	56	700	360.134	9.561	4.251	0.012	0.336	0.309	2143.818
2265006025	4 Stroke Welders	68	710	472.663	9.925	4.362	0.012	0.259	0.238	2199.297
2265006030	4 Stroke Pressure Washers	85	800	520.820	14.110	4.903	0.014	0.416	0.382	2489.843
2265006035	4 Stroke Hydro Power Units	56	750	540.040	12.593	4.750	0.013	0.334	0.307	2370.599
2265007010	4 Stroke Shredders > 6 HP	80	800	574.873	12.138	4.583	0.013	0.240	0.221	2348.476
2265007015	4 Stroke Forest Equipment - Feller/Bunch/Skidder	70	810	492.131	14.561	5.384	0.014	0.598	0.551	2593.347
2265008005	4 Stroke Airport Ground Support Equipment	56	600	129.439	4.224	3.262	0.010	0.232	0.214	1744.054
2265010010	4 Stroke Other Oil Field Equipment	90	740	594.073	12.552	5.085	0.013	0.323	0.297	2345.417
2267001060	LPG Specialty Vehicle Carts	58	490	39.571	1.556	7.383	0.006	0.126	0.126	1279.002
2267002003	LPG Pavers	66	460	11.694	0.271	2.149	0.006	0.128	0.128	1217.324
2267002015	LPG Rollers	62	450	10.625	0.245	2.053	0.006	0.129	0.129	1216.734
2267002021	LPG Paving Equipment	59	480	21.734	0.695	3.857	0.006	0.126	0.126	1236.558
2267002024	LPG Surfacing Equipment	49	460	11.889	0.284	2.203	0.006	0.128	0.128	1218.063
2267002030	LPG Trenchers	66	460	11.603	0.266	2.127	0.006	0.128	0.128	1217.036
2267002033	LPG Bore/Drill Rigs	79	490	47.879	1.865	8.612	0.006	0.125	0.125	1291.603
2267002039	LPG Concrete/Industrial Saws	78	430	10.724	0.249	2.062	0.006	0.129	0.129	1216.741
2267002045	LPG Cranes	47	480	18.484	0.548	3.258	0.006	0.126	0.126	1229.629
2267002054	LPG Crushing/Proc. Equipment	85	480	17.207	0.491	3.028	0.006	0.126	0.126	1226.942
2267002057	LPG Rough Terrain Forklifts	63	470	12.078	0.281	2.184	0.006	0.128	0.128	1217.553

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2267002060	LPG Rubber Tire Loaders	71	460	10.606	0.245	2.051	0.006	0.128	0.128	1216.733
2267002066	LPG Tractors/Loaders/ Backhoes	48	450	10.613	0.245	2.052	0.006	0.128	0.128	1216.733
2267002072	LPG Skid Steer Loaders	58	470	17.960	0.540	3.235	0.006	0.126	0.126	1229.750
2267002081	LPG Other Construction Equipment	48	480	21.341	0.678	3.786	0.006	0.125	0.125	1235.872
2267003010	LPG Aerial Lifts	46	480	16.929	0.503	3.099	0.006	0.124	0.124	1228.550
2267003020	LPG Forklifts	30	460	10.428	0.238	2.035	0.006	0.127	0.127	1216.720
2267003030	LPG Sweepers/Scrubbers	71	440	10.581	0.244	2.049	0.006	0.128	0.128	1216.731
2267003040	LPG Other General Industrial Equipment	54	450	10.490	0.240	2.041	0.006	0.127	0.127	1216.724
2267003050	LPG Other Material Handling Equipment	53	480	14.344	0.380	2.595	0.006	0.125	0.125	1222.456
2267003070	LPG Terminal Tractors	78	430	10.620	0.245	2.053	0.006	0.128	0.128	1216.734
2267004066	LPG Chippers/Stump Grinders	78	450	10.527	0.242	2.044	0.006	0.128	0.128	1216.727
2267005055	LPG Other Agricultural Equipment	55	490	58.705	2.106	9.469	0.006	0.128	0.128	1294.883
2267005060	LPG Irrigation Sets	60	450	10.596	0.244	2.050	0.006	0.128	0.128	1216.733
2267006005	LPG Generator Sets	68	480	25.799	0.878	5.636	0.006	0.124	0.124	1258.436
2267006010	LPG Pumps	69	470	15.607	0.424	3.093	0.006	0.126	0.126	1228.544
2267006015	LPG Air Compressors	56	460	11.008	0.244	2.073	0.006	0.127	0.127	1216.834
2267006025	LPG Welders	68	460	11.124	0.251	2.078	0.006	0.127	0.127	1216.746
2267006030	LPG Pressure Washers	85	470	18.838	0.557	3.295	0.006	0.126	0.126	1229.877
2267006035	LPG Hydro Power Units	56	460	11.091	0.250	2.103	0.006	0.127	0.127	1217.201
2267008005	LPG Airport Ground Support Equipment	56	450	10.456	0.239	2.038	0.006	0.127	0.127	1216.722
2268002081	CNG Other Construction Equipment	48	480	21.264	2.452	3.856	0.006	0.125	0.125	1337.469
2268003020	CNG Forklifts	30	460	10.428	0.906	2.131	0.006	0.127	0.127	1159.779

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2268003030	CNG Sweepers/Scrubbers	71	460	10.439	0.908	2.132	0.006	0.127	0.127	1159.937
2268003040	CNG Other General Industrial Equipment	54	460	10.454	0.910	2.134	0.006	0.127	0.127	1160.143
2268003060	CNG AC/Refrigeration	46	450	10.660	0.925	2.147	0.006	0.127	0.127	1161.720
2268003070	CNG Terminal Tractors	78	430	10.619	0.932	2.149	0.006	0.128	0.128	1162.429
2268005055	CNG Other Agricultural Equipment	55	510	58.612	7.530	9.515	0.006	0.128	0.128	1917.751
2268005060	CNG Irrigation Sets	60	510	10.601	0.930	2.147	0.006	0.128	0.128	1162.182
2268006005	CNG Generator Sets	68	490	27.954	3.534	6.291	0.006	0.124	0.124	1477.602
2268006010	CNG Pumps	69	480	18.124	1.885	3.697	0.006	0.125	0.125	1277.589
2268006015	CNG Air Compressors	56	470	11.036	0.927	2.169	0.006	0.127	0.127	1161.970
2268006020	CNG Gas Compressors	85	410	11.753	1.087	2.256	0.006	0.139	0.139	1178.200
2268006035	CNG Hydro Power Units	56	470	11.537	0.963	2.235	0.006	0.126	0.126	1166.305
2268010010	CNG Other Oil Field Equipment	90	410	11.074	0.994	2.192	0.006	0.133	0.133	1168.757
2270001060	Diesel Specialty Vehicle Carts	21	450	5.171	1.298	7.201	0.005	0.778	0.755	1440.354
2270002003	Diesel Pavers	59	380	0.348	0.062	1.619	0.003	0.063	0.061	1214.353
2270002006	Diesel Tampers/Rammers	43	1000	5.599	1.833	9.303	0.005	0.564	0.547	1300.249
2270002009	Diesel Plate Compactors	43	410	4.833	1.489	8.974	0.005	0.501	0.486	1300.509
2270002015	Diesel Rollers	59	390	0.577	0.097	2.144	0.003	0.095	0.092	1233.947
2270002018	Diesel Scrapers	59	370	0.403	0.058	0.962	0.003	0.061	0.059	1183.461
2270002021	Diesel Paving Equipment	59	390	0.813	0.164	2.573	0.003	0.129	0.125	1227.309
2270002024	Diesel Surfacing Equipment	59	380	1.401	0.225	4.111	0.004	0.193	0.187	1224.413
2270002027	Diesel Signal Boards/Light Plants	43	410	2.553	0.635	7.326	0.004	0.303	0.294	1293.822
2270002030	Diesel Trenchers	59	400	0.973	0.165	4.133	0.004	0.131	0.127	1273.769

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270002033	Diesel Bore/Drill Rigs	43	370	1.401	0.357	5.396	0.004	0.255	0.247	1190.657
2270002036	Diesel Excavators	59	380	0.185	0.040	0.864	0.003	0.037	0.036	1194.768
2270002039	Diesel Concrete/Industrial Saws	59	410	1.149	0.209	4.623	0.004	0.151	0.146	1305.122
2270002042	Diesel Cement & Mortar Mixers	43	390	2.797	0.721	6.927	0.004	0.430	0.417	1245.000
2270002045	Diesel Cranes	43	370	0.329	0.073	1.357	0.003	0.061	0.059	1175.759
2270002048	Diesel Graders	59	370	0.168	0.035	0.569	0.003	0.037	0.036	1185.409
2270002051	Diesel Off-highway Trucks	59	370	0.176	0.063	3.104	0.003	0.045	0.043	1183.456
2270002054	Diesel Crushing/Proc. Equipment	43	380	0.493	0.103	2.500	0.003	0.076	0.074	1203.316
2270002057	Diesel Rough Terrain Forklifts	59	390	0.776	0.094	2.429	0.003	0.131	0.127	1255.905
2270002060	Diesel Rubber Tire Loaders	59	370	0.491	0.083	1.816	0.003	0.086	0.083	1190.505
2270002066	Diesel Tractors/Loaders/ Backhoes	21	460	2.816	0.578	4.267	0.004	0.466	0.452	1467.363
2270002069	Diesel Crawler Tractor/Dozers	59	370	0.337	0.059	1.453	0.003	0.059	0.058	1190.050
2270002072	Diesel Skid Steer Loaders	21	480	6.057	1.248	7.830	0.005	0.937	0.908	1529.960
2270002075	Diesel Off-Highway Tractors	59	370	0.613	0.111	3.225	0.003	0.094	0.091	1183.397
2270002078	Diesel Dumpers/Tenders	21	470	6.046	1.408	7.902	0.005	0.907	0.880	1509.314
2270002081	Diesel Other Construction Equipment	59	370	0.913	0.133	2.346	0.003	0.131	0.127	1185.545
2270003010	Diesel Aerial Lifts	21	480	5.322	1.127	7.814	0.005	0.726	0.705	1531.825
2270003020	Diesel Forklifts	59	400	0.186	0.044	2.298	0.003	0.028	0.027	1265.584
2270003030	Diesel Sweepers/Scrubbers	43	380	0.283	0.060	1.691	0.003	0.048	0.046	1219.335
2270003040	Diesel Other General Industrial Equipment	43	380	0.444	0.088	1.873	0.003	0.084	0.081	1205.573
2270003050	Diesel Other Material Handling Equipment	21	440	2.961	0.753	5.282	0.004	0.495	0.480	1414.309
2270003060	Diesel AC/Refrigeration	43	410	0.727	0.190	5.842	0.004	0.073	0.071	1301.611

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270003070	Diesel Terminal Tractors	59	380	0.103	0.026	0.667	0.003	0.023	0.022	1199.665
2270004031	Diesel Leaf blowers/Vacuums	43	410	4.953	1.406	9.805	0.004	0.701	0.680	1299.297
2270004036	Diesel Snow blowers	43	370	0.812	0.203	3.079	0.002	0.138	0.134	682.595
2270004046	Diesel Front Mowers	43	410	2.381	0.565	7.380	0.004	0.321	0.312	1301.100
2270004056	Diesel Lawn & Garden Tractors	43	410	3.185	0.752	8.067	0.005	0.372	0.361	1301.025
2270004066	Diesel Chippers/Stump Grinders	43	380	1.855	0.407	5.579	0.004	0.330	0.320	1215.967
2270004071	Diesel Commercial Turf Equipment	43	400	0.797	0.183	3.741	0.004	0.104	0.101	1263.303
2270004076	Diesel Other Lawn & Garden Equipment	43	410	3.131	0.696	8.024	0.004	0.508	0.493	1293.486
2270005010	Diesel 2-Wheel Tractors	59	410	5.453	1.845	9.222	0.005	0.531	0.515	1313.073
2270005015	Diesel Agricultural Tractors	59	380	1.607	0.274	4.194	0.004	0.270	0.262	1211.457
2270005020	Diesel Combines	59	370	2.179	0.512	6.228	0.004	0.443	0.430	1185.567
2270005025	Diesel Balers	59	400	4.231	0.772	7.662	0.004	0.608	0.590	1270.118
2270005030	Diesel Agricultural Mowers	59	410	4.716	0.587	6.408	0.004	0.691	0.671	1313.335
2270005035	Diesel Sprayers	59	380	2.548	0.583	6.149	0.004	0.416	0.404	1196.053
2270005040	Diesel Tillers > 6 HP	59	370	2.761	0.441	6.004	0.004	0.351	0.341	1186.769
2270005045	Diesel Swathers	59	400	4.518	0.697	7.503	0.004	0.669	0.649	1284.644
2270005055	Diesel Other Agricultural Equipment	59	380	2.111	0.393	5.020	0.004	0.373	0.362	1196.565
2270005060	Diesel Irrigation Sets	43	390	0.904	0.170	3.229	0.004	0.166	0.161	1235.293
2270006005	Diesel Generator Sets	43	390	2.150	0.516	6.163	0.004	0.343	0.333	1254.379
2270006010	Diesel Pumps	43	390	2.252	0.529	6.146	0.004	0.372	0.361	1253.430
2270006015	Diesel Air Compressors	43	400	0.836	0.147	3.634	0.004	0.132	0.128	1266.203
2270006020	Diesel Gas Compressors	43	410	0.205	0.044	2.965	0.003	0.032	0.032	1301.567

Table 4-3. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2025 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270006025	Diesel Welders	21	480	5.055	1.041	7.680	0.005	0.711	0.689	1530.177
2270006030	Diesel Pressure Washers	43	380	2.101	0.563	6.077	0.004	0.316	0.306	1224.634
2270006035	Diesel Hydro Power Units	43	400	0.981	0.192	4.118	0.004	0.147	0.142	1272.425
2270007015	Diesel Forest Equipment - Feller/Bunch/Skidder	59	370	0.106	0.026	0.422	0.003	0.024	0.024	1186.535
2270008005	Diesel Airport Ground Support Equipment	59	380	0.534	0.082	1.473	0.003	0.095	0.092	1195.505
2270009010	Diesel Other Underground Mining Equipment	21	450	8.238	1.961	10.896	0.005	0.969	0.940	1429.004
2270010010	Diesel Other Oil Field Equipment	43	370	0.425	0.099	2.773	0.003	0.070	0.068	1174.768
2282005010	2 Stroke Outboard	21	850	212.876	60.135	12.993	0.012	0.371	0.341	2241.292
2282005015	2 Stroke Personal Water Craft	21	820	252.540	18.894	14.055	0.012	0.149	0.137	2152.915
2282010005	4 Stroke Inboard/Stern-drive	21	630	117.482	21.165	10.502	0.010	0.151	0.139	1845.488
2282020005	Diesel Inboard/Stern-drive	35	370	2.250	0.628	9.540	0.011	0.228	0.221	1173.350
2282020010	Diesel Outboards	35	410	3.994	1.214	6.602	0.012	0.606	0.588	1300.228
2285002015	Diesel Railway Maintenance	21	440	3.453	0.842	5.755	0.004	0.608	0.590	1402.037
2285004015	4 Stroke Railway Maintenance	62	750	530.499	13.727	4.587	0.013	0.294	0.271	2343.575
2285006015	LPG Railway Maintenance	62	480	14.054	0.351	2.465	0.006	0.126	0.126	1220.466

Notes for Table 4-3 follow Table 4-5

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260001010	2 Stroke Motorcycles: Off- Road ^c	100	260	78.159	67.958	0.930	0.003	2.486	2.287	575.056
2260001020	2 Stroke Snowmobiles	34	1640	125.658	166.919	6.260	0.012	1.484	1.366	2090.082
2260001030	2 Stroke ATVs ^c	100	210	81.491	11.079	0.954	0.003	0.254	0.234	507.847
2260001060	2 Stroke Specialty Vehicles/Carts	58	1000	575.557	20.418	4.625	0.013	0.296	0.273	2348.143
2260002006	2 Stroke Tampers/Rammers	55	680	561.023	134.887	3.366	0.008	20.431	18.796	1595.706
2260002009	2 Stroke Plate Compactors	55	830	490.703	110.101	5.246	0.013	16.837	15.490	2440.250
2260002021	2 Stroke Paving Equipment	59	830	494.439	109.714	5.246	0.013	16.950	15.594	2437.533
2260002027	2 Stroke Signal Boards/Light Plants	72	830	512.953	128.849	5.246	0.013	17.574	16.168	2422.469
2260002039	2 Stroke Concrete/Industrial Saws	78	630	580.949	136.956	3.517	0.009	21.176	19.482	1645.708
2260002054	2 Stroke Crushing/Proc. Equipment	85	830	512.954	112.858	5.246	0.013	17.574	16.168	2422.473
2260003030	2 Stroke Sweepers/Scrubbers	71	820	512.955	115.391	5.246	0.013	17.574	16.168	2422.474
2260003040	2 Stroke Other General Industrial Equipment	54	830	512.954	113.920	5.246	0.013	17.574	16.168	2422.471
2260004015	2 Stroke Rotary Tillers < 6 HP (Residential)	40	940	455.057	108.307	5.259	0.013	16.269	14.967	2454.545
2260004016	2 Stroke Rotary Tillers < 6 HP (Commercial)	40	900	459.843	94.286	5.259	0.013	16.406	15.094	2451.241
2260004020	2 Stroke Chain Saws < 6 HP (Residential)	70	900	470.343	108.599	5.246	0.013	16.249	14.949	2454.308
2260004021	2 Stroke Chain Saws < 6 HP (Commercial)	70	650	577.069	133.544	3.616	0.009	20.971	19.293	1690.024
2260004025	2 Stroke Trimmers/Edgers/Brush Cutter (Residential)	91	890	434.250	109.988	5.296	0.013	16.887	15.536	2441.560
2260004026	2 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	810	494.627	103.045	4.976	0.012	17.171	15.797	2323.476
2260004030	2 Stroke Leaf blowers/Vacuums (Residential)	94	890	460.554	130.447	5.259	0.013	16.426	15.112	2450.749
2260004031	2 Stroke Leaf blowers/Vacuums (Commercial)	94	760	520.131	113.803	4.354	0.011	18.424	16.950	2042.129
2260004035	2 Stroke Snow blowers (Residential)	35	870	530.461	401.580	1.774	0.006	5.897	5.425	1239.586
2260004036	2 Stroke Snow blowers (Commercial)	35	870	619.109	231.251	2.069	0.007	6.881	6.330	1446.141

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260004071	2 Stroke Commercial Turf Equipment	60	840	481.749	98.319	5.246	0.013	16.572	15.246	2446.601
2260005035	2 Stroke Sprayers	65	840	424.243	107.926	5.318	0.013	17.377	15.987	2430.717
2260006005	2 Stroke Generator Sets	68	830	483.481	131.465	5.251	0.013	16.809	15.464	2441.134
2260006010	2 Stroke Pumps	69	830	461.249	136.072	5.275	0.013	18.335	16.869	2396.302
2260006015	2 Stroke Air Compressors	56	830	512.954	134.653	5.246	0.013	17.574	16.168	2422.469
2260006035	2 Stroke Hydro Power Units	56	830	512.953	141.762	5.246	0.013	17.574	16.168	2422.469
2260007005	2 Stroke Chain Saws > 6 HP	70	620	586.888	137.090	3.366	0.008	21.491	19.772	1577.862
2265001010	4 Stroke Motorcycles: Off- Road	100	160	57.747	6.817	1.231	0.003	0.147	0.135	504.290
2265001030	4 Stroke ATVs	100	170	80.563	7.938	0.948	0.003	0.147	0.135	532.944
2265001050	4 Stroke Golf Carts	46	740	587.437	13.470	4.915	0.013	0.301	0.277	2345.375
2265001060	4 Stroke Specialty Vehicles/Carts	58	820	555.837	17.093	6.150	0.013	0.237	0.218	2289.246
2265002003	4 Stroke Pavers	66	700	433.852	9.469	4.232	0.012	0.257	0.237	2156.090
2265002006	4 Stroke Tampers/Rammers	55	760	572.771	12.620	4.541	0.013	0.251	0.231	2345.277
2265002009	4 Stroke Plate Compactors	55	830	488.696	15.048	5.124	0.014	0.518	0.476	2584.957
2265002015	4 Stroke Rollers	62	690	448.733	9.939	4.301	0.012	0.254	0.233	2152.868
2265002021	4 Stroke Paving Equipment	59	780	530.969	14.075	4.746	0.013	0.345	0.318	2415.769
2265002024	4 Stroke Surfacing Equipment	49	750	535.789	13.423	4.822	0.013	0.359	0.330	2389.386
2265002027	4 Stroke Signal Boards/Light Plants	72	780	525.775	13.417	5.091	0.014	0.464	0.427	2495.240
2265002030	4 Stroke Trenchers	66	710	416.325	10.327	4.375	0.012	0.324	0.298	2202.699
2265002033	4 Stroke Bore/Drill Rigs	79	790	359.475	14.138	6.343	0.013	0.491	0.452	2398.936
2265002039	4 Stroke Concrete/Industrial Saws	78	710	519.784	11.419	4.625	0.012	0.279	0.257	2250.914
2265002042	4 Stroke Cement & Mortar Mixers	59	820	534.548	17.959	4.759	0.013	0.352	0.324	2450.754

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265002045	4 Stroke Cranes	47	590	94.948	3.266	3.903	0.009	0.164	0.151	1641.071
2265002054	4 Stroke Crushing/Proc. Equipment	85	740	495.656	12.051	4.695	0.013	0.327	0.301	2311.077
2265002057	4 Stroke Rough Terrain Forklifts	63	570	32.060	1.588	2.817	0.009	0.155	0.143	1553.970
2265002060	4 Stroke Rubber Tire Loaders	71	550	24.388	1.391	2.725	0.009	0.154	0.141	1544.026
2265002066	4 Stroke Tractors/Loaders/ Backhoes	48	730	543.060	11.343	4.565	0.013	0.264	0.242	2293.834
2265002072	4 Stroke Skid Steer Loaders	58	640	243.285	6.026	4.115	0.010	0.191	0.176	1860.007
2265002078	4 Stroke Dumpers/Tenders	41	800	545.705	17.183	4.833	0.013	0.281	0.259	2364.822
2265002081	4 Stroke Other Construction Equipment	48	580	46.077	2.462	4.366	0.009	0.151	0.139	1567.746
2265003010	4 Stroke Aerial Lifts	46	630	166.517	4.593	3.888	0.010	0.174	0.160	1748.892
2265003020	4 Stroke Forklifts	30	560	24.058	1.348	2.708	0.009	0.152	0.140	1544.027
2265003030	4 Stroke Sweepers/Scrubbers	71	610	202.642	5.246	3.453	0.010	0.220	0.202	1822.910
2265003040	4 Stroke Other General Industrial Equipment	54	760	441.500	13.780	5.056	0.013	0.533	0.491	2400.478
2265003050	4 Stroke Other Material Handling Equipment	53	640	198.547	5.003	3.596	0.010	0.183	0.168	1797.650
2265003060	4 Stroke AC/Refrigeration	46	740	575.277	12.572	4.605	0.013	0.260	0.239	2345.293
2265003070	4 Stroke Terminal Tractors	78	520	24.513	1.361	2.732	0.009	0.154	0.142	1544.026
2265004010	4 Stroke Lawn mowers (Residential)	33	900	422.985	24.094	5.353	0.015	0.642	0.591	2759.961
2265004011	4 Stroke Lawn mowers (Commercial)	33	880	427.371	14.859	5.557	0.015	0.717	0.659	2759.983
2265004015	4 Stroke Rotary Tillers < 6 HP (Residential)	40	910	422.886	20.968	5.353	0.015	0.643	0.591	2760.134
2265004016	4 Stroke Rotary Tillers < 6 HP (Commercial)	40	890	423.791	13.408	5.395	0.015	0.658	0.605	2760.143
2265004025	4 Stroke Trimmers/Edgers/Brush Cutter HP (Residential)	91	900	423.894	20.268	5.399	0.015	0.660	0.607	2760.146
2265004026	4 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	820	496.861	12.439	5.116	0.014	0.500	0.460	2566.417
2265004030	4 Stroke Leaf blowers/Vacuums (Residential)	94	900	423.910	27.586	5.400	0.015	0.660	0.607	2760.143

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265004031	4 Stroke Leaf blowers/Vacuums (Commercial)	94	700	434.060	8.459	4.197	0.012	0.249	0.229	2154.585
2265004035	4 Stroke Snow blowers (Residential)	35	940	605.502	232.016	4.734	0.008	0.126	0.116	1506.663
2265004036	4 Stroke Snow blowers (Commercial)	35	940	710.111	33.886	5.385	0.009	0.147	0.135	1757.281
2265004040	4 Stroke Rear Engine Riding Mowers (Residential)	38	760	571.421	22.379	4.516	0.013	0.247	0.227	2346.273
2265004041	4 Stroke Rear Engine Riding Mowers (Commercial)	38	740	574.506	11.400	4.594	0.013	0.259	0.238	2346.059
2265004046	4 Stroke Front Mowers	65	790	568.892	12.291	4.664	0.013	0.243	0.224	2339.692
2265004051	4 Stroke Shredders < 6 HP	80	890	423.367	13.950	5.375	0.015	0.651	0.599	2760.138
2265004055	4 Stroke Lawn & Garden Tractors (Residential)	44	760	571.327	16.859	4.507	0.013	0.247	0.227	2345.559
2265004056	4 Stroke Lawn & Garden Tractors (Commercial)	44	740	574.675	10.813	4.593	0.013	0.258	0.238	2345.581
2265004066	4 Stroke Chippers/Stump Grinders	78	640	292.427	6.265	3.694	0.011	0.213	0.196	1930.389
2265004071	4 Stroke Commercial Turf Equipment	60	730	487.198	10.458	4.536	0.013	0.315	0.290	2309.800
2265004075	4 Stroke Other Lawn & Garden Equipment	58	850	497.239	23.448	5.040	0.014	0.445	0.410	2556.499
2265004076	4 Stroke Other Lawn & Garden Equipment	58	850	494.610	21.628	5.050	0.014	0.443	0.408	2550.718
2265005010	4 Stroke 2-Wheel Tractors	62	740	577.449	11.901	4.660	0.013	0.267	0.246	2345.307
2265005015	4 Stroke Agricultural Tractors	62	580	105.699	2.874	3.006	0.009	0.170	0.156	1661.918
2265005020	4 Stroke Combines	74	580	112.242	8.952	10.090	0.009	0.153	0.141	1629.334
2265005025	4 Stroke Balers	62	580	112.593	11.022	10.119	0.009	0.153	0.141	1629.650
2265005030	4 Stroke Agricultural Mowers	48	770	571.191	12.390	4.541	0.013	0.250	0.230	2347.707
2265005035	4 Stroke Sprayers	65	740	382.500	14.391	6.803	0.012	0.300	0.276	2182.026
2265005040	4 Stroke Tillers > 6 HP	71	870	700.061	22.460	7.620	0.013	0.248	0.228	2432.569
2265005045	4 Stroke Swathers	52	580	112.593	9.014	10.119	0.009	0.153	0.141	1629.651
2265005055	4 Stroke Other Agricultural Equipment	55	620	204.610	8.124	8.969	0.010	0.175	0.161	1777.836

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265005060	4 Stroke Irrigation Sets	60	550	36.233	1.756	2.802	0.009	0.168	0.154	1571.227
2265006005	4 Stroke Generator Sets	68	780	557.794	14.660	4.610	0.013	0.287	0.264	2383.925
2265006010	4 Stroke Pumps	69	760	438.125	12.362	4.829	0.013	0.414	0.381	2359.256
2265006015	4 Stroke Air Compressors	56	700	360.047	9.557	4.243	0.012	0.336	0.309	2143.773
2265006025	4 Stroke Welders	68	710	472.588	9.922	4.358	0.012	0.259	0.238	2199.299
2265006030	4 Stroke Pressure Washers	85	800	520.813	14.109	4.902	0.014	0.416	0.382	2489.842
2265006035	4 Stroke Hydro Power Units	56	750	540.025	12.592	4.749	0.013	0.334	0.307	2370.590
2265007010	4 Stroke Shredders > 6 HP	80	800	574.107	12.080	4.563	0.013	0.240	0.221	2348.001
2265007015	4 Stroke Forest Equipment - Feller/Bunch/Skidder	70	810	492.144	14.562	5.385	0.014	0.599	0.551	2593.340
2265008005	4 Stroke Airport Ground Support Equipment	56	600	129.504	4.227	3.266	0.010	0.233	0.214	1744.052
2265010010	4 Stroke Other Oil Field Equipment	90	740	594.074	12.552	5.085	0.013	0.323	0.297	2345.417
2267001060	LPG Specialty Vehicle Carts	58	490	36.401	1.388	6.678	0.006	0.126	0.126	1270.185
2267002003	LPG Pavers	66	460	11.270	0.258	2.098	0.006	0.128	0.128	1216.873
2267002015	LPG Rollers	62	450	10.610	0.245	2.052	0.006	0.128	0.128	1216.732
2267002021	LPG Paving Equipment	59	480	20.139	0.623	3.559	0.006	0.127	0.127	1233.042
2267002024	LPG Surfacing Equipment	49	460	11.504	0.269	2.143	0.006	0.128	0.128	1217.417
2267002030	LPG Trenchers	66	460	11.167	0.255	2.086	0.006	0.128	0.128	1216.754
2267002033	LPG Bore/Drill Rigs	79	490	44.126	1.668	7.778	0.006	0.125	0.125	1281.195
2267002039	LPG Concrete/Industrial Saws	78	430	10.726	0.249	2.062	0.006	0.129	0.129	1216.740
2267002045	LPG Cranes	47	480	17.138	0.492	3.029	0.006	0.126	0.126	1227.018
2267002054	LPG Crushing/Proc. Equipment	85	480	15.986	0.441	2.824	0.006	0.127	0.127	1224.639
2267002057	LPG Rough Terrain Forklifts	63	470	11.503	0.263	2.115	0.006	0.128	0.128	1216.926

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2267002060	LPG Rubber Tire Loaders	71	460	10.572	0.243	2.048	0.006	0.128	0.128	1216.731
2267002066	LPG Tractors/Loaders/ Backhoes	48	450	10.590	0.244	2.050	0.006	0.128	0.128	1216.731
2267002072	LPG Skid Steer Loaders	58	470	16.869	0.494	3.047	0.006	0.126	0.126	1227.613
2267002081	LPG Other Construction Equipment	48	480	19.804	0.613	3.521	0.006	0.126	0.126	1232.821
2267003010	LPG Aerial Lifts	46	480	15.752	0.455	2.908	0.006	0.124	0.124	1226.450
2267003020	LPG Forklifts	30	460	10.429	0.238	2.035	0.006	0.127	0.127	1216.720
2267003030	LPG Sweepers/Scrubbers	71	440	10.583	0.244	2.049	0.006	0.128	0.128	1216.731
2267003040	LPG Other General Industrial Equipment	54	450	10.478	0.240	2.040	0.006	0.127	0.127	1216.724
2267003050	LPG Other Material Handling Equipment	53	480	13.426	0.343	2.450	0.006	0.125	0.125	1220.889
2267003070	LPG Terminal Tractors	78	430	10.627	0.245	2.053	0.006	0.129	0.129	1216.734
2267004066	LPG Chippers/Stump Grinders	78	450	10.533	0.242	2.045	0.006	0.128	0.128	1216.729
2267005055	LPG Other Agricultural Equipment	55	490	55.227	1.925	8.694	0.006	0.128	0.128	1285.298
2267005060	LPG Irrigation Sets	60	450	10.576	0.244	2.049	0.006	0.128	0.128	1216.731
2267006005	LPG Generator Sets	68	480	23.914	0.789	5.139	0.006	0.124	0.124	1252.545
2267006010	LPG Pumps	69	470	14.291	0.392	2.905	0.006	0.125	0.125	1226.755
2267006015	LPG Air Compressors	56	460	10.732	0.241	2.051	0.006	0.127	0.127	1216.726
2267006025	LPG Welders	68	460	10.744	0.244	2.054	0.006	0.127	0.127	1216.731
2267006030	LPG Pressure Washers	85	470	17.502	0.501	3.069	0.006	0.126	0.126	1227.339
2267006035	LPG Hydro Power Units	56	460	10.887	0.245	2.072	0.006	0.127	0.127	1216.902
2267008005	LPG Airport Ground Support Equipment	56	450	10.492	0.241	2.041	0.006	0.127	0.127	1216.725
2268002081	CNG Other Construction Equipment	48	480	19.743	2.223	3.595	0.006	0.126	0.126	1310.910
2268003020	CNG Forklifts	30	460	10.429	0.907	2.131	0.006	0.127	0.127	1159.795

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2268003030	CNG Sweepers/Scrubbers	71	460	10.440	0.908	2.132	0.006	0.127	0.127	1159.953
2268003040	CNG Other General Industrial Equipment	54	460	10.441	0.908	2.132	0.006	0.127	0.127	1159.962
2268003060	CNG AC\Refrigeration	46	450	10.572	0.920	2.142	0.006	0.127	0.127	1161.206
2268003070	CNG Terminal Tractors	78	430	10.626	0.933	2.150	0.006	0.129	0.129	1162.526
2268005055	CNG Other Agricultural Equipment	55	510	55.133	6.888	8.744	0.006	0.128	0.128	1842.065
2268005060	CNG Irrigation Sets	60	510	10.581	0.927	2.146	0.006	0.128	0.128	1161.903
2268006005	CNG Generator Sets	68	490	26.166	3.184	5.741	0.006	0.124	0.124	1434.974
2268006010	CNG Pumps	69	480	16.212	1.714	3.422	0.006	0.125	0.125	1257.532
2268006015	CNG Air Compressors	56	470	10.741	0.914	2.147	0.006	0.127	0.127	1160.584
2268006020	CNG Gas Compressors	85	410	11.753	1.087	2.256	0.006	0.139	0.139	1178.200
2268006035	CNG Hydro Power Units	56	470	11.156	0.931	2.183	0.006	0.126	0.126	1162.568
2268010010	CNG Other Oil Field Equipment	90	410	11.075	0.995	2.192	0.006	0.133	0.133	1168.770
2270001060	Diesel Specialty Vehicle Carts	21	450	4.750	1.189	6.816	0.005	0.714	0.692	1440.643
2270002003	Diesel Pavers	59	380	0.281	0.054	1.503	0.003	0.050	0.048	1214.357
2270002006	Diesel Tampers/Rammers	43	1000	5.555	1.836	9.276	0.005	0.555	0.539	1300.271
2270002009	Diesel Plate Compactors	43	410	4.800	1.489	8.951	0.005	0.496	0.481	1300.528
2270002015	Diesel Rollers	59	390	0.478	0.086	2.002	0.003	0.078	0.075	1233.953
2270002018	Diesel Scrapers	59	370	0.334	0.051	0.799	0.003	0.052	0.051	1183.462
2270002021	Diesel Paving Equipment	59	390	0.724	0.151	2.384	0.003	0.114	0.110	1227.323
2270002024	Diesel Surfacing Equipment	59	380	1.228	0.202	3.768	0.004	0.169	0.164	1224.453
2270002027	Diesel Signal Boards/Light Plants	43	410	2.505	0.624	7.246	0.004	0.294	0.285	1293.840
2270002030	Diesel Trenchers	59	400	0.845	0.148	3.970	0.003	0.111	0.108	1273.793

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270002033	Diesel Bore/Drill Rigs	43	370	1.263	0.322	4.931	0.004	0.227	0.220	1190.736
2270002036	Diesel Excavators	59	380	0.159	0.036	0.801	0.003	0.032	0.031	1194.769
2270002039	Diesel Concrete/Industrial Saws	59	410	1.027	0.194	4.500	0.004	0.131	0.127	1305.142
2270002042	Diesel Cement & Mortar Mixers	43	390	2.614	0.682	6.536	0.004	0.394	0.382	1245.121
2270002045	Diesel Cranes	43	370	0.281	0.063	1.185	0.003	0.053	0.051	1175.769
2270002048	Diesel Graders	59	370	0.133	0.030	0.484	0.003	0.030	0.029	1185.409
2270002051	Diesel Off-highway Trucks	59	370	0.154	0.060	3.072	0.003	0.042	0.041	1183.457
2270002054	Diesel Crushing/Proc. Equipment	43	380	0.433	0.092	2.323	0.003	0.067	0.065	1203.330
2270002057	Diesel Rough Terrain Forklifts	59	390	0.657	0.079	2.227	0.003	0.112	0.109	1255.918
2270002060	Diesel Rubber Tire Loaders	59	370	0.407	0.071	1.642	0.003	0.072	0.070	1190.517
2270002066	Diesel Tractors/Loaders/ Backhoes	21	460	2.400	0.487	3.868	0.004	0.403	0.391	1467.517
2270002069	Diesel Crawler Tractor/Dozers	59	370	0.280	0.052	1.326	0.003	0.051	0.049	1190.053
2270002072	Diesel Skid Steer Loaders	21	480	5.537	1.132	7.477	0.005	0.849	0.824	1530.250
2270002075	Diesel Off-Highway Tractors	59	370	0.530	0.100	3.062	0.003	0.084	0.082	1183.410
2270002078	Diesel Dumpers/Tenders	21	470	5.458	1.275	7.514	0.005	0.810	0.786	1509.650
2270002081	Diesel Other Construction Equipment	59	370	0.771	0.114	2.043	0.003	0.111	0.108	1185.574
2270003010	Diesel Aerial Lifts	21	480	4.852	1.020	7.507	0.005	0.656	0.636	1532.088
2270003020	Diesel Forklifts	59	400	0.183	0.044	2.293	0.003	0.027	0.027	1265.584
2270003030	Diesel Sweepers/Scrubbers	43	380	0.251	0.055	1.612	0.003	0.041	0.040	1219.338
2270003040	Diesel Other General Industrial Equipment	43	380	0.375	0.075	1.655	0.003	0.071	0.069	1205.582
2270003050	Diesel Other Material Handling Equipment	21	440	2.677	0.676	4.856	0.004	0.445	0.432	1414.476
2270003060	Diesel AC/Refrigeration	43	410	0.702	0.186	5.825	0.004	0.069	0.067	1301.614

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270003070	Diesel Terminal Tractors	59	380	0.091	0.025	0.642	0.003	0.021	0.020	1199.665
2270004031	Diesel Leaf blowers/Vacuums	43	410	4.725	1.354	9.531	0.004	0.656	0.637	1299.511
2270004036	Diesel Snow blowers	43	370	0.738	0.184	2.785	0.002	0.125	0.122	682.635
2270004046	Diesel Front Mowers	43	410	2.263	0.539	7.227	0.004	0.295	0.287	1301.150
2270004056	Diesel Lawn & Garden Tractors	43	410	3.144	0.743	8.026	0.005	0.365	0.354	1301.038
2270004066	Diesel Chippers/Stump Grinders	43	380	1.695	0.369	5.142	0.004	0.300	0.291	1216.052
2270004071	Diesel Commercial Turf Equipment	43	400	0.733	0.175	3.629	0.004	0.092	0.089	1263.308
2270004076	Diesel Other Lawn & Garden Equipment	43	410	2.937	0.650	7.743	0.004	0.467	0.453	1293.604
2270005010	Diesel 2-Wheel Tractors	59	410	5.447	1.846	9.223	0.005	0.530	0.514	1313.072
2270005015	Diesel Agricultural Tractors	59	380	1.460	0.248	3.908	0.004	0.245	0.238	1211.504
2270005020	Diesel Combines	59	370	2.040	0.477	5.801	0.004	0.407	0.395	1185.648
2270005025	Diesel Balers	59	400	3.978	0.715	7.353	0.004	0.563	0.546	1270.263
2270005030	Diesel Agricultural Mowers	59	410	4.150	0.507	5.823	0.004	0.612	0.594	1313.474
2270005035	Diesel Sprayers	59	380	2.374	0.536	5.759	0.004	0.382	0.371	1196.167
2270005040	Diesel Tillers > 6 HP	59	370	2.566	0.412	5.624	0.004	0.326	0.317	1186.837
2270005045	Diesel Swathers	59	400	4.261	0.649	7.124	0.004	0.620	0.602	1284.760
2270005055	Diesel Other Agricultural Equipment	59	380	1.867	0.341	4.494	0.004	0.330	0.320	1196.650
2270005060	Diesel Irrigation Sets	43	390	0.792	0.148	2.956	0.003	0.145	0.141	1235.321
2270006005	Diesel Generator Sets	43	390	2.009	0.481	5.896	0.004	0.316	0.307	1254.458
2270006010	Diesel Pumps	43	390	2.104	0.493	5.863	0.004	0.344	0.333	1253.511
2270006015	Diesel Air Compressors	43	400	0.710	0.128	3.422	0.003	0.110	0.107	1266.224
2270006020	Diesel Gas Compressors	43	410	0.205	0.044	2.965	0.003	0.032	0.032	1301.567

Table 4-4. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2026 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270006025	Diesel Welders	21	480	4.586	0.942	7.414	0.005	0.635	0.616	1530.392
2270006030	Diesel Pressure Washers	43	380	1.973	0.527	5.789	0.004	0.293	0.284	1224.727
2270006035	Diesel Hydro Power Units	43	400	0.867	0.174	3.928	0.004	0.126	0.123	1272.446
2270007015	Diesel Forest Equipment - Feller/Bunch/Skidder	59	370	0.091	0.024	0.391	0.003	0.022	0.021	1186.535
2270008005	Diesel Airport Ground Support Equipment	59	380	0.443	0.070	1.300	0.003	0.078	0.076	1195.515
2270009010	Diesel Other Underground Mining Equipment	21	450	8.151	1.942	10.825	0.005	0.954	0.925	1429.090
2270010010	Diesel Other Oil Field Equipment	43	370	0.350	0.086	2.553	0.003	0.060	0.059	1174.770
2282005010	2 Stroke Outboard	21	850	211.744	56.251	12.995	0.012	0.328	0.302	2241.271
2282005015	2 Stroke Personal Water Craft	21	820	252.363	18.490	14.070	0.012	0.142	0.131	2153.175
2282010005	4 Stroke Inboard/Sterndrive	21	630	112.441	20.163	9.681	0.010	0.151	0.139	1841.372
2282020005	Diesel Inboard/Sterndrive	35	370	2.245	0.628	9.364	0.011	0.225	0.218	1173.380
2282020010	Diesel Outboards	35	410	3.915	1.179	6.404	0.012	0.586	0.569	1300.336
2285002015	Diesel Railway Maintenance	21	440	3.197	0.778	5.398	0.004	0.565	0.548	1402.171
2285004015	4 Stroke Railway Maintenance	62	750	530.486	13.729	4.582	0.013	0.295	0.271	2343.499
2285006015	LPG Railway Maintenance	62	480	13.261	0.322	2.352	0.006	0.126	0.126	1219.319

Notes for Table 4-4 follow Table 4-5

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260001010	2 Stroke Motorcycles: Off-Road ^c	100	260	78.045	67.611	0.932	0.003	2.473	2.276	575.464
2260001020	2 Stroke Snowmobiles	34	1640	124.370	165.150	6.310	0.012	1.462	1.345	2087.269
2260001030	2 Stroke ATVs ^c	100	210	81.345	10.198	0.956	0.003	0.221	0.203	509.188
2260001060	2 Stroke Specialty Vehicles/Carts	58	1000	575.455	20.369	4.625	0.013	0.296	0.273	2348.101
2260002006	2 Stroke Tampers/Rammers	55	680	561.174	134.926	3.366	0.008	20.437	18.802	1595.606
2260002009	2 Stroke Plate Compactors	55	830	490.853	110.155	5.246	0.013	16.842	15.495	2440.129
2260002021	2 Stroke Paving Equipment	59	830	494.543	109.752	5.246	0.013	16.954	15.598	2437.443
2260002027	2 Stroke Signal Boards/Light Plants	72	830	512.953	128.849	5.246	0.013	17.574	16.168	2422.470
2260002039	2 Stroke Concrete/Industrial Saws	78	630	580.948	136.956	3.517	0.009	21.176	19.482	1645.708
2260002054	2 Stroke Crushing/Proc. Equipment	85	830	512.953	112.858	5.246	0.013	17.574	16.168	2422.469
2260003030	2 Stroke Sweepers/Scrubbers	71	820	512.953	115.390	5.246	0.013	17.574	16.168	2422.472
2260003040	2 Stroke Other General Industrial Equipment	54	830	512.954	113.920	5.246	0.013	17.574	16.168	2422.471
2260004015	2 Stroke Rotary Tillers < 6 HP (Residential)	40	940	455.079	108.314	5.259	0.013	16.269	14.968	2454.531
2260004016	2 Stroke Rotary Tillers < 6 HP (Commercial)	40	900	459.829	94.283	5.259	0.013	16.406	15.093	2451.246
2260004020	2 Stroke Chain Saws < 6 HP (Residential)	70	900	470.366	108.605	5.246	0.013	16.249	14.949	2454.295
2260004021	2 Stroke Chain Saws < 6 HP (Commercial)	70	650	577.069	133.544	3.616	0.009	20.971	19.293	1690.026
2260004025	2 Stroke Trimmers/Edgers/Brush Cutter (Residential)	91	890	434.270	109.994	5.296	0.013	16.887	15.536	2441.546
2260004026	2 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	810	494.660	103.057	4.976	0.012	17.172	15.798	2323.450
2260004030	2 Stroke Leaf blowers/Vacuums (Residential)	94	890	460.575	130.453	5.259	0.013	16.427	15.113	2450.738
2260004031	2 Stroke Leaf blowers/Vacuums (Commercial)	94	760	520.163	113.813	4.354	0.011	18.425	16.951	2042.107
2260004035	2 Stroke Snow blowers (Residential)	35	870	530.446	401.576	1.774	0.006	5.897	5.425	1239.595
2260004036	2 Stroke Snow blowers (Commercial)	35	870	619.073	231.242	2.069	0.007	6.880	6.330	1446.158

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2260004071	2 Stroke Commercial Turf Equipment	60	840	481.757	98.322	5.246	0.013	16.572	15.246	2446.591
2260005035	2 Stroke Sprayers	65	840	424.206	107.912	5.318	0.013	17.376	15.986	2430.751
2260006005	2 Stroke Generator Sets	68	830	483.483	131.465	5.251	0.013	16.809	15.464	2441.131
2260006010	2 Stroke Pumps	69	830	461.214	136.054	5.275	0.013	18.335	16.868	2396.282
2260006015	2 Stroke Air Compressors	56	830	512.953	134.653	5.246	0.013	17.574	16.168	2422.471
2260006035	2 Stroke Hydro Power Units	56	830	512.954	141.762	5.246	0.013	17.574	16.168	2422.474
2260007005	2 Stroke Chain Saws > 6 HP	70	620	586.888	137.090	3.366	0.008	21.491	19.772	1577.859
2265001010	4 Stroke Motorcycles: Off- Road	100	160	57.594	6.801	1.230	0.003	0.147	0.135	504.291
2265001030	4 Stroke ATVs	100	170	80.511	7.915	0.945	0.003	0.147	0.135	532.941
2265001050	4 Stroke Golf Carts	46	740	587.435	13.470	4.915	0.013	0.301	0.277	2345.374
2265001060	4 Stroke Specialty Vehicles/Carts	58	820	548.195	16.333	5.881	0.013	0.236	0.217	2283.892
2265002003	4 Stroke Pavers	66	700	433.776	9.466	4.226	0.012	0.257	0.237	2156.052
2265002006	4 Stroke Tampers/Rammers	55	760	572.718	12.615	4.539	0.013	0.251	0.231	2345.274
2265002009	4 Stroke Plate Compactors	55	830	488.677	15.046	5.123	0.014	0.518	0.476	2584.958
2265002015	4 Stroke Rollers	62	690	448.749	9.941	4.302	0.012	0.254	0.233	2152.867
2265002021	4 Stroke Paving Equipment	59	780	530.888	14.070	4.739	0.013	0.345	0.318	2415.679
2265002024	4 Stroke Surfacing Equipment	49	750	535.791	13.424	4.821	0.013	0.359	0.330	2389.370
2265002027	4 Stroke Signal Boards/Light Plants	72	780	525.787	13.418	5.091	0.014	0.464	0.427	2495.238
2265002030	4 Stroke Trenchers	66	710	416.274	10.326	4.371	0.012	0.324	0.298	2202.697
2265002033	4 Stroke Bore/Drill Rigs	79	790	356.787	13.981	6.103	0.013	0.491	0.452	2395.650
2265002039	4 Stroke Concrete/Industrial Saws	78	710	519.790	11.420	4.626	0.012	0.279	0.257	2250.914
2265002042	4 Stroke Cement & Mortar Mixers	59	820	534.240	17.922	4.747	0.013	0.351	0.323	2450.651

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265002045	4 Stroke Cranes	47	590	92.661	3.153	3.706	0.009	0.164	0.151	1638.570
2265002054	4 Stroke Crushing/Proc. Equipment	85	740	495.398	12.039	4.672	0.013	0.327	0.301	2310.778
2265002057	4 Stroke Rough Terrain Forklifts	63	570	31.599	1.568	2.782	0.009	0.155	0.143	1553.764
2265002060	4 Stroke Rubber Tire Loaders	71	550	24.345	1.389	2.723	0.009	0.153	0.141	1544.028
2265002066	4 Stroke Tractors/Loaders/ Backhoes	48	730	543.081	11.346	4.566	0.013	0.264	0.243	2293.833
2265002072	4 Stroke Skid Steer Loaders	58	640	241.978	5.960	4.003	0.010	0.191	0.176	1858.567
2265002078	4 Stroke Dumpers/Tenders	41	800	544.577	17.087	4.779	0.013	0.281	0.259	2364.039
2265002081	4 Stroke Other Construction Equipment	48	580	43.023	2.309	4.101	0.009	0.152	0.140	1564.314
2265003010	4 Stroke Aerial Lifts	46	630	164.916	4.511	3.752	0.010	0.174	0.160	1747.175
2265003020	4 Stroke Forklifts	30	560	24.058	1.348	2.708	0.009	0.152	0.140	1544.026
2265003030	4 Stroke Sweepers/Scrubbers	71	610	202.633	5.245	3.452	0.010	0.220	0.202	1822.910
2265003040	4 Stroke Other General Industrial Equipment	54	760	441.493	13.779	5.056	0.013	0.533	0.491	2400.477
2265003050	4 Stroke Other Material Handling Equipment	53	640	197.451	4.948	3.504	0.010	0.183	0.168	1796.548
2265003060	4 Stroke AC/Refrigeration	46	740	575.264	12.570	4.604	0.013	0.260	0.239	2345.291
2265003070	4 Stroke Terminal Tractors	78	520	24.496	1.360	2.731	0.009	0.154	0.142	1544.025
2265004010	4 Stroke Lawn mowers (Residential)	33	900	422.982	24.094	5.353	0.015	0.642	0.591	2759.957
2265004011	4 Stroke Lawn mowers (Commercial)	33	880	427.374	14.859	5.557	0.015	0.717	0.659	2759.984
2265004015	4 Stroke Rotary Tillers < 6 HP (Residential)	40	910	422.889	20.969	5.353	0.015	0.643	0.591	2760.132
2265004016	4 Stroke Rotary Tillers < 6 HP (Commercial)	40	890	423.788	13.407	5.394	0.015	0.658	0.605	2760.143
2265004025	4 Stroke Trimmers/Edgers/Brush Cutter HP (Residential)	91	900	423.898	20.269	5.400	0.015	0.660	0.607	2760.145
2265004026	4 Stroke Trimmers/Edgers/Brush Cutter (Commercial)	91	820	496.870	12.441	5.116	0.014	0.500	0.460	2566.416
2265004030	4 Stroke Leaf blowers/Vacuums (Residential)	94	900	423.915	27.586	5.400	0.015	0.660	0.607	2760.146

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265004031	4 Stroke Leaf blowers/Vacuums (Commercial)	94	700	433.969	8.458	4.191	0.012	0.249	0.229	2154.584
2265004035	4 Stroke Snow blowers (Residential)	35	940	605.480	232.016	4.734	0.008	0.126	0.116	1506.663
2265004036	4 Stroke Snow blowers (Commercial)	35	940	710.051	33.885	5.385	0.009	0.147	0.135	1757.280
2265004040	4 Stroke Rear Engine Riding Mowers (Residential)	38	760	571.391	22.375	4.515	0.013	0.247	0.228	2346.244
2265004041	4 Stroke Rear Engine Riding Mowers (Commercial)	38	740	574.510	11.400	4.594	0.013	0.259	0.238	2346.060
2265004046	4 Stroke Front Mowers	65	790	567.916	12.200	4.620	0.013	0.243	0.224	2339.209
2265004051	4 Stroke Shredders < 6 HP	80	890	423.374	13.951	5.375	0.015	0.651	0.599	2760.139
2265004055	4 Stroke Lawn & Garden Tractors (Residential)	44	760	571.332	16.859	4.507	0.013	0.247	0.227	2345.557
2265004056	4 Stroke Lawn & Garden Tractors (Commercial)	44	740	574.680	10.813	4.593	0.013	0.258	0.238	2345.580
2265004066	4 Stroke Chippers/Stump Grinders	78	640	292.434	6.266	3.694	0.011	0.213	0.196	1930.390
2265004071	4 Stroke Commercial Turf Equipment	60	730	487.201	10.458	4.536	0.013	0.315	0.290	2309.799
2265004075	4 Stroke Other Lawn & Garden Equipment	58	850	496.792	23.336	5.009	0.014	0.445	0.410	2556.328
2265004076	4 Stroke Other Lawn & Garden Equipment	58	850	494.065	21.511	5.014	0.014	0.443	0.408	2550.472
2265005010	4 Stroke 2-Wheel Tractors	62	740	577.448	11.900	4.660	0.013	0.267	0.246	2345.308
2265005015	4 Stroke Agricultural Tractors	62	580	105.750	2.877	3.008	0.009	0.170	0.157	1661.918
2265005020	4 Stroke Combines	74	580	101.750	8.189	9.153	0.009	0.153	0.141	1616.511
2265005025	4 Stroke Balers	62	580	102.099	10.105	9.182	0.009	0.153	0.141	1616.851
2265005030	4 Stroke Agricultural Mowers	48	770	571.193	12.386	4.535	0.013	0.251	0.231	2347.679
2265005035	4 Stroke Sprayers	65	740	377.861	14.023	6.440	0.012	0.300	0.276	2177.119
2265005040	4 Stroke Tillers > 6 HP	71	870	685.645	21.528	7.332	0.013	0.246	0.226	2421.882
2265005045	4 Stroke Swathers	52	580	102.099	8.247	9.182	0.009	0.153	0.141	1616.851
2265005055	4 Stroke Other Agricultural Equipment	55	620	196.244	7.654	8.221	0.010	0.175	0.161	1767.691

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2265005060	4 Stroke Irrigation Sets	60	550	36.194	1.755	2.800	0.009	0.168	0.154	1571.227
2265006005	4 Stroke Generator Sets	68	780	557.703	14.642	4.602	0.013	0.287	0.264	2383.902
2265006010	4 Stroke Pumps	69	760	437.915	12.349	4.803	0.013	0.414	0.381	2358.942
2265006015	4 Stroke Air Compressors	56	700	359.999	9.554	4.239	0.012	0.336	0.309	2143.772
2265006025	4 Stroke Welders	68	710	472.538	9.919	4.354	0.012	0.259	0.238	2199.296
2265006030	4 Stroke Pressure Washers	85	800	520.770	14.104	4.901	0.014	0.415	0.382	2489.834
2265006035	4 Stroke Hydro Power Units	56	750	540.015	12.592	4.748	0.013	0.334	0.307	2370.581
2265007010	4 Stroke Shredders > 6 HP	80	800	573.912	12.079	4.558	0.013	0.241	0.222	2347.570
2265007015	4 Stroke Forest Equipment - Feller/Bunch/Skidder	70	810	492.136	14.561	5.384	0.014	0.598	0.551	2593.347
2265008005	4 Stroke Airport Ground Support Equipment	56	600	129.540	4.228	3.268	0.010	0.233	0.214	1744.053
2265010010	4 Stroke Other Oil Field Equipment	90	740	594.072	12.552	5.085	0.013	0.323	0.297	2345.418
2267001060	LPG Specialty Vehicle Carts	58	490	33.352	1.229	6.016	0.006	0.126	0.126	1261.943
2267002003	LPG Pavers	66	460	10.956	0.251	2.073	0.006	0.128	0.128	1216.746
2267002015	LPG Rollers	62	450	10.596	0.244	2.050	0.006	0.128	0.128	1216.732
2267002021	LPG Paving Equipment	59	480	18.692	0.557	3.287	0.006	0.127	0.127	1229.821
2267002024	LPG Surfacing Equipment	49	460	11.204	0.259	2.103	0.006	0.128	0.128	1217.022
2267002030	LPG Trenchers	66	460	10.865	0.250	2.068	0.006	0.128	0.128	1216.743
2267002033	LPG Bore/Drill Rigs	79	490	40.496	1.479	6.988	0.006	0.125	0.125	1271.389
2267002039	LPG Concrete/Industrial Saws	78	430	10.725	0.249	2.062	0.006	0.129	0.129	1216.741
2267002045	LPG Cranes	47	480	15.954	0.442	2.831	0.006	0.127	0.127	1224.784
2267002054	LPG Crushing/Proc. Equipment	85	480	14.911	0.396	2.641	0.006	0.127	0.127	1222.548
2267002057	LPG Rough Terrain Forklifts	63	470	11.084	0.254	2.081	0.006	0.128	0.128	1216.750

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2267002060	LPG Rubber Tire Loaders	71	460	10.553	0.243	2.047	0.006	0.128	0.128	1216.729
2267002066	LPG Tractors/Loaders/ Backhoes	48	450	10.569	0.243	2.048	0.006	0.128	0.128	1216.730
2267002072	LPG Skid Steer Loaders	58	470	15.924	0.454	2.884	0.006	0.127	0.127	1225.749
2267002081	LPG Other Construction Equipment	48	480	18.443	0.554	3.283	0.006	0.126	0.126	1230.079
2267003010	LPG Aerial Lifts	46	480	14.808	0.415	2.748	0.006	0.125	0.125	1224.638
2267003020	LPG Forklifts	30	460	10.429	0.238	2.035	0.006	0.127	0.127	1216.720
2267003030	LPG Sweepers/Scrubbers	71	440	10.578	0.244	2.049	0.006	0.128	0.128	1216.731
2267003040	LPG Other General Industrial Equipment	54	450	10.469	0.240	2.039	0.006	0.127	0.127	1216.724
2267003050	LPG Other Material Handling Equipment	53	480	12.675	0.313	2.331	0.006	0.125	0.125	1219.608
2267003070	LPG Terminal Tractors	78	430	10.619	0.245	2.053	0.006	0.128	0.128	1216.734
2267004066	LPG Chippers/Stump Grinders	78	450	10.538	0.242	2.045	0.006	0.128	0.128	1216.728
2267005055	LPG Other Agricultural Equipment	55	490	51.441	1.732	7.876	0.006	0.128	0.128	1275.242
2267005060	LPG Irrigation Sets	60	450	10.561	0.243	2.047	0.006	0.128	0.128	1216.730
2267006005	LPG Generator Sets	68	480	22.532	0.719	4.745	0.006	0.124	0.124	1247.780
2267006010	LPG Pumps	69	470	13.627	0.367	2.767	0.006	0.125	0.125	1225.214
2267006015	LPG Air Compressors	56	460	10.553	0.239	2.042	0.006	0.127	0.127	1216.722
2267006025	LPG Welders	68	460	10.485	0.239	2.038	0.006	0.126	0.126	1216.720
2267006030	LPG Pressure Washers	85	470	16.389	0.454	2.881	0.006	0.126	0.126	1225.252
2267006035	LPG Hydro Power Units	56	460	10.709	0.241	2.051	0.006	0.127	0.127	1216.726
2267008005	LPG Airport Ground Support Equipment	56	450	10.513	0.241	2.043	0.006	0.127	0.127	1216.727
2268002081	CNG Other Construction Equipment	48	480	18.384	2.016	3.360	0.006	0.126	0.126	1286.929
2268003020	CNG Forklifts	30	460	10.429	0.907	2.131	0.006	0.127	0.127	1159.797

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2268003030	CNG Sweepers/Scrubbers	71	460	10.439	0.908	2.132	0.006	0.127	0.127	1159.931
2268003040	CNG Other General Industrial Equipment	54	460	10.432	0.907	2.131	0.006	0.127	0.127	1159.838
2268003060	CNG AC/Refrigeration	46	450	10.519	0.917	2.139	0.006	0.127	0.127	1160.908
2268003070	CNG Terminal Tractors	78	430	10.618	0.932	2.149	0.006	0.128	0.128	1162.417
2268005055	CNG Other Agricultural Equipment	55	510	51.347	6.200	7.929	0.006	0.128	0.128	1761.163
2268005060	CNG Irrigation Sets	60	510	10.566	0.925	2.144	0.006	0.128	0.128	1161.700
2268006005	CNG Generator Sets	68	490	24.688	2.904	5.299	0.006	0.124	0.124	1400.851
2268006010	CNG Pumps	69	480	15.226	1.585	3.218	0.006	0.125	0.125	1241.954
2268006015	CNG Air Compressors	56	470	10.550	0.908	2.137	0.006	0.127	0.127	1159.978
2268006020	CNG Gas Compressors	85	410	11.753	1.087	2.256	0.006	0.139	0.139	1178.200
2268006035	CNG Hydro Power Units	56	470	10.827	0.911	2.149	0.006	0.126	0.126	1160.218
2268010010	CNG Other Oil Field Equipment	90	410	11.074	0.995	2.192	0.006	0.133	0.133	1168.758
2270001060	Diesel Specialty Vehicle Carts	21	450	4.359	1.088	6.451	0.005	0.653	0.634	1440.903
2270002003	Diesel Pavers	59	380	0.242	0.049	1.427	0.003	0.042	0.041	1214.360
2270002006	Diesel Tampers/Rammers	43	1000	5.524	1.838	9.256	0.005	0.549	0.533	1300.291
2270002009	Diesel Plate Compactors	43	410	4.778	1.489	8.935	0.005	0.491	0.477	1300.540
2270002015	Diesel Rollers	59	390	0.400	0.078	1.885	0.003	0.063	0.061	1233.959
2270002018	Diesel Scrapers	59	370	0.270	0.044	0.666	0.003	0.044	0.043	1183.462
2270002021	Diesel Paving Equipment	59	390	0.650	0.139	2.222	0.003	0.101	0.097	1227.333
2270002024	Diesel Surfacing Equipment	59	380	1.068	0.181	3.458	0.003	0.147	0.143	1224.488
2270002027	Diesel Signal Boards/Light Plants	43	410	2.465	0.615	7.188	0.004	0.285	0.277	1293.852
2270002030	Diesel Trenchers	59	400	0.725	0.133	3.829	0.003	0.094	0.091	1273.812

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270002033	Diesel Bore/Drill Rigs	43	370	1.120	0.284	4.459	0.004	0.200	0.194	1190.809
2270002036	Diesel Excavators	59	380	0.138	0.034	0.754	0.003	0.028	0.027	1194.769
2270002039	Diesel Concrete/Industrial Saws	59	410	0.919	0.182	4.388	0.004	0.115	0.111	1305.159
2270002042	Diesel Cement & Mortar Mixers	43	390	2.437	0.645	6.153	0.004	0.359	0.348	1245.223
2270002045	Diesel Cranes	43	370	0.234	0.053	1.029	0.003	0.044	0.043	1175.777
2270002048	Diesel Graders	59	370	0.111	0.027	0.427	0.003	0.026	0.025	1185.409
2270002051	Diesel Off-highway Trucks	59	370	0.139	0.058	3.049	0.003	0.040	0.039	1183.458
2270002054	Diesel Crushing/Proc. Equipment	43	380	0.377	0.082	2.174	0.003	0.058	0.057	1203.342
2270002057	Diesel Rough Terrain Forklifts	59	390	0.526	0.066	2.062	0.003	0.091	0.088	1255.930
2270002060	Diesel Rubber Tire Loaders	59	370	0.339	0.062	1.497	0.003	0.061	0.059	1190.523
2270002066	Diesel Tractors/Loaders/ Backhoes	21	460	2.127	0.427	3.605	0.004	0.359	0.348	1467.635
2270002069	Diesel Crawler Tractor/Dozers	59	370	0.231	0.046	1.227	0.003	0.044	0.043	1190.057
2270002072	Diesel Skid Steer Loaders	21	480	5.011	1.016	7.118	0.005	0.760	0.737	1530.534
2270002075	Diesel Off-Highway Tractors	59	370	0.456	0.090	2.913	0.003	0.076	0.073	1183.420
2270002078	Diesel Dumpers/Tenders	21	470	4.917	1.155	7.145	0.005	0.719	0.697	1509.931
2270002081	Diesel Other Construction Equipment	59	370	0.673	0.100	1.823	0.003	0.098	0.095	1185.595
2270003010	Diesel Aerial Lifts	21	480	4.387	0.916	7.205	0.005	0.587	0.569	1532.338
2270003020	Diesel Forklifts	59	400	0.182	0.043	2.291	0.003	0.027	0.026	1265.585
2270003030	Diesel Sweepers/Scrubbers	43	380	0.229	0.052	1.559	0.003	0.037	0.036	1219.340
2270003040	Diesel Other General Industrial Equipment	43	380	0.319	0.064	1.474	0.003	0.060	0.058	1205.589
2270003050	Diesel Other Material Handling Equipment	21	440	2.400	0.600	4.437	0.004	0.396	0.384	1414.637
2270003060	Diesel AC/Refrigeration	43	410	0.683	0.183	5.812	0.004	0.067	0.065	1301.619

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270003070	Diesel Terminal Tractors	59	380	0.084	0.024	0.628	0.003	0.019	0.019	1199.666
2270004031	Diesel Leaf blowers/Vacuums	43	410	4.525	1.310	9.293	0.004	0.617	0.599	1299.694
2270004036	Diesel Snow blowers	43	370	0.672	0.168	2.527	0.002	0.114	0.111	682.669
2270004046	Diesel Front Mowers	43	410	2.161	0.518	7.102	0.004	0.275	0.267	1301.187
2270004056	Diesel Lawn & Garden Tractors	43	410	3.112	0.735	7.991	0.005	0.359	0.349	1301.045
2270004066	Diesel Chippers/Stump Grinders	43	380	1.532	0.330	4.714	0.004	0.269	0.261	1216.131
2270004071	Diesel Commercial Turf Equipment	43	400	0.691	0.170	3.550	0.003	0.084	0.081	1263.312
2270004076	Diesel Other Lawn & Garden Equipment	43	410	2.764	0.610	7.495	0.004	0.431	0.418	1293.705
2270005010	Diesel 2-Wheel Tractors	59	410	5.439	1.847	9.223	0.005	0.529	0.513	1313.071
2270005015	Diesel Agricultural Tractors	59	380	1.293	0.221	3.593	0.004	0.215	0.209	1211.545
2270005020	Diesel Combines	59	370	1.893	0.439	5.340	0.004	0.370	0.359	1185.731
2270005025	Diesel Balers	59	400	3.696	0.656	7.007	0.004	0.514	0.499	1270.413
2270005030	Diesel Agricultural Mowers	59	410	3.605	0.432	5.272	0.004	0.539	0.523	1313.599
2270005035	Diesel Sprayers	59	380	2.193	0.489	5.337	0.004	0.348	0.338	1196.279
2270005040	Diesel Tillers > 6 HP	59	370	2.365	0.383	5.213	0.004	0.301	0.292	1186.903
2270005045	Diesel Swathers	59	400	3.977	0.598	6.715	0.004	0.569	0.552	1284.881
2270005055	Diesel Other Agricultural Equipment	59	380	1.632	0.294	4.009	0.004	0.288	0.279	1196.724
2270005060	Diesel Irrigation Sets	43	390	0.671	0.126	2.677	0.003	0.122	0.118	1235.344
2270006005	Diesel Generator Sets	43	390	1.875	0.448	5.632	0.004	0.291	0.282	1254.532
2270006010	Diesel Pumps	43	390	1.958	0.459	5.576	0.004	0.315	0.306	1253.589
2270006015	Diesel Air Compressors	43	400	0.601	0.110	3.227	0.003	0.092	0.089	1266.243
2270006020	Diesel Gas Compressors	43	410	0.205	0.044	2.965	0.003	0.032	0.032	1301.567

Table 4-5. Criteria Pollutant Emission Factors for Non-Road Engines and Equipment – 2027 (cont.)

SCC	Equipment Description	Load Factor ^a (% Max Power)	BSFC ^b (lb/1000 hp-hr)	Emission Factors (lb/1000 hp-hr)						
				CO	VOC	NO _x	SO ₂	PM ₁₀ ^d	PM _{2.5} ^{e,f}	CO ₂ ^g
2270006025	Diesel Welders	21	480	4.189	0.856	7.181	0.005	0.573	0.556	1530.584
2270006030	Diesel Pressure Washers	43	380	1.848	0.492	5.500	0.004	0.271	0.262	1224.814
2270006035	Diesel Hydro Power Units	43	400	0.767	0.158	3.749	0.004	0.109	0.106	1272.464
2270007015	Diesel Forest Equipment - Feller/Bunch/Skidder	59	370	0.081	0.022	0.369	0.003	0.020	0.019	1186.535
2270008005	Diesel Airport Ground Support Equipment	59	380	0.362	0.059	1.146	0.003	0.064	0.062	1195.522
2270009010	Diesel Other Underground Mining Equipment	21	450	8.080	1.925	10.765	0.005	0.943	0.915	1429.164
2270010010	Diesel Other Oil Field Equipment	43	370	0.287	0.075	2.369	0.003	0.052	0.050	1174.773
2282005010	2 Stroke Outboard	21	850	210.774	52.946	12.992	0.012	0.291	0.268	2241.266
2282005015	2 Stroke Personal Water Craft	21	820	252.215	18.196	14.080	0.012	0.137	0.126	2153.366
2282010005	4 Stroke Inboard/Stern drive	21	630	107.630	19.175	8.852	0.010	0.151	0.139	1837.679
2282020005	Diesel Inboard/Stern drive	35	370	2.242	0.627	9.238	0.011	0.223	0.217	1173.399
2282020010	Diesel Outboards	35	410	3.851	1.150	6.229	0.012	0.570	0.553	1300.424
2285002015	Diesel Railway Maintenance	21	440	2.848	0.684	4.889	0.004	0.503	0.488	1402.334
2285004015	4 Stroke Railway Maintenance	62	750	530.287	13.711	4.573	0.013	0.294	0.270	2343.443
2285006015	LPG Railway Maintenance	62	480	12.570	0.299	2.261	0.006	0.126	0.126	1218.454

Notes for Table 4-1 through Table 4-5 provided on the following page.

Notes for Table 4-1 through Table 4-5

- a. Load factor and activity data obtained from EPA Office of Transportation Air Quality and were derived from *Median Life, Annual Activity, and Load Factor Values for Nonroad Engine Emissions Modeling*, EPA 420-R-10-016, NR-005d, July 2010.
- b. BSFC and emission factors obtained from EPA Office of Transportation Air Quality and were derived from *Exhaust Emission Factors for Nonroad Engine Modeling: Spark-Ignition*, EPA 420-R-019, NR-010e, December 2005, and *Exhaust Emission Factors for Nonroad Engine Modeling: Compression-Ignition*, EPA 420-P-04-009, NR-009c, April 2004. The emission factors are composite emission factors that represent the national mix of model years and technology types believed to be in existence in 2007. They represent in-use emissions and consider NONROAD model deterioration and transient adjustment factors across all model years.
- c. Activities for off-road motorcycles and all-terrain vehicles are in units of miles per year instead of hours per year.
- d. PM₁₀ is assumed to be equivalent to total PM for gasoline engines.
- e. For gasoline engines, PM_{2.5} is assumed to be 92% of the PM₁₀ value.
- f. For LPG and CNG engines, all PM is assumed to be PM_{2.5}.
- g. The Carbon Dioxide Equivalent (CO₂e) emission factors are the total of CO₂ and CH₄ converted to equivalent CO₂ (CO₂e) using a global warming potential (GWP) value of 25 for CH₄. The converted CH₄ value was added to the CO₂ emission factor and presented as a CO₂e emission factor in units of lb/1000lb. Calculations were made using the stated BSFC, the fuel density in Table 3-1, and if the fuel was not stated, it was assumed to be gasoline. N₂O is not included in these calculations because there is no N₂O pollutant output for the NONROAD module within MOVES5.

Table 4-6. Pre-1998 Non-Road CI Engine Criteria Pollutant Emission Factors (Power Rating > 50 hp)

Equipment Description	Emission Factors (lb/1000 hp-hr)						
	CO	VOC ^a	NO _x	SO _x	PM ₁₀ ^b	PM _{2.5} ^c	CO _{2e} ^d
Construction Equipment							
Asphalt Pavers	7.05	1.39	22.71	0.21	1.98	1.92	1323.27
Plate Compactors	6.83	1.86	20.50	0.21	1.98	1.92	1323.27
Concrete Pavers	10.08	2.55	22.09	0.21	1.98	1.92	1323.27
Rollers	6.83	1.86	20.50	0.21	1.72	1.67	1323.27
Scrapers	11.02	1.63	19.18	0.21	2.78	2.69	1323.27
Paving Equipment	10.14	2.34	24.27	0.21	1.98	1.92	1323.27
Signal Boards	11.02	2.79	17.64	0.21	2.20	2.14	1323.27
Trenchers	20.15	3.58	22.09	0.21	3.17	3.08	1323.27
Bore/Drill Rigs	20.28	3.27	24.27	0.21	3.17	3.08	1323.27
Excavators	11.46	1.63	23.70	0.21	3.17	3.08	1323.27
Concrete/Industrial Saws	20.28	3.27	24.27	0.21	3.17	3.08	1323.27
Cement and Mortar Mixers	10.14	2.34	24.27	0.21	1.98	1.92	1323.27
Cranes	9.26	2.93	22.71	0.21	3.17	3.08	1323.27
Graders	8.38	3.58	21.16	0.21	2.20	2.14	1323.27
Off-Highway Trucks	6.17	1.95	21.16	0.21	1.76	1.71	1323.27
Crushing/Processing Equipment	20.28	3.27	24.27	0.21	3.17	3.08	1323.27
Rough Terrain Forklifts	22.05	3.90	17.64	0.21	3.53	3.42	1323.27
Rubber Tired Dozers	6.17	1.95	22.71	0.21	1.46	1.41	1323.27
Tractors/Loaders/Backhoes	14.99	3.25	22.27	0.21	2.31	2.25	1323.27
Crawler Tractors	10.58	2.93	22.71	0.21	2.45	2.37	1323.27
Skid Steer Loaders	19.84	4.88	21.16	0.21	3.17	3.08	1323.27
Off-Highway Tractors	32.36	4.78	26.26	0.21	4.48	4.34	1323.27
Dumpers/Tenders	6.17	1.95	21.16	0.21	3.17	3.08	1323.27
Other Construction Equipment	20.28	3.27	24.27	0.21	3.17	3.08	1323.27
Industrial Equipment							
Aerial Lifts	13.36	3.64	30.86	0.21	3.53	3.42	1323.27
Forklifts	13.36	3.64	30.86	0.21	3.53	3.42	1323.27
Sweepers/Scrubbers	13.36	3.64	30.86	0.21	3.53	3.42	1323.27
Other General Equipment	13.36	3.64	30.86	0.21	3.53	3.42	1323.27
Other Material Handling Equipment	13.36	3.64	30.86	0.21	3.53	3.42	1323.27
Lawn and Garden Equipment							
Rear Engine Riding Mowers	11.02	2.79	17.64	0.21	2.20	2.14	1323.27
Lawn and Garden Tractors	11.02	2.79	17.64	0.21	2.20	2.14	1323.27
Wood Splitters	11.02	2.79	17.64	0.21	2.20	2.14	1323.27
Chippers/Stump Grinders	11.02	2.79	17.64	0.21	2.20	2.14	1323.27
Other Equipment	11.02	2.79	17.64	0.21	2.20	2.14	1323.27

Table 4-6. Pre-1998 Non-Road CI Engine Criteria Pollutant Emission Factors (Power Rating > 50 hp)

Equipment Description	Emission Factors (lb/1000 hp-hr)						
	CO	VOC ^a	NO _x	SO _x	PM ₁₀ ^b	PM _{2.5} ^c	CO _{2e} ^d
Agricultural Equipment							
Tractors	19.71	5.32	24.71	0.21	4.52	4.38	1323.27
Sprayers	8.33	5.18	17.15	0.21	3.33	3.23	1323.27
Tillers	11.02	2.79	17.64	0.21	2.20	2.14	1323.27
Hydro Power Units	8.33	5.18	17.15	0.21	3.33	3.23	1323.27
Other Equipment	9.63	4.23	24.52	0.21	3.33	3.23	1323.27
Logging Equipment							
Skidders	11.46	1.95	24.91	0.21	3.17	3.08	1323.27
Fellers/Bunchers	11.46	1.95	24.91	0.21	3.17	3.08	1323.27
Recreational Equipment							
Specialty Vehicles/Carts	11.02	2.79	17.64	0.21	2.20	2.14	1323.27

SOURCE: *Nonroad Engine and Vehicle Emission Study – Report*, EPA 460/3-91-02, 21A-2001, November 1991.

- Reported as hydrocarbon (HC) and converted to VOC by multiplying value by a conversion factor (1.053). This value recommended by the document *Conversion Factors for Hydrocarbon Emission Components*, U.S. Environmental Protection Agency (EPA), Office of Transportation and Air Quality, July 2010.
- Reported as particulate matter (PM) in the source document and assumed to be equal to PM₁₀.
- Assumed to be 97% of PM₁₀ per *Exhaust and Crankshaft Emission Factors for Nonroad Engine Modeling: Compression-Ignition*, EPA 420-P-04-009, April 2004.
- The Greenhouse Gas (GHG) emission factors calculated by summing the product of the emission factors for CO₂, CH₄, and N₂O and their respective global warming potentials (GWP). The GWP for CO₂, CH₄, and N₂O are 1, 28, and 265, respectively. Emission factors for individual GHG calculated by taking the product of the default emission factor provided in Tables C-1 and C-2 of Title 40 Code of Federal Regulations (CFR) Part 98 and the brake-specific fuel consumption (BSFC) for diesel engines provided in Table 3-1.

Table 4-7. Weight Percent Speciation of VOC Emissions for Non-Road Engines

Compound	HAP	Gasoline ^a	Diesel ^b	Natural Gas ^c			LPG ^d
				2-Stroke LB	4-Stroke LB	4-Stroke RB	
Acenaphthene	X	---	0.02%	0.00%	0.00%	---	---
Acenaphthylene	X	---	0.08%	0.00%	0.01%	---	---
Acetaldehyde	X	0.30%	11.88%	6.49%	7.00%	8.63%	0.88%
Acetylene		15.47%	---	---	---	---	---
Acrolein	X	---	1.43%	6.51%	4.31%	8.14%	---
Anthracene	X	---	0.03%	0.00%	---	---	---
Benz(a)anthracene	X	---	0.03%	0.00%	---	---	---
Benzaldehyde		0.26%	---	---	---	---	---
Benzene	X	5.83%	14.46%	1.62%	0.37%	4.89%	3.23%
Benzo(a)pyrene	X	---	0.00%	0.00%	---	---	---
Benzo(b)fluoranthene	X	---	0.00%	0.00%	0.00%	---	---
Benzo(k)fluoranthene	X	---	0.00%	0.00%	---	---	---
Benzo(g,h,i)perylene	X	---	0.01%	0.00%	0.00%	---	---
Benzo(o)pyrene		---	---	0.00%	0.00%	---	---
Biphenyl	X	---	---	0.00%	0.18%	---	---
1,3-Butadiene	X	0.99%	0.61%	0.69%	0.22%	2.05%	---
Butane		---	---	3.97%	0.45%	---	---
n-Butane		2.19%	---	---	---	---	---
1-Butene		0.40%	---	---	---	---	---
cis-2-Butene		0.22%	---	---	---	---	---
trans-2-Butene		0.28%	---	---	---	---	---
Butyl isobutyraldehyde		---	---	0.37%	0.09%	0.15%	0.59%
Carbon Tetrachloride	X	---	---	0.05%	0.03%	0.05%	---
Chlorobenzene		---	---	0.04%	0.03%	0.04%	---
Chloroethane	X	---	---	---	0.00%	---	---
Chloroform	X	---	---	0.04%	0.02%	0.04%	---
Chrysene	X	---	0.00%	0.00%	0.00%	---	---
Cyclohexane		---	---	0.26%	---	---	---
Cyclopentane		---	---	0.08%	0.19%	---	---
1,3-Cyclopentadiene		0.26%	---	---	---	---	---
Dbenz(a,h)anthracene	X	---	0.01%	---	---	---	---
1,1-Dichloroethane	X	---	---	0.03%	0.02%	0.03%	---
1,2-Dichloroethane	X	---	---	0.04%	0.02%	0.03%	---
1,2-Dichloropropane	X	---	---	0.04%	0.02%	0.04%	---
1,3-Dichloropropane	X	---	---	0.04%	0.02%	0.04%	---
Dicyclopentadiene		0.27%	---	---	---	---	---
1,2-Diethylbenzene		0.56%	---	---	---	---	---
1,3-Diethylbenzene		0.45%	---	---	---	---	---
2,2-Dimethylbutane		0.30%	---	---	---	---	---
2,3-Dimethylbutane		0.62%	---	---	---	---	---
trans-1,3-Dimethylcyclopentane		0.28%	---	---	---	---	---
2,3-Dimethylhexane		0.32%	---	---	---	---	---
2,4-Dimethylhexane		0.45%	---	---	---	---	---
2,5-Dimethylhexane		0.24%	---	---	---	---	---
2,3-Dimethylpentane		1.16%	---	---	---	---	---
2,4-Dimethylpentane		0.71%	---	---	---	---	---
1,2-Dimethyl-4-Ethylbenzene		0.17%	---	---	---	---	---
1,3-Dimethyl-2-Ethylbenzene		0.34%	---	---	---	---	---
1,3-Dimethyl-4-Ethylbenzene		0.20%	---	---	---	---	---
Ethylbenzene	X	2.00%	---	0.09%	0.03%	0.08%	0.29%
Ethylene		11.39%	---	---	---	---	18.53%
Ethylene Dibromide	X	---	---	0.06%	0.04%	0.07%	---
Fluoranthene	X	---	0.12%	0.00%	0.00%	---	---
Fluorene	X	---	0.45%	0.00%	0.01%	---	---
Formaldehyde	X	1.32%	18.28%	46.17%	44.24%	63.43%	23.82%
n-Heptane		0.78%	---	---	---	---	---
1-Hexene		0.20%	---	---	---	---	---
n-Hexane	X	0.45%	---	0.37%	0.93%	---	0.59%
trans-2-Hexene		0.16%	---	---	---	---	---
Indan		---	---	---	---	---	---
Indeno(1,2,3-c,d)pyrene	X	0.24%	0.01%	0.00%	---	---	---

Compound	HAP	Gasoline ^a	Diesel ^b	Natural Gas ^c			LPG ^d
				2-Stroke LB	4-Stroke LB	4-Stroke RB	
Isobutane		---	---	---	3.14%	---	---
Isobutene		2.02%	---	---	---	---	---
Isopentane		5.50%	---	---	---	---	---
Isoprene		0.32%	---	---	---	---	---
Methanol	X	0.15%	---	2.07%	2.10%	9.47%	---
2-Methyl-1-Butene		0.35%	---	---	---	---	---
2-Methyl-2-Butene		0.37%	---	---	---	---	---
Methylcyclohexane		0.24%	---	0.28%	1.03%	---	---
Methylcyclopentane		0.40%	---	---	---	---	---
1-Methylcyclopentene		0.16%	---	---	---	---	---
1-Methyl-2-Ethylbenzene		0.50%	---	---	---	---	---
1-Methyl-3-Ethylbenzene		1.52%	---	---	---	---	---
1-Methyl-4-Ethylbenzene		0.71%	---	---	---	---	---
2-Methylheptane		0.37%	---	---	---	---	---
3-Methylheptane		0.40%	---	---	---	---	---
4-Methylheptane		0.17%	---	---	---	---	---
2-Methylhexane		1.02%	---	---	---	---	---
3-Methylhexane		1.18%	---	---	---	---	---
3-Methyl-cis-3-Hexene		0.18%	---	---	---	---	---
2-Methylnaphthalene		---	---	0.02%	0.03%	---	---
3-Methyloctane		0.20%	---	---	---	---	---
2-Methyl-2-Pentene		0.18%	---	---	---	---	---
2-Methylpentane		1.73%	---	---	---	---	---
3-Methylpentane		0.99%	---	---	---	---	---
1-Methyl-3-Propylbenzene		0.26%	---	---	---	---	---
Methyl t-butyl ether	X	0.30%	---	---	---	---	---
Naphthalene	X	0.35%	1.31%	0.08%	0.06%	0.30%	---
n-Nonane		---	---	0.03%	0.09%	---	---
1-Nonene		0.61%	---	---	---	---	---
n-Octane		0.30%	---	0.06%	0.29%	---	---
1-Octene		0.22%	---	---	---	---	---
n-Pentane		0.71%	---	1.28%	2.18%	---	---
1-Pentene		0.27%	---	---	---	---	---
cis-2-Pentene		0.21%	---	---	---	---	---
trans-2-Pentene		0.34%	---	---	---	---	---
Perylene		---	---	0.00%	---	---	---
Phenanthrene	X	---	0.46%	0.00%	0.01%	---	---
Phenol	X	---	---	0.03%	0.02%	---	---
1,2-Propadiene		0.29%	---	---	---	---	---
Propane		---	---	24.01%	35.11%	---	---
n-Propylbenzene		0.38%	---	---	---	---	---
Propylene		4.72%	39.98%	---	---	---	49.71%
1-Propyne		0.48%	---	---	---	---	---
Pyrene	X	---	0.07%	0.00%	0.00%	---	---
Styrene	X	---	---	0.05%	0.02%	0.04%	---
Tetrachloroethane		---	---	---	0.00%	---	---
1,1,2,2-Tetrachloroethane	X	---	---	0.06%	0.03%	0.08%	---
1,2,3,5-Tetramethylbenzene		0.22%	---	---	---	---	---
Tolaldehyde		0.16%	---	---	---	---	---
Toluene	X	8.21%	6.34%	0.81%	0.34%	1.73%	1.18%
1,1,2-Trichloroethane	X	---	---	0.04%	0.03%	0.05%	---
1,2,3-Trimethylbenzene		0.40%	---	0.03%	0.02%	---	---
1,2,4-Trimethylbenzene		2.18%	---	0.09%	0.01%	---	---
1,3,5-Trimethylbenzene		0.77%	---	0.01%	0.03%	---	---
2,2,5-Trimethylhexane		0.30%	---	---	---	---	---
2,2,4-Trimethylpentane	X	2.37%	---	0.71%	0.21%	---	---
2,3,4-Trimethylpentane		0.52%	---	---	---	---	---
Vinyl Chloride	X	---	---	0.02%	0.01%	0.02%	---
Vinylacetylene		0.23%	---	---	---	---	---
o-Vinyltoluene		0.26%	---	---	---	---	---
Xylenes	X	7.47%	4.42%	0.22%	0.15%	0.60%	1.18%

- SOURCE: Emission factors used to calculate weight percent taken from EPA's SPECIATE profile #4738.
- SOURCE: Emission factors used to calculate weight percent taken from Section 3.3 of AP-42.
- SOURCE: Emission factors used to calculate weight percent taken from Section 3.2 of AP-42.
- SOURCE: Emission factors used to calculate weight percent taken from Mojave Desert AQMD.

“X” Indicates the compound is a HAP.

“---” Indicates No Data Available.

4.6 References

40 CFR 98, "Title 40-Protection of the Environment, Chapter I-Environmental Protection Agency, Subchapter C-Air Programs, Part 98 Subpart C Table C-1-Default CO₂ Emission Factors and High Heat Values for Various Types of Fuel," U.S. Environmental Protection Agency

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5.0 ON-ROAD VEHICLES (VEHE)

***Air Force policy considers the dispensing of fuel into on-road vehicles as a mobile source of emissions. However, if the regulator insists this category be included as a stationary source, subtract those emissions from the Mobile AEI and add them to the Stationary AEI to avoid duplicate reporting. This is accomplished by manually calculating emissions generated from on-road vehicle refueling using the procedures given in the “Fuel Dispensing” section of this document, then subtracting those values from the emissions generated by on-road vehicles described in this section. ***

5.1 Introduction

On-road vehicles encompass the full range of passenger cars, light duty trucks, heavy duty trucks, buses, and motorcycles that are specifically designed to operate on highways and other road systems. On-road vehicles in use on DAF installations are classified either as Government Owned Vehicles (GOVs) or Privately Owned Vehicles (POVs). GOVs include all on-road vehicles that are owned or leased and operated by government organizations on the base (e.g., Air Force, Guard, Reserve, etc.). Such vehicles are typically referred to as “fleet vehicles” and range from small passenger cars to large vehicles such as refueling or fire trucks. This classification also includes tactical vehicles. Tactical Vehicles are defined as any motor vehicle designed to military specifications to meet direct transportation support of combat, tactical or relief operations, or for training of personnel for such purposes. POVs are those on-road vehicles that travel on a DAF installation, but are owned or leased and operated by base employees and visitors. Both GOVs and POVs typically operate on conventional gasoline and diesel motor fuels (including JP-8 and Jet-A), but may also operate on alternative, non-petroleum-based fuels.

The emissions of concern from the operation of on-road vehicles include the criteria pollutants: NO_x, VOC, CO, SO₂, PM_{2.5}, PM₁₀, and GHGs as well as HAPs. HAPs include: 1,3-butadiene., benzene, acetaldehyde, formaldehyde, acrolein, and methyl tert-butyl ether (MTBE). Some of these direct pollutant emissions also participate in atmospheric reactions that contribute to the formation of ground level ozone and fine PM pollution. Factors which impact the volume of pollutants emitted include the vehicle make and model, the vehicle miles traveled (VMT), the average operating speed, vehicle age, climate, altitude, fuel type and quality, and maintenance procedures. To control vehicle emissions, the EPA has adopted an integrated approach to controlling on-road vehicle emissions. This approach has resulted in the establishment of regulatory standards that consider changes in vehicle and engine design, advanced emission controls, and the mandated use of reformulated and cleaner burning fuels.

Emissions from the operation of on-road vehicles are designated as exhaust, evaporative, or fugitive in nature. Exhaust emissions result from the combustion (sometimes incomplete) of the motor fuel while evaporative emissions result from the volatilization of the fuel in engine components during the different stages of a vehicle's operating cycle. Additionally, fugitive particulate emissions, in the form of road dust, brake wear dust, and tire wear dust, can be attributed to the operation of on-road vehicles.

The EPA is currently proposing to regulate greenhouse gases (GHGs) for both mobile and stationary sources. As a matter of DAF policy, GHG emissions are to be reported as part of the mobile AEI. Specifically, CO₂, N₂O and CH₄ emissions should be estimated for all mobile sources when EFs are available. Since CO₂, N₂O and CH₄ EFs are attainable for on-road vehicles, emissions should be estimated as part of a mobile source AEI. Additionally, although not currently regulated under the CAA, many regulatory agencies may request installations to include GHG emissions from motor vehicles in mobile source AEIs. Specific requests to calculate and provide CO₂ and/or N₂O and CH₄ emissions data to regulatory agencies as part of this process should be reported through the appropriate Air Force Civil Engineer Center (AFCEC) channels and coordinated through the chain-of-command. Such coordination should be accomplished prior to responding to the request to ensure a consistent DAF response.

Since 1978, the EPA has used computer models to estimate emissions from cars, trucks, and other mobile sources. The EPA's initial on-road vehicle emissions modeling software, known as the MOBILE model, was expanded many times over the years to incorporate new data. The updates kept the basic structure of the model but included new data on vehicle emissions, new vehicle emission standards, and better addressed new policy questions. MOBILE uses average gram per mile emission rates and a series of correction factors to estimate emissions over a wide range of driving conditions. MOBILE6.2, finalized in 2004, was the EPA's official model for highway vehicle emissions. Several analysts have critiqued the MOBILE series of models and suggested that the EPA develop a modeling "toolkit" that would better serve the range of users for highway vehicle modeling, including consistent modeling at the aggregate scale, mesoscale, and microscale analyses.

In response to these and other concerns, the EPA developed the Motor Vehicle Emissions Simulator (MOVES) model. MOVES incorporates extensive new data and advanced algorithms to estimate highway vehicle emissions of GHGs, criteria pollutants, and selected air toxics at the national, regional, and project levels. In December of 2024, the EPA published an announcement in the Federal Register approving the newest model, MOVES5, for official use (outside of California). MOVES5 includes updated light-duty and heavy-duty brake wear emissions, onroad and nonroad fuel properties for calendar year 2021 and later, historical and forecast default vehicle miles travelled, vehicle populations, age distributions, and fuel distributions and incorporates the impacts of the EPA Light- and Medium-Duty Multi-Pollutant

Rule and the Heavy-Duty Greenhouse Gas Emissions-Phase 3 Rule. MOVES5 is used for EPA internal policy analysis and is required for use (outside of California) in the evaluation of State Implementation Plans (SIPs) and transportation conformity determinations. On the official EPA website, use of other models, such as the MOBILE model and previous versions of MOVES, is being discouraged as they contain outdated or otherwise inaccurate data. The emission factors derived in this guide were generated using the MOVES5 model.

Vehicle emissions within the state of California are not calculated using MOVES software but instead use a similar, California-developed calculation model known as the Emission FACtor (EMFAC) model. On January 15, 2021, California released the latest EMFAC Model, EMFAC2021 and an update was released in April 2022. The EMFAC2021 model was used to derive county emission factors in this guide.

The EPA has historically classified on-road vehicles into eight broad categories based on the motor fuel type and Gross Vehicle Weight (GVW). MOVES was designed to reflect the general fleet distribution or fleet characterization (i.e., fractional vehicle category distribution by year) for a specific location. MOVES can also estimate emission rates (e.g., grams/mile, grams/vehicle) or accept input VMT and vehicle populations to generate total emissions for any year from 1990 and 1999-2050. **The MOVES model incorporates emissions from on-road vehicle refueling. Therefore, these emissions are not addressed in the “Fuel Dispensing” section of this document since they are already accounted for in the EFs presented in this section.**

5.1.1 Vehicle Categories

The 28 vehicle categories from MOVES have been grouped into seven major aggregate categories based on vehicle type and Gross Vehicle Weight Rating (GVWR). Table 5-1 provides the seven major aggregate categories based upon available MOBILE6 EF outputs and readily identifiable general vehicle groupings. The seven aggregate vehicle categories are:

- ***Light-Duty Gasoline Vehicles (LDGV)*** – All gasoline-powered passenger cars
- ***Light-Duty Diesel Vehicles (LDDV)*** – All diesel-powered passenger cars
- ***Light-Duty Gasoline Trucks (LDGT)*** – All smaller gasoline-powered trucks (0 to 8,500 lbs. GVWR)
- ***Light-Duty Diesel Trucks (LDDT)*** – All smaller diesel-powered trucks (0 to 8,500 lbs. GVWR)
- ***Heavy-Duty Gasoline Vehicles (HDGV)*** – All larger gasoline-powered vehicles (8,501 lbs. to >60,000 lbs. GVWR)

- **Heavy-Duty Diesel Vehicles (HDDV)** – All larger diesel-powered vehicles (10,001 lbs. to > 60,000 lbs. GVWR)
- **Motorcycles (MC)** – All motorcycles (assumed to be gasoline-powered)

5.1.2 Vehicle Fleet Characterization

Based upon a review of recent DAF mobile source emission inventories, the vehicle categories that are most representative of the types of GOVs and POVs expected to be encountered on a typical DAF installation have been identified. The seven Air Force vehicle categories provide the most readily identifiable and discernible vehicle classes for vehicle mix identification and characterization. It is recognized that some vehicles encountered may not fit within the specific weight parameters of the categories chosen. In such instances, personnel conducting the AEI should use professional judgment to assign the vehicles to the listed category which most closely approximates the vehicle(s) in question. This approximation should be based on the fuel type and vehicle weight. Table 5-2 provides a breakdown of the fleet characterization for the typical POV and GOV vehicle mix at a DAF installation. **The vehicle mix provided in this table is to be used for estimating vehicle emissions unless specific vehicle mix data is available from a recent traffic study.**

5.1.3 Tactical Vehicles

Tactical vehicles are defined as any motor vehicle designed to military specifications to meet direct transportation support of combat, tactical or relief operations, or for training of personnel for such purposes. This also includes commercially designed motor vehicles modified to military specifications. Tactical vehicles are a subset of GOVs, and Table 5-3 provides vehicle mix percentages for tactical vehicles as well as non-tactical vehicles out of the total GOV vehicle mix. This supplemental information is provided if the need to calculate emissions specific to tactical or non-tactical vehicles arises.

Table 5-1. Air Force On-Road Vehicle Categories

CATEGORY		VEHICLE CLASS DESCRIPTION
Air Force	MOVES	
Gas/Diesel		
LDGV	LDGV	Light-Duty Gasoline Vehicles (Passenger Cars)
LDDV	LDDV	Light-Duty Diesel Vehicles (Passenger Cars)
LDGT	LDGT1	Light-Duty Gasoline Trucks 1 (0-6,000 lbs. GVWR, 0-3,750 lbs. LVW)
	LDGT2	Light-Duty Gasoline Trucks 2 (0-6,000 lbs. GVWR, 3,751-5,750 lbs. LVW)
	LDGT3	Light-Duty Gasoline Trucks 3 (6,001-8,500 lbs. GVWR, 0-5,750 lbs. ALVW)
	LDGT4	Light-Duty Gasoline Trucks 4 (6,001-8,500 lbs. GVWR, greater than 5,751 lbs. ALVW)
LDDT	LDDT1/2	Light-Duty Diesel Trucks 1 and 2 (0-6,000 lbs. GVWR)
	LDDT3/4	Light-Duty Diesel Trucks 3 and 4 (6,001-8,500 lbs. GVWR)
HDGV	HDGV2b	Class 2b Heavy-Duty Gasoline Vehicles (8,501-10,000 lbs. GVWR)
	HDGV3	Class 3 Heavy-Duty Gasoline Vehicles (10,001-14,000 lbs. GVWR)
	HDGV4	Class 4 Heavy-Duty Gasoline Vehicles (14,001-16,000 lbs. GVWR)
	HDGV5	Class 5 Heavy-Duty Gasoline Vehicles (16,001-19,500 lbs. GVWR)
	HDGV6	Class 6 Heavy-Duty Gasoline Vehicles (19,501-26,000 lbs. GVWR)
	HDGV7	Class 7 Heavy-Duty Gasoline Vehicles (26,001-33,000 lbs. GVWR)
	HDGV8a	Class 8a Heavy-Duty Gasoline Vehicles (33,001-60,000 lbs. GVWR)
	HDGV8b	Class 8b Heavy-Duty Gasoline Vehicles (>60,000 lbs. GVWR)
	HDGB	Gasoline Buses (School, Transit and Urban)
HDDV	HDDV2b	Class 2b Heavy-Duty Diesel Vehicles (8,501-10,000 lbs. GVWR)
	HDDV3	Class 3 Heavy-Duty Diesel Vehicles (10,001-14,000 lbs. GVWR)
	HDDV4	Class 4 Heavy-Duty Diesel Vehicles (14,001-16,000 lbs. GVWR)
	HDDV5	Class 5 Heavy-Duty Diesel Vehicles (16,001-19,500 lbs. GVWR)
	HDDV6	Class 6 Heavy-Duty Diesel Vehicles (19,501-26,000 lbs. GVWR)
	HDDV7	Class 7 Heavy-Duty Diesel Vehicles (26,001-33,000 lbs. GVWR)
	HDDV8a	Class 8a Heavy-Duty Diesel Vehicles (33,001-60,000 lbs. GVWR)
	HDDV8b	Class 8b Heavy-Duty Diesel Vehicles (>60,000 lbs. GVWR)
		HDDBT
	HDDBS	Diesel School Buses
MC	MC	Motorcycles (Gasoline)
HYBRID		
LDGV (H)	---	---
LDGT (H)	---	---
ELECTRIC		
LDV (EV)	---	---
LDT (EV)	---	---

Table 5-2. Typical Air Force POV & GOV Mix

CATEGORY		2012 to 2020 Avg. National Vehicle Mix (%)		POV Vehicle Mix (%) ^a	GOV Vehicle Mix (%) ^b
Air Force	MOVES				
Gas/Diesel					
LDGV	LDGV	34.86	34.86	41.00	9.48
LDDV	LDDV	0.03	0.03	0.52	0.59
LDGT	LDGT1	9.57	56.00	46.40	46.57
	LDGT2	31.86			
	LDGT3	9.98			
	LDGT4	4.59			
LDDT	LDDT1/2	0.00	0.19	0.66	16.43
	LDDT3/4	0.19			
HDGV	HDGV2a	2.88	3.46	3.39	4.60
	HDGV2b				
	HDGV3	0.10			
	HDGV4	0.03			
	HDGV5	0.11			
	HDGV6	0.24			
	HDGV7	0.10			
	HDGV8a	0.00			
	HDGV8b	0.00			
	HDGB	0.00			
HDDV	HDDV2b	0.72	3.70	2.51	21.22
	HDDV3	0.22			
	HDDV4	0.21			
	HDDV5	0.10			
	HDDV6	0.41			
	HDDV7	0.59			
	HDDV8a	0.35			
	HDDV8b	0.82			
	HDDBT	0.03			
	HDDBS	0.25			
MC	MC	1.76	1.76	1.88	0.00
HYBRID					
LDGV (H)	---	---	---	0.09	0.85
LDGT (H)	---	---	---	0.09	0.11
ELECTRIC					
LDV (EV)	---	---	---	2.14	0.08
LDT (EV)	---	---	---	1.32	0.08

a. SOURCE: POV vehicle mix based on available Employee-Certification and Reporting System (ECARS) data collected on 2/2024.

b. SOURCE: GOV vehicle mix based on information provided by the Air Force Vehicle and Equipment Management Office (VEMSO).

“---” Indicates No Data Available

Table 5-3. GOV Tactical and Non-Tactical Vehicle Mix

CATEGORY		GOV Tactical Vehicle Mix (%)	GOV Non-Tactical Vehicle Mix (%)
Air Force	MOVES		
Gas/Diesel			
LDGV	LDGV	0.00	9.48
LDDV	LDDV	0.00	0.59
LDGT	LDGT1	1.34	46.57
	LDGT2		
	LDGT3		
	LDGT4		
LDDT	LDDT1/2	5.24	16.43
	LDDT3/4		
HDGV	HDGV2a	3.03	4.60
	HDGV2b		
	HDGV3		
	HDGV4		
	HDGV5		
	HDGV6		
	HDGV7		
	HDGV8a		
	HDGV8b		
	HDGB		
HDDV	HDDV2b	90.39	21.22
	HDDV3		
	HDDV4		
	HDDV5		
	HDDV6		
	HDDV7		
	HDDV8a		
	HDDV8b		
	HDDBT		
	HDDBS		
MC	MC	0.00	0.00
HYBRID			
LDGV (H)	---	0.00	0.85
LDGT (H)	---	0.00	0.11
ELECTRIC			
LDV (EV)	---	0.00	0.08
LDT (EV)	---	0.00	0.08

SOURCE: GOV vehicle mix based on information provided by the Air Force Vehicle and Equipment Management Office (VEMSO).

5.2 Emission Factors

Emissions from on-road vehicles include exhaust emissions, which occur both when the vehicle is in motion and while idling, as well as fugitive particulate emissions from road dust. The methodology for estimating emissions from each of these contributing sources is described in the following sections.

5.2.1 Vehicle Exhaust Emissions

The operation of on-road vehicles results in the generation of vehicle exhaust, which emits criteria pollutants, HAPs, and GHGs. Estimating emissions from vehicle exhaust is made more challenging because the number of pollutants emitted is different for a vehicle in normal operation versus when a vehicle is idling. The emissions total from vehicle exhaust is quantified by taking the sum of both the idling and normal operating exhaust emissions. **MOVES accounts for idling in proportion to normal driving, therefore calculation of idling emissions is not required for an AEI.** Particulate emissions estimation is made further complicated by the fact that particulate is emitted from vehicle exhaust from both idle and normal vehicle use, as well as from the suspension of road dust. The EFs for each contributing source are described in more detail below.

5.2.1.1 Vehicle Exhaust Emissions– Normal Vehicle Operation

EFs for the Air Force vehicle categories were obtained directly from MOVES5. The MOVES5 model was used to generate estimations of on-road vehicle emissions for each state (except California), the District of Columbia, and relevant US territories. This model requires various inputs such as population of personnel and VMT by vehicle type, age distribution and average speed distribution, ambient meteorological conditions, and elevation among other inputs. The “default” input database for MOVES5 was used for all calculations and derivations. The MOVES5 model was run for each state for calendar years 2025 through 2029 using the national estimates contained within the default database for all vehicle types listed in Table 5-1. The vehicle types selected for the run were all gasoline and diesel vehicles available in the MOVES database. The vehicle model years used for each run include the 30-year span from the calendar year of the run to 30 years prior. The output emission rates were averaged using an activity- (mileage) weighted average over all vehicle model years for each calendar year to estimate a representative emission factor for each pollutant for each vehicle type. The resultant EFs are provided in a gram/mile format and are presented in Table 5-19 through Table 5-23 for all states except California. The State of California uses the EMFAC2021 Model to calculate vehicle emissions. This model calculates emissions in a manner similar to MOVES in that it calculates emissions for all motor vehicles (across model years) in the state using data stored in a default database structured similarly to the MOVES database. EMFAC vehicle emissions data provided in this guide is on a county-basis for each county in California and is presented in Table 5-39

through Table 5-43. Vehicle-specific emission factors for California vehicle types are also included.

Additionally, there are composite EF tables included in this section. These values account for emission reductions resulting in the use of alternative fuels and are calculated using Air Force-specific vehicle mix data (refer to Section 5.2.1.3 for more information on alternative fuels). The composite EFs are provided in Table 5-9 through Table 5-18 and are presented chronologically by calendar year. Furthermore, since the calculation of composite EFs account for Air Force vehicle mix data, the tables are further subdivided into POV and GOV categories. The composite EFs for California were derived from EMFAC and are provided in Table 5-29 through Table 5-38. The model inputs and default values used to calculate EFs in MOVES and EMFAC are provided in Table 5-4 and Table 5-5, respectively.

Table 5-4. MOVES5 Model Inputs and Default Values

Model Input	Input Value
Scale	National
Calculation Type	Inventory
Model Years	30-year range from calendar year back
Years	2025-2029
Months	All
Days	Weekend and Weekdays
Hours	All
Geographic Bounds	State/Territory Specific
Fuels	Diesel Fuel and Gasoline
Source Use Types	All
Road Types	All
Pollutants and Processes	NO _x , SO _x , CO, VOC, PM ₁₀ , PM _{2.5} , CO ₂ , NH ₃ , and all required additional processes
Activity	Distance Traveled, Populations, Starts

Table 5-5. EMFAC2021 Model Inputs and Default Values

Model Input	Input Value
Run Mode	Emissions
Run Type	Default Activity
Area	County Specific
Years	2025-2029
Season	Annual
Aggregation Level	Day
Vehicle Class	ALL
Model Year	30-year range from calendar year back
Fuel	By Fuel
Speed	Aggregated
Pollutants and Processes	NO _x , SO _x , CO, ROG, PM ₁₀ , PM _{2.5} , CO ₂ , CH ₄
Activities	VMT, Population

There is no universally accepted set of EFs for installations located outside of the continental United States (OCONUS). Additionally, determining the vehicle mix or classifying vehicles may be more difficult in a foreign country. Calculating emissions for on-road vehicles at OCONUS facilities can be approximated by calculating the average of all state-specific composite EFs. The EFs for vehicle emissions at OCONUS installations are provided in Table 5-49 and Table 5-50 and are to be used with the same methodology as calculating on-road vehicle emissions within the United States.

5.2.1.2 Vehicle Exhaust Emissions – Idling

An idling vehicle wastes fuel, increases the cost of maintenance, and creates air pollution. Several states have adopted anti-idling restrictions with some including these restrictions in their SIPs. EFs for emissions from idling vehicles were developed and are provided in a gram/hour format. An idling vehicle is not in motion; therefore, emissions may not be calculated on miles driven, but rather on the time spent in idle. For this reason, the total amount of time that a vehicle spends in idle must be known or closely approximated. **Note that MOVES EFs already account for vehicle idling in proportion to normal driving. For this reason, the EFs provided in this chapter are presented for calculating theoretical emissions for NEPA, or for intersection modeling.** Idling EFs for each vehicle category are provided in Table 5-6.

Table 5-6. Idling Emission Factors for On-Road Vehicles

Vehicle Category	Emission Factors (g/hr)				
	CO	NO _x	VOC	PM ₁₀ ^a	PM _{2.5} ^b
LDGV (Passenger Cars)	71.225	3.515	2.683	---	---
LDGT (0-8,500 lb GVWR)	72.725	4.065	4.043	---	---
HDGV (>8,500 lb GVWR)	151.900	5.330	6.495	---	---
LDDV (Passenger Cars)	7.018	2.690	1.373	---	---
LDDT (Light-Duty Trucks)	5.853	3.705	2.720	---	---
HDDV (>8,500 lb GVWR)	25.628	33.763	3.455	1.196	1.100
MC (Motorcycles)	301.075	1.625	19.153	---	---

SOURCE: *Idling Vehicle Emissions for Passenger Cars, Light-Duty Trucks, and Heavy-Duty Trucks*, United States Environmental Protection Agency, Office of Transportation and Air Quality, EPA420-F-08-025, October 2008.

a. PM₁₀ is an average of HDDV particulate emissions.

b. PM_{2.5} value is assumed to be 92% of the PM₁₀ value per *Air Emissions Factor Guide to Air Force Mobile Sources*, December 2009.

“---” Indicates No Data Available

5.2.1.3 Alternative Fuel Emission Reduction Factors

Progressively stringent requirements resulting from the EPA, Presidential Executive Orders, DoD, and Air Force pollution prevention and energy conservation initiatives will result in an increasing number of GOVs and POVs powered by alternative fuels such as E85, CNG, or B20, and advanced hybrid electric vehicles (HEVs). Regardless of fuel type, all vehicles operating on alternative fuels are currently required to meet existing EPA emission standards established for gasoline and/or diesel-powered vehicles. However, some fuels offer potential emission reductions beyond those standards.

Relative to conventional gasoline, the higher-octane value and oxygen content of E85 fuel should lead to reduced vehicle emissions. The EPA’s Office of Transportation Air Quality (OTAQ) notes that while potential reductions will vary with engine design, E85 fuel should lead to reductions in VOCs, CO, PM, and NO_x relative to conventional gasoline (USEPA 2006a). The case with HAP emissions is not as clear since some data indicates a reduction in benzene and fewer total toxics, but an increase in ethanol and acetaldehyde emissions (USEPA 2006a). Adding to the complexity, some studies have shown that with the use of a catalytic converter, there is virtually no difference in exhaust emissions from on-road vehicles powered by gasoline. Due to these inconsistencies and the lack of clear data trends, **the application of E85 emission reduction factors is not recommended.**

CNG is recognized as one of the cleanest burning alternative fuels available and offers several advantages over gasoline (USDOE 2002). There is limited data for emissions reductions that CNG offers over conventional gasoline, especially since emissions will vary with engine design and performance. However, the EPA suggests that, relative to conventional gasoline-powered

vehicle applications, emissions from CNG-powered vehicles are estimated to be substantially lower for CO, PM, NO_x, and non-methane hydrocarbons.

There have been a few studies on the impacts of B20 fuel on vehicle emissions. In October 2002, the EPA issued a draft technical report on biodiesel emissions (USEPA 2002b). The EPA used the results from 39 studies to compare the difference in emissions between vehicles using B20 versus diesel fuel. Relative to low sulfur diesel (sulfur content of 500 ppm), B20 use resulted in notable reductions of NO_x, PM, HC, and CO emissions. Since the publication of the study, Ultra-Low Sulfur Diesel (ULSD) regulations that limit the sulfur content of on-highway diesel fuel to 15 ppm have been enacted and are in place across the country. Another study conducted under the auspices of the DoD Environmental Security Technology Certification Program (ESTCP) sought to measure the impact of B20 on emissions from engines used in on-road and portable power generation applications (DoD 2006). Whereas the EPA study used a B20/low sulfur diesel blend, the ESTCP study used a B20 biodiesel/ULSD blend to reflect the fact that conventional low sulfur diesel is no longer available for use in on-road vehicles. **The ESTCP study concluded that there were no statistically significant differences in criteria pollutant emissions between the B20 biodiesel blended with ULSD and ULSD by itself.** Likewise, no consistent trend was observed regarding HAP emissions.

Hybrid Electric Vehicles (HEVs) produce fewer criteria pollutant, HAP, and CO₂ emissions than comparable dedicated gasoline-powered vehicles. This is because HEVs utilize an electric motor in conjunction with a traditional, and often smaller, internal combustion engine. The electric motor decreases the frequency in which the combustion engine is used, which reduces fuel consumption and, therefore, emissions. Overall emissions will vary depending on several factors, including the vehicle's electrical storage capacity and how long it can operate in "electric-only" mode. Additional factors include how advanced the engine controls are, which emission standards the vehicles have been produced to meet, vehicle size, and model year. For these reasons, the emission profile of HEVs must be judged individually based on the miles traveled under each power mode, complicating attempts to estimate vehicle emission reductions. To estimate the potential emission reduction benefits from the use of HEVs, two sources were utilized: vehicle family application and emission certification data contained in the EPA OTAQ Certification and Fuel Economy Information System, and the California Air Resources Board (CARB) On-Road Vehicle and Engine Certification website. The assessment of representative certification data indicated NO_x, CO, HC (assumed to be equal to VOCs), and CO₂ were substantially reduced on average (U.S. Environmental Protection Agency, Office of Transportation Air Quality, Certification and Fuel Economy Information System).

Based upon this data, reduction factors for alternative fuels were calculated for on-road vehicles and are provided in Table 5-7. To estimate potential emission reductions from the use of these alternative fuels and advanced vehicle technologies, calculate vehicle emissions using the

MOVES5 gasoline or diesel fuel emission factors provided, and apply an appropriate percent impact based upon the values listed in the table.

Table 5-7. Alternative Fuel Emission Reduction Factors (FERFs)

Alternative Fuel (Original fuel type)	Vehicle Category	Fuel Reduction Emission Factor (%)					
		CO	NO _x	VOC ^a	PM ₁₀	PM _{2.5}	CO ₂
CNG (Gasoline) ^b	LDGV, LDGT, HDGV	90	35	50	90 ^c	90 ^c	25
B20 (Diesel) ^d	LDDV, LDDT, HDDV	0	0	0	0	0	0
HEVs (Gasoline) ^e	LDGV, LDGT	50	75	35	---	---	30

- Source provided emission factors (EFs) for hydrocarbons (HC) or non-methane HCs which are assumed to be equivalent to VOC emissions reduction.
 - SOURCE: *Clean Alternative Fuels: Compressed Natural Gas* (EPA 420-F-00-033), U.S. Environmental Protection Agency, March 2002.
 - SOURCE: Arkansas Gas Association, Natural Gas Vehicles
 - Based on EFs using a default of 15 parts per million (ppm) sulfur for diesel, and results of the Department of Defense Environmental Security Technology Certification Program study, Effect of Biodiesel on Diesel Engine Nitrogen Oxide and Other Regulated Emissions, Project number WP-0308, May 2006, indicating no statistically significant difference in B20/Ultra Low Sulfur Diesel (ULSD) vs. ULSD emissions.
 - EFs represent the difference in CO₂ emissions associated with the combustion of one gallon of gasoline equivalent of Compressed Natural Gas (CNG). Source: California Climate Action Registry, General Reporting Protocol Version 2.2, Table C-3, March 2007.
- “---” Indicates No Data Available.

5.2.2 Fugitive Particulate Matter (PM) Emissions

Though roads are themselves stationary, the generation of airborne road dust is the result of the turbulent wake created by on-road vehicles, which are mobile sources. Therefore, road dust emissions are provided in this section. **Note that this section does not describe emissions from asphalt paving since those operations are considered transitory and are addressed in the *Air Emissions Guide for Air Force Transitory Sources*.** Since fugitive PM emissions are the result of road dust suspended as the vehicle moves across a road surface, the extent of the emitted PM is dependent on whether the road surface is paved or unpaved. These surfaces are subjected to strong air currents from the turbulent wake that follows behind a vehicle as it passes. The currents disturb the loose material pulverized under the weight of the vehicle and PM is cast into the air. PM emissions will fluctuate for several reasons, including construction activities in the area, road degradation due to vehicular traffic, and the application of granular material for snow and ice control. Typically, the most important factors regarding road PM emissions are the number and weight of the vehicles that travel the road, and the VMT. Paved and unpaved road EFs are already derived and may be found in Table 5-8.

Table 5-8. Fugitive PM Emission Factors

	POV		GOV	
	PM ₁₀ (g/mi)	PM _{2.5} (g/mi)	PM ₁₀ (g/mi)	PM _{2.5} (g/mi)
Paved Road	0.058	0.014	0.069	0.017
Unpaved Road	466.206	46.621	505.981	50.598

The EFs for suspension of loose material on paved and unpaved road surfaces due to vehicle travel were derived from the following empirical equations from AP-42 Chapter 13.2.1 (Jan 2011) and AP-42 Chapter 13.2.2 (Nov 2006):

$$EF(Pol)_P = k(Pol) \times (sL)^{0.91} \times W^{1.02} \quad \text{AP-42 Chapter 13.2.1.3}$$

Where,

- EF(Pol)_p** = Particulate emission factor for **paved** roads (g/mi)
- k(Pol)** = Particle size multiplier (g/mi). **PM_{2.5} = 0.25 and PM₁₀ = 1.00**
- sL** = Road surface silt loading (g/m²). **AP-42 Chapter 13.2.1 recommends a default value of 0.015 for limited access roadways (such as Air Force roads)**
- W** = Average weight of the vehicles traveling the road (tons). **POVs = 2.581 and GOVs = 3.096**

$$EF(Pol)_U = k(Pol) \times \left(\frac{s}{12}\right)^a \times \left(\frac{W}{3}\right)^b \times 453.6 \quad \text{AP-42 Chapter 13.2.2.2}$$

Where,

- EF(Pol)_U** = Particulate emission factor for **unpaved** roads (g/mi)
- k(Pol)** = Particle size multiplier (lb/mi). **PM_{2.5} = 0.15 and PM₁₀ = 1.5**
- s** = Surface material silt content (%). **AP-42 Chapter 13.2.2 value for construction site road value of 8.5**
- a, b** = Empirical constants for industrial roads from AP-42 Table 13.2.2-2. **a=0.9 and b=0.45**
- 453.6** = Factor converting lbs to grams (g/lb)

***Note:** The equation above calls for the average weight of all vehicles traveling the road and is **not** intended to be used to calculate a separate EF for each vehicle weight class. Rather, one EF should be calculated to represent the “fleet” average weight of all vehicles.

5.2.2.1 Corrected Emission Factors Accounting for Precipitation

Average fugitive PM emissions are inversely proportional to the frequency of measurable precipitation (>0.01 inch). The total fugitive PM emissions are calculated using the appropriate EF listed above, the total vehicle miles traveled, and a precipitation correction factor. When accounting for precipitation, the fugitive PM EFs must be corrected. The corrected EFs for both paved ($EF(Pol)_{CP}$) and unpaved ($EF(Pol)_{CU}$) roads are calculated as follows:

$$EF(Pol)_{CP} = EF(Pol)_P \times \left(1 - \frac{P}{4N}\right)$$

Equation 5-1

$$EF(Pol)_{CU} = EF(Pol)_U \times \left(1 - \frac{P}{N}\right)$$

Equation 5-2

Where,

- $EF(Pol)_{CP/CU}$ = Corrected emission factor for paved or unpaved roads (g/mi)
- P = Number of days in the inventory period in which at least 0.01 inches of precipitation was measured (days). See Figure 5-1 to determine this value based on the installation's geographic location.
- N = Number of days in the inventory period (days). 1 year = 365 days

***Note** – The paved road precipitation factor differs from the unpaved precipitation factor since it incorporates a factor of 4 in the denominator to account for the fact that paved roads dry more quickly than unpaved roads.

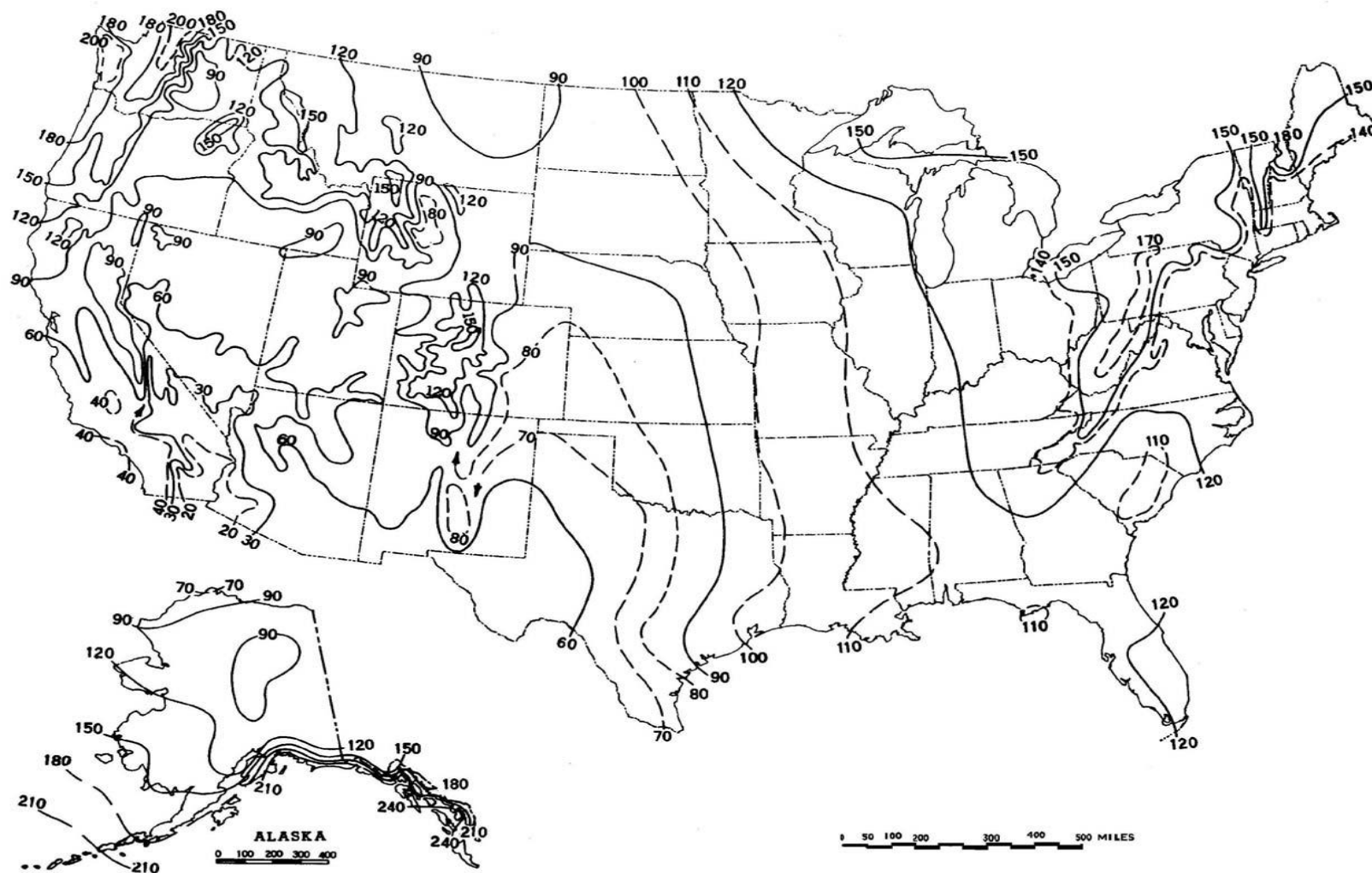


Figure 5-1. Mean Number of Days in the Year with Precipitation of 0.01 Inches or More

5.3 Emission Calculations

The total emissions from the operation of on-road vehicles are the sum of the emissions from the vehicle exhaust and fugitive PM from road dust. There are three accepted methods for estimating vehicle emissions. The first, which is the simplest and preferred method, uses Air Force/State/Territory composite EFs. The second method uses POV and GOV fleet mix from recent traffic studies. The third and final method uses the typical DAF POV and GOV fleet mix from Table 5-2. **No matter which method is used for estimation, POV and GOV emissions are calculated independently.**

5.3.1 Vehicle Exhaust Emissions – Typical Vehicle Operation

Calculating emissions from vehicle exhaust is dependent on the VMT and appropriate EF. Vehicle exhaust emissions are directly dependent on the vehicle mix at the installation. There are two circumstances that determine the method for calculating vehicle exhaust emissions – when the specific vehicle mix is known, or when it is unknown. If the vehicle mix is known, that data may be used for emissions calculations. If the vehicle mix is unknown, the mix from Table 5-2 may be assumed. Calculating these emissions is discussed below.

5.3.1.1 Method 1: Using Air Force/State/Territory Composite Emission Factors (Preferred Method)

This is the preferred method for emissions estimates because it is the simplest method to use. The EFs used for this method are selected based on the emission inventory year and the state/territory in which the installation is located. The Air Force/State/Territory composite EFs ($EF(Pol)_{Comp}$) were derived using the assumed vehicle mix as provided in Table 5-2 and Table 5-19 through Table 5-23 for most states. For the State of California, the composite values are provided in Table 5-29 through Table 5-38. Use Table 5-49 and Table 5-50 for OCONUS installations. Note that the tables are separated into POV and GOV since the EFs account for the vehicle mix which differs between these two classifications. **Also note that these EFs have already been adjusted to reflect the reduction in emissions due to vehicles that operate on alternative fuels.** Therefore, no additional calculation is needed to account for the reduction in emissions from the use of alternative fuels. Emissions calculation using the adjusted EFs is estimated as follows:

$$E(Pol)_{Total} = VMT_{Total} \times EF(Pol)_{Comp} \times 0.002205$$

Equation 5-3

Where,

- E(Pol)_{Total}** = Total annual emissions of specific pollutant from vehicle exhaust (lb/yr)
- VM_{Total}** = Total annual vehicle miles traveled for all POV or GOV (mi/yr). This should be available for GOVs through records or estimated for GOVs and POVs using Equation 5-4 and Equation 5-5 respectively. **Note that this includes both paved and unpaved roads, as applicable.**
- EF(Pol)_{Comp}** = Air Force/State/Territory composite EF for specific pollutant (g/mi) from Table 5-9 through Table 5-18 and for California, Table 5-29 through Table 5-38.
- 0.002205** = Factor for converting grams to pound (lb/g)

Emissions from GOVs and POVs are calculated using the general formula provided in Equation 5-3. **These steps must be completed independently for each pollutant of concern. Note GOVs and POVs should not be combined, and their emissions must be calculated independently.** Due to the complexity of calculating on-road vehicle emissions, the following steps are recommended for use as a guideline for data collection and emissions calculations:

Step 1 – Gather fleet data. The first step is to determine the number of POVs or GOVs (N) operating on base. Also, the total vehicle miles traveled (VM_{Total}) or average vehicle miles traveled (AVM) for GOVs should be recorded. This data can often be provided or estimated by the Security Forces Squadron (from the Pass & Registration section) and/or the Military Personnel Flight (MPF). For POVs, VM_{Total} is calculated using Equation 5-5 while Equation 5-4 may be used to calculate VM_{Total} for GOVs only if necessary.

Vehicle Miles Traveled for GOVs:

The total vehicle miles traveled (VM_{Total}) for GOVs is the sum of all the miles driven using GOVs during the inventory period. These values should be available through records kept by the base transportation organization or directly from the organizations that operate and/or maintain the vehicles. Alternatively, VM_{Total} may be estimated if it is assumed that each vehicle category traveled the same distance per year, as shown:

$$VM_{Total} = AVM \times N$$

Equation 5-4

Where,

- VM_{Total}** = The total vehicle miles traveled for all GOV vehicles (mi/yr)
- AVM** = The annual average miles traveled per vehicle (mi/yr)
- N** = The number of vehicles – GOV in this case – at the installation

Vehicle Miles Traveled for POVs:

For POVs, the suggested method for estimating VMT_{Total} is to assume that each POV in operation on an installation travels twice the distance from the main gate to the population centroid of the installation. Not every person will operate their vehicle every day of the year so it is assumed that the majority of POVs will be driven during the workweek. Additionally, a statistical analysis of available Employee-Certification and Reporting System (ECARS) data revealed that typically only 70% of the installation population operates their vehicles on the installation during the week. Using this information, the VMT_{Total} for POVs is estimated as follows:

$$VMT_{Total} = D \times 520 \times 0.7 \times P$$

Equation 5-5

Where,

- D** = One-way distance from the main gate to the population centroid of the installation (miles/trip)
- 520** = Factor converting the number of miles per trip to miles per year (trips/year)
- 0.7** = Fraction of the installation population that operates their vehicle during the week
- P** = Installation population

In Equation 5-5, the 520-multiplying factor was derived as follows:

$$2 \frac{\text{trips}}{\text{days}} \times 5 \frac{\text{days}}{\text{weeks}} \times 52 \frac{\text{weeks}}{\text{yr}} = 520 \frac{\text{trips}}{\text{yr}}$$

Step 2 – Select emission factors. These are provided in Table 5-19 through Table 5-28 for all states other than California, Table 5-39 through Table 5-48 for California, or Table 5-49 and Table 5-50 for OCONUS installations.

Step 3 – Calculate emissions. Emissions of each pollutant (and vehicle classification) are calculated *independently* using Equation 5-3.

5.3.1.2 Method 2: Using Specific Vehicle Mix Data

This method is more intensive than the preferred method given above. However, it may be desirable if a recent traffic study conflicts with the typical vehicle mix provided, or if emissions from each vehicle category are required. The EFs used for this method are selected based on the emission inventory year, the state in which the installation is located, and the vehicle category (LDGV, LDDV, etc.). Additionally, they can be found in Table 5-19 through Table 5-28 (for states other than California) and Table 5-39 through Table 5-48 for California. To account for the reduction in emissions due to the use of alternative fuels, the appropriate emissions reduction

factor, as given in Table 5-7, is employed. Emissions are estimated using the VMT for each vehicle category and summed as follows:

$$E(Pol)_{Total} = \sum_{i=1}^n \left\{ VMT_i \times EF(Pol)_i \times \left[1 - \frac{FERF(Pol)}{100} \right] \times 0.002205 \right\}$$

Equation 5-6

Where,

E(Pol)_{Total} = Total annual emissions of specific pollutant from vehicle exhaust (lb/yr)

VMT_i = Total annual vehicle miles traveled for each vehicle class (mi/yr).

This should be available for GOVs through records and estimated for POVs using Equation 5-5. Note that this includes both paved and unpaved roads, if applicable.

EF(Pol)_i = Air Force/State/Territory emission factor for specific pollutant (g/mi)

FERF(Pol) = Pollutant-specific fuel emission reduction factor, as applicable (%). This is provided in Table 5-7.

100 = Factor converting percent to fraction

0.002205 = Factor converting grams to pounds (lb/g)

To accurately account for the reduction of emissions using alternative fuels, the VMT_i for each hybrid and CNG vehicle should be known and treated as a separate vehicle category. If the annual VMT for each vehicle category is not known, the following equation may be used to approximate VMT for each specific vehicle category (VMT_i):

$$VMT_i = AVM_i \times n_i = AVM_i \times N \times \frac{MIX_i}{100}$$

Equation 5-7

Where,

AVM_i = Average annual vehicle miles traveled by each vehicle category (mi/yr)

n_i = Number of vehicles in a specific vehicle category

N = Total number of vehicles (POV or GOV)

MIX_i = Vehicle mix for a specific vehicle category (%)

To quantify the emissions from on-road vehicles using this method, the following process is recommended:

Step 1 – Gather fleet data. Data required to calculate vehicle emissions typically includes vehicle category, model year, and vehicle miles traveled. (VMT_i) during the year in question.

- a. **GOV Fleet Mix Data:** If a GOV is driven both on and off base during the inventory year, an estimate must be made to apportion the number of miles driven between off and on installation miles. The best way to collect GOV information is to provide blank forms for each vehicle category to the installation organization(s) responsible for managing GOVs.
- b. **POV Fleet Mix Data:** Prior to conducting an AEI that includes POVs, it is recommended that the individual responsible for preparing the mobile source emission inventory contacts the Base Development and/or Community Planning section of the Civil Engineering Squadron. This is to determine if a traffic survey has been conducted recently at the installation, which may contain information that will be useful in calculating POV emissions.

If a recent traffic survey is not available, and resources do not allow for a new traffic survey to be conducted, data provided by the Security Forces Squadron (from the Pass & Registration section) and/or the Military Personnel Flight (MPF) can be used to estimate POV fleet data. Types of data that can usually be obtained from the Security Forces Squadron and/or MPF include:

- 1) The estimated average number of registered POVs at the installation during the applicable inventory year.
- 2) The estimated percentage of registered vehicles that fall under the seven vehicle categories.
- 3) The estimated distance (in miles) of the average POV trip on the installation during a typical weekday and weekend day.
- 4) The estimated distance (in miles) of non-registered vehicles that travel on the installation during a typical weekday and weekend day.

An alternative approach to obtaining vehicle registration information may be available at some installations as some installations may be able to provide a listing of the vehicles contained in their databases.

Step 2 – Group vehicle categories. Upon gathering fleet data, group together all vehicles based on the DAF vehicle categories identified in Table 5-1. Record the number of vehicles (n_i) and total annual miles traveled (VMT_i) for each vehicle category.

- a. If VMT_i is unknown, it can be estimated using Equation 5-7.

- b. If there is insufficient fleet data to provide the number of vehicles (n_i) for each vehicle category despite the total number of vehicles and associated relative vehicle mix (MIX_i) for each specific category being known, the equation below can be used to estimate n_i :

$$n_i = N \times \frac{MIX_i}{100}$$

Step 3 – Select emission factors. The appropriate EFs are selected based on the vehicle category, the calendar year for which emissions calculations are being performed, and the installation's geographic location. Vehicle exhaust EFs are selected from Table 5-19 through Table 5-28 for states other than California, Table 5-39 through Table 5-48 for California emissions calculations, and for OCONUS, Table 5-49 and Table 5-50.

Step 4 – Calculate emissions. For vehicle exhaust emissions, calculate the emissions for each individual vehicle category and sum these values for the total vehicle emissions for that pollutant. Pollutant emissions for each vehicle category are calculated using Equation 5-6.

5.3.1.3 Method 3: Using DAF Typical Vehicle Mix Data

Another method for calculating on-road vehicle emissions is to calculate the emissions from each vehicle category using the typical DAF vehicle mix. This method is like that of calculating emissions using specific vehicle mix data. The EFs used for this method are selected based on three metrics: 1) the emission inventory year, 2) the state in which the installation is located, and 3) the vehicle category. Emissions are estimated via this method using a modified version of Equation 5-3 by substituting the correct EF as shown:

$$E(Pol)_{Total} = VMT_{Total} \times EF(Pol)_{Total} \times 0.002205$$

Equation 5-8

Where,

$EF(Pol)_{Total}$ = Total adjusted on-road vehicle exhaust emissions (lb/yr).

The total adjusted on-road vehicle EF considers any reduction in emissions due to alternative fuel use. This is calculated as follows:

$$EF(Pol)_{Total} = \sum_{i=1}^n \left\{ \left(\frac{MIX_i}{100} \right) \times EF(Pol)_i \times \left[1 - \frac{FERF(Pol)}{100} \right] \right\}$$

Equation 5-9

The total vehicle miles traveled (VMT_{Total}) is the sum of the average miles traveled for all vehicle categories as shown:

$$VMT_{Total} = \sum_{i=1}^n \left(AVM_i \times N \times \frac{MIX_i}{100} \right)$$

Equation 5-10

Emissions from vehicles are calculated by applying the equations in Method 2 using the typical POV or GOV vehicle mix data from Table 5-2. **These steps must be completed separately for each pollutant of concern. GOVs and POVs should not be combined, and their emissions should be calculated independently of each other.** Due to the complexity of calculating on-road vehicle emissions, the following steps are recommended for use as a guideline for data collection and emissions calculations:

Step 1 – Gather fleet data. In this case, fleet data or a traffic survey for the base is not available. Therefore, obtain the total number (N) of vehicles (POV or GOV) driving on base and the overall average annual vehicle miles traveled (AVM) for all vehicle categories. The data can often be provided or estimated by the Security Forces Squadron (from the Pass & Registration section) and/or the Military Personnel Flight (MPF) can be used to estimate POV fleet data. Types of data that can usually be obtained from the Security Forces Squadron and/or MPF include: 1) the estimated average number of registered POVs and/or GOVs at the installation during the applicable inventory year; 2) the estimated distance (in miles) of the average POV travels on the installation during a typical weekday and weekend day; and 3) the estimated number of non-registered vehicles that travel on the installation during a typical weekday and weekend day.

An alternative approach to obtaining vehicle registration information may be available at some installations. Data such as listings of vehicles held in databases (preferably in hardcopy format) as well as the number of registered vehicles are examples of alternative data options that may be available at specific installations.

Step 2 – Group vehicle categories. Upon gathering fleet data on the total number (N) of vehicles (POV or GOV) driving on base and overall average AVM, obtain and record the typical vehicle mix values (MIX_i) from Table 5-2 for each vehicle category. Then, assuming all vehicle categories traveled the same distance per year, calculate the total annual vehicle miles traveled (VMT_{Total}) for all vehicle categories combined using Equation 5-4.

Step 3 – Select emission factors. Selection of the appropriate EF is based on the vehicle category, the calendar year being calculated for, the installation's location (state), and the installation's altitude. The EFs are then selected from Table 5-19 through Table 5-28 for all states except California, Table 5-39 through Table 5-48 for California, or Table 5-49 and Table 5-50 for OCONUS installations.

Once the appropriate pollutant specific EFs for each vehicle have been obtained, calculate the total composite EF using Equation 5-9.

Step 4 – Calculate emissions. The total pollutant emissions, on a per vehicle category-basis, for on-road emissions are calculated using Equation 5-8.

5.3.2 Vehicle Exhaust Emissions – Idling

Calculating idling emissions uses slightly modified versions of equations used for calculating on-road emissions caused by normal vehicle operation as discussed in the previous sections. The primary difference is that the EFs for idling vehicles are presented as grams/hr, meaning the time spent in idle mode must be known (or estimated). Idling emissions from typical on-road vehicle operation have also been addressed in the previous section. Estimating the emissions from vehicle idling is performed under two circumstances: 1) where the vehicle mix is known (e.g., from a recent traffic study) and 2) where the typical DAF vehicle mix is used. **This section describes the calculation of *theoretical* emissions from idling vehicles for NEPA and intersection modeling, not for a mobile AEI.**

5.3.2.1 Method 1: Using Specific Vehicle Mix Data

If necessary, emissions may be calculated using a specific vehicle mix different from the one provided in Table 5-2. This method may be desirable if a recent traffic study conflicts with the typical vehicle mix provided. The EFs used for this method are selected based on the vehicle category. These EFs are provided in Table 5-6. Idling emissions are estimated as follows:

$$E(Pol)_{Total} = \sum_{i=1}^n \left\{ VIT_i \times EF(Pol)_i \times \left[1 - \frac{FERF(Pol)}{100} \right] \times 0.002205 \right\}$$

Equation 5-11

Where,

- $E(Pol)_{Total}$ = Total theoretical emissions of specific pollutant from idling (lb/yr)
- VIT_i = Annual vehicle idling time (hr/yr)
- $EF(Pol)_i$ = Idling emission factor for specific pollutant (g/hr) from Table 5-6.

The vehicle idling time is the most difficult parameter to determine. Depending on the proposed action, idling times of varying lengths may be recommended for each vehicle *category* and/or *classification*. The idling time for each vehicle category may be estimated using an average idling time as shown:

$$VIT_i = AVIT_i \times n_i = AVIT_i \times N \times \frac{MIX_i}{100}$$

Equation 5-12

Where,

AVIT_i = Average annual vehicle idling time (hr/yr)

5.3.2.2 Method 2: Using Air Force Typical Vehicle Mix Data

If the specific vehicle mix data is not available from a recent traffic study, the typical vehicle mix from Table 5-2 can be assumed. The EFs used for this method are selected based on the Air Force vehicle category. These EFs can be found in Table 5-6. Theoretical emissions from vehicle idling using this method are calculated as follows:

$$E(Pol)_{Total} = VIT_{Total} \times EF(Pol)_{Total} \times 0.002205$$

Equation 5-13

Where,

VIT_{Total} = Total annual vehicle idling time for all POVs or GOVs (hr/yr)

EF(Pol)_{Total} = Total adjusted idling emission factor (g/hr). Calculated using Equation 5-14 below.

The total adjusted idling EF considers any reduction in emissions due to alternative fuel use and is calculated as follows:

$$EF(Pol)_{Total} = \sum_{i=1}^n \left\{ EF(Pol)_i \times \frac{MIX_i}{100} \times \left[1 - \frac{FERF(Pol)}{100} \right] \right\}$$

Equation 5-14

The total vehicle idling time (VIT_{Total}) is the sum of the average idling time for all vehicles categories as shown below:

$$VIT_{Total} = \sum_{i=1}^n \left(AVIT_i \times N \times \frac{MIX_i}{100} \right)$$

Equation 5-15

Equation 5-15 may be simplified if it is assumed that each vehicle category will idle for the same amount of time per year. This simplification reduces Equation 5-15 to the equation that follows:

$$VIT_{Total} = AVIT \times N$$

Equation 5-16

In the absence of average vehicle idling time (AVIT) data, contact Base CE for assistance in estimating this value.

5.3.3 Fugitive PM Emissions

Particulate emissions are generated from vehicle exhaust and are described in the previous sections. Fugitive particulate emissions, however, are generated from the operation of on-road vehicles across paved or unpaved road surfaces. The amount of particulate generated is a function of the road surface (paved or unpaved) and the total vehicle miles traveled (VMT_{Total}). The EFs are selected from Table 5-8 based on the road surface type (paved or unpaved) and vehicle classification (POV or GOV). The selected EFs must be corrected based on the number of days in the year with precipitation greater than or equal to 0.01 inches using the appropriate equation (either Equation 5-1 or Equation 5-2) and the type of road surface. Using the corrected EF for paved or unpaved roads ($EF(Pol)_{CP}$ or $EF(Pol)_{CU}$ respectively), fugitive PM emissions are calculated as follows:

$$E(Pol)_{Total} = VMT_{Total} \times \left\{ \left[\frac{\%VMT_P}{100} \times EF(Pol)_{CP} \right] + \left[\frac{\%VMT_U}{100} \times EF(Pol)_{CU} \right] \right\} \times 0.002205$$

Equation 5-17

Where,

$E(Pol)_{Total}$ = Total annual emission of fugitive PM from on-road vehicles (lb/yr)

$\%VMT_P$ = Percent of total miles driven on paved roads (%)

$\%VMT_U$ = Percent of total miles driven on unpaved roads (%)

5.3.4 VOC Speciation

On-road vehicles have the potential to produce a significant amount of air pollutants released into the atmosphere. The amount of pollution is a function of the number of on-road vehicles, the average number of miles driven, the time of year, the content of the fuel used, and even the average idling time. The large number of variables impacting air emissions from on-road vehicles increases the complexity of quantifying their emissions. However, measurements are continually being taken to develop more accurate air emissions estimates. Individual VOCs may be estimated using the weight fractions of each chemical to the total emitted VOC.

The weight fractions provided in this document were determined using test data from a variety of sources, including the EPA's *SPECIATE* database. The emission profiles used to determine the VOC weight percent are assumed to be representative of the vehicle category's emissions. However, this information should only be used when no alternative emission profiles are available. The average weight percent of individual pollutants were calculated using the following equations:

$$P_{Pol} = \frac{A_{Pol}}{AVOC_{Total}}$$

Equation 5-18

Where,

- P_{Pol} = Weight percent of a given pollutant (%)
 A_{Pol} = Individual pollutant emission factor (mg/mi)
 $AVOC_{Total}$ = Total VOC emission factor (mg/mi)

Speciated VOCs are calculated by taking the product of the total VOCs and the weighted percentage of the individual VOC as follows:

$$E_{Pol} = E_{VOC} \times \frac{P_{Pol}}{100}$$

Equation 5-19

Where,

- E_{Pol} = Emission of speciated VOC (lb/yr)
100 = Factor for converting percent to a fraction (%)
 E_{VOC} = Emissions of total VOC (lb/yr)

The percentages of each VOC to total VOC are provided in Table 5-51. Note that the light-duty gas vehicles, light-duty gas trucks, and heavy-duty gas vehicles (LDGV, LDGT, and HDGV) are not further subdivided into hybrid and CNG-fueled vehicles. To calculate emissions specific to these vehicles, apply the vehicle mix (using the default values if no onsite data is available).

5.4 Information Resources

Information required for calculating emissions from GOVs can usually be obtained from the installation transportation organization as it typically maintains records on most, if not all, GOVs assigned to the installation. At some installations, it may also be necessary to obtain information directly from the organizations that use and/or maintain the vehicles. For example, the Fire Department may need to be contacted to obtain information specific to fire trucks and rescue vehicles.

In some cases, it may be necessary to obtain and review data contained in the installation's vehicle maintenance index file (VMIF), on-line vehicle interactive management system (OLVIMS) report, or equivalent vehicle information management system to verify vehicle class/type as some installations do not use the same classification system used by the EPA.

Some facilities may have a cross-reference tool with management codes that will assist in interpreting how vehicle usage is being tracked (e.g., miles, hours, and kilometers).

Most information required to calculate POV emissions may be obtained from the Security Forces Squadron. The Pass & Registration section of the base Security Forces Squadron usually maintains computer records on all POVs registered at the installation. Some installations perform vehicle registration at MPF. The office that handles vehicle registrations (Pass & Registration or MPF) is also in a good position to survey personnel on their vehicle usage. Since the Security Forces Squadron is responsible for staffing the installation gates, they are usually the best source of information on non-registered vehicles.

If the POV information needed to calculate vehicle emissions cannot be obtained from the Security Forces Squadron, it might be necessary to survey a representative number of installation personnel to obtain the required information. It is also highly recommended that personnel conducting the AEI check with the Base Development and/or Community Planning sections of the Civil Engineering Squadron to determine whether any recent traffic surveys have been conducted.

For purposes of estimating the length of typical on-installation POV trips, consider the trip length in terms of the mileage from the main gate to a common on-installation destination and back. For instance, if most POVs are believed to be traveling to the Base Exchange, the Commissary, or the Medical Clinic, estimate the distance from the main gate to those locations. In such instances, it may be assumed that a median round-trip distance of 3-4 miles is appropriate for use. However, it may also be necessary to estimate vehicle travel distances for individuals who travel on and off the installation more than once per day, such as personnel who leave during lunchtime. **In the absence of installation-specific survey data, it can be conservatively assumed that 5% of installation personnel will travel off-installation during lunchtime.** Since this is a second trip through the gate, you should assume the daily on-installation mileage is doubled for those individuals. If installation organizations are unable to provide required data, it may be possible to obtain trip length and driver behavior data that can be extrapolated to on-installation conditions from the local metropolitan planning office (MPO).

5.5 Example Problems

5.5.1 Problem 1 – Calculating POV and GOV Emissions Using Method 1

A DAF base is performing an air emissions inventory for calendar year (CY) 2025 CO emissions for their POVs and GOVs operated by the facility during the year. Data indicates that there is a total of 422 POVs and 38 GOVs and all vehicles traveled an average of 4,563 miles each. Calculate CO emissions for CY2025 if the base is in Alabama.

Step 1 – Gather fleet data. The data required to calculate emissions is provided in the problem statement. This information includes the number of POVs ($N_{POV} = 422$), the number of GOVs ($N_{GOV} = 38$), and the average miles traveled for each vehicle ($AVM = 4,563 \text{ mi/yr}$).

Next, calculate total vehicle miles traveled (VMT_{Total}). Using the number of POVs and GOVs, the average vehicle miles traveled (AVM), and Equation 5-4, the VMT_{Total} is calculated as follows:

$$VMT_{Total} = AVM \times N$$

For POVs

$$VMT_{Total-POV} = 4,563 \frac{\text{mi}}{\text{yr}} \times 422 = 1,925,586 \frac{\text{mi}}{\text{yr}}$$

For GOVs:

$$VMT_{Total-GOV} = 4,563 \frac{\text{mi}}{\text{yr}} \times 38 = 173,394 \frac{\text{mi}}{\text{yr}}$$

Step 2 – Select emission factors. According to Table 5-9, for CY2025 in Alabama, the CO EF ($EF(CO)_{Alabama}$) for POVs is **4.470 g/mi**. Similarly, the CO EF ($EF(CO)_{Alabama}$) for GOVs is **4.254 g/mi**.

Step 3 – Calculate emissions. Emissions are calculated using the adjusted EFs from Step 2, the VMT_{Total} calculated from Step 1, and Equation 5-3 as shown below:

$$E(Pol)_{Total} = VMT_{Total} \times EF(Pol)_{Total} \times 0.002205$$

For POVs:

$$E(CO)_{Total} = 1,925,586 \frac{\text{mi}}{\text{yr}} \times 4.470 \frac{\text{g}}{\text{mi}} \times 0.002205 \frac{\text{lb}}{\text{g}}$$

$$\boxed{E(CO)_{Total} = 18,979.25 \frac{\text{lb}}{\text{yr}}}$$

For GOVs:

$$E(CO)_{Total} = 173,394 \frac{\text{mi}}{\text{yr}} \times 4.254 \frac{\text{g}}{\text{mi}} \times 0.002205 \frac{\text{lb}}{\text{g}}$$

$$\boxed{E(CO)_{Total} = 1,626.45 \frac{\text{lb}}{\text{yr}}}$$

5.5.2 Problem 2 – Calculating GOV Emissions Using Method 2

A DAF base is performing an inventory for CY2025 CO emissions for their 15 GOVs operated by the facility during the year. The Air Force Base is in Alabama.

Step 1 – Gather fleet data and Step 2 – Group vehicle categories. Since the data was available from the Environmental manager, steps 1 and 2 are combined.

Installation Name: Anytown AFB			Inventory Year: 2025	
Responsible Organization (Name and Office Symbol):				
POC (Name, Phone #, and email):				
Vehicle Category:				
Vehicle Identification Number (VIN)	Vehicle Description	Bldg. Number	Model Year	Miles Driven (mi/yr)
LDGV				
Vehicle #1	Sedan	Bldg. 45-2	1999	4,900
Vehicle #10	Sedan	Bldg. 45-2	1999	5,670
Vehicle #11	Sedan	Bldg. 15-1	2004	4,368
Vehicle #15	Sedan	Bldg. 23-6	2002	6,670
Vehicle #8	Sedan	Bldg. 15	1998	2,700
Vehicle #3	Sedan	Bldg. 1	2004	7,400
Vehicle #5	Sedan	Bldg. 10	1997	1,730
Vehicle #9	Sedan	Bldg. 10	1997	1,450
		Average	2000	4,361
		Total		34,888
LDGT				
Vehicle #6	Pickup	Bldg. 15	2000	4,600
Vehicle #7	Pickup	Bldg. 15	2000	5,200
Vehicle #13	Van	Bldg. 15	1999	6,500
Vehicle #14	SUV	Bldg. 15	2003	3,200
		Average	2000	4,875
		Total		19,500
HDGV				
Vehicle #2	Flatbed	Bldg. 15	1998	4,450
		Average	1998	4,450
		Total		4,450
LDDT				
Vehicle #4	Pickup	Bldg. 1	2004	4,300
		Average	2004	4,300
		Total		4,300
HDDV				
Vehicle #12	Fire Truck	Bldg. 45-2	2002	5,300
		Average	2002	5,300
		Total		5,300

Step 3 – Select emission factors. For vehicles in CY2025 in Alabama, the CO EFs for each vehicle category are given in Table 5-19. The EFs are provided in the table below.

Vehicle Category	CO Emission Factor (g/mi)
LDGV	4.405
LDGT	4.220
HDGV	10.726
LDDV	6.821
LDDT	5.903
HDDV	1.637
MC	11.859

Step 4 – Calculate emissions. No information was provided regarding whether any of the vehicles operated on alternative fuel. Using the vehicle miles traveled for each vehicle category (VMT_i) from the fleet data, the EFs recorded in Step 3, and Equation 5-6, the emissions are first calculated for each vehicle category as follows:

$$E(Pol)_{Total} = \sum_{i=1}^7 \left\{ VMT_i \times EF(Pol)_i \times \left[1 - \frac{FERF(Pol)}{100} \right] \times 0.002205 \right\}$$

$$E(CO)_{LDGV} = 34,888 \frac{mi}{yr} \times 4.405 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 338.87 \frac{lb}{yr}$$

$$E(CO)_{LDGT} = 19,500 \frac{mi}{yr} \times 4.220 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 181.45 \frac{lb}{yr}$$

$$E(CO)_{HDGV} = 4,450 \frac{mi}{yr} \times 10.726 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 105.25 \frac{lb}{yr}$$

$$E(CO)_{LDDV} = 0 \frac{mi}{yr} \times 6.821 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 0.0 \frac{lb}{yr}$$

$$E(CO)_{LDDT} = 4,300 \frac{mi}{yr} \times 5.903 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 55.97 \frac{lb}{yr}$$

$$E(CO)_{HDDV} = 5,300 \frac{mi}{yr} \times 1.637 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 19.13 \frac{lb}{yr}$$

$$E(CO)_{MC} = 0 \frac{mi}{yr} \times 11.859 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 0.0 \frac{lb}{yr}$$

Finally, the total CO emission are calculated by summing the contributing CO emission from each vehicle category.

$$E(Pol)_{Total} = \sum_{i=1}^7 E(Pol)_i$$

$$E(CO)_{TOTAL} = (338.87 + 181.45 + 105.25 + 0 + 55.97 + 19.13 + 0) \frac{lb}{yr}$$

$$E(CO)_{TOTAL} = 700.67 \frac{lb}{yr}$$

5.5.3 Problem 3 – Calculate POV Emissions Using Method 2

A DAF Base (located in Alabama) is conducting an emissions inventory to quantify CY2025 emissions attributable to the operation of POVs. Using the information provided by the Security Forces Squadron, the following data was used to calculate the CY2025 emissions of CO from the operation of POVs.

Step 1 – Gather fleet data. Fleet data information is provided in the figure following Step 2.

Step 2 – Group vehicle categories. The first step in grouping the vehicle categories is to calculate the estimated total number of vehicles (N) driving on base. Using the data provided in the form referenced in Step 1, the total number of POVs is estimated as follows:

$$N = Registered + Unregistered$$

$$N = 1,675 + 125 = 1,800 \text{ vehicles}$$

Installation Name: Anytown AFB		Inventory Year: 2025
Responsible Organization (Name and Office Symbol): 58 CES/CD		
POC (Name, Phone #, and email): SSgt John Jones, DSN 234-5678		
Question	Response	
Can you provide the listing of all registered vehicles on base? (Y/N)? If so, be sure to include all specific information (make/model year, etc.) about the vehicles.	N	
What is the estimated average number of <u>registered</u> POVs at the installation during the inventory period?	1,675	
What is the estimated percentage of <u>registered</u> vehicles which travel on the installation during a typical weekday (Monday-Friday)?	75	
What is the estimated percentage of <u>registered</u> vehicles which travel on the installation during a typical weekend day (Saturday and Sunday)?	50	
What is the estimated distance the average POV travels on base during a typical weekday?	6 mi/day	
What is the estimated distance the average POV travels on base during a typical weekend day?	4 mi/day	
What is the estimated number of <u>non-registered</u> POVs which travel on base during a typical weekday?	125	
What is the estimated average model year of all POVs driven on base during the inventory year? (NOTE: This is not required if the average model years are listed below for each vehicle category)		
Using registration information, provide an estimate of the percentage of <u>registered</u> POVs which fall under each of the 7 vehicle categories listed below.		
Vehicle Category	Category Description	Estimated % of Registered Vehicles
LDGV	Light-Duty Gasoline Vehicles – All gasoline-powered passenger cars	36
LDDV	Light-Duty Diesel Vehicles – All diesel-powered passenger cars	1
LDGT	Light-Duty Gasoline Trucks – All smaller gasoline-powered trucks (0 to 8,500 lbs. GVWR)	54
LDDT	Light-Duty Diesel Trucks (LDDT) – All smaller diesel-powered trucks (0 to 8,500 lbs. GVWR)	1
HDGV	Heavy-Duty Gasoline Vehicles (HDGV) – All larger gasoline-powered vehicles (8,501 to >60,000 lbs. GVWR)	4
HDDV	Heavy-Duty Diesel Vehicles – All larger diesel-powered vehicles (10,001 to >60,000 lbs. GVWR)	3
MC	Motorcycles (MC) – All motorcycles (assumed to be gasoline powered)	1

Next, the number of vehicles which fall under each vehicle category are calculated under the assumption that the fleet mix for the unregistered vehicles is the same as for the registered

vehicles. By slightly modifying Equation 5-7, the number of vehicles for each category (n_i) may be derived from the total number of vehicles (N) and vehicle category mix (MIX_i).

$$n_i = N \times \frac{MIX_i}{100}$$

$$n_{LDGV} = 1,800 \times \frac{36\%}{100\%} = \mathbf{648 \text{ Vehicles}}$$

$$n_{LDDV} = 1,800 \times \frac{1\%}{100\%} = \mathbf{18 \text{ Vehicles}}$$

$$n_{LDGT} = 1,800 \times \frac{54\%}{100\%} = \mathbf{972 \text{ Vehicles}}$$

$$n_{LDDT} = 1,800 \times \frac{1\%}{100\%} = \mathbf{18 \text{ Vehicles}}$$

$$n_{HDGV} = 1,800 \times \frac{4\%}{100\%} = \mathbf{72 \text{ Vehicles}}$$

$$n_{HDDV} = 1,800 \times \frac{3\%}{100\%} = \mathbf{54 \text{ Vehicles}}$$

$$n_{MC} = 1,800 \times \frac{1\%}{100\%} = \mathbf{18 \text{ Vehicles}}$$

Next, the average annual vehicle miles traveled (AVM_i) is calculated. Using the data provided in the form above, the AVM traveled is calculated as follows:

$$AVM_i = \frac{52 \text{ weeks}}{\text{yr}} \times \left[\left(\frac{75\%}{100\%} \times 6 \frac{\text{mi}}{\text{day}} \times 5 \frac{\text{day}}{\text{week}} \right) + \left(\frac{50\%}{100\%} \times 4 \frac{\text{mi}}{\text{day}} \times 2 \frac{\text{day}}{\text{week}} \right) \right]$$

$$AVM_i = \frac{52 \text{ weeks}}{\text{yr}} \times \left[\left(0.75 \times 6 \frac{\text{mi}}{\text{day}} \times 5 \frac{\text{day}}{\text{week}} \right) + \left(0.5 \times 4 \frac{\text{mi}}{\text{day}} \times 2 \frac{\text{day}}{\text{week}} \right) \right]$$

$$AVM_i = \frac{52 \text{ weeks}}{\text{yr}} \times \left[\left(22.5 \frac{\text{mi}}{\text{week}} \right) + \left(4 \frac{\text{mi}}{\text{week}} \right) \right]$$

$$AVM_i = \frac{52 \text{ weeks}}{\text{yr}} \times \left[\left(26.5 \frac{\text{mi}}{\text{week}} \right) \right] = \mathbf{1,378 \frac{\text{mi}}{\text{yr}}}$$

Finally, the total annual VMT for each category (VMT_i) is calculated using Equation 5-7.

$$VMT_i = AVM_i \times n_i$$

$$VMT_{LDGV} = 1378 \frac{\text{mi}}{\text{yr}} \times 648 \text{ vehicles} = \mathbf{892,944 \frac{\text{mi}}{\text{yr}}}$$

$$VMT_{LDDV} = 1378 \frac{\text{mi}}{\text{yr}} \times 18 \text{ vehicles} = \mathbf{24,804 \frac{\text{mi}}{\text{yr}}}$$

$$VMT_{LDGT} = 1378 \frac{mi}{yr} \times 972 \text{ vehicles} = 1,339,416 \frac{mi}{yr}$$

$$VMT_{LDDT} = 1378 \frac{mi}{yr} \times 18 \text{ vehicles} = 24,804 \frac{mi}{yr}$$

$$VMT_{HDGV} = 1378 \frac{mi}{yr} \times 72 \text{ vehicles} = 99,216 \frac{mi}{yr}$$

$$VMT_{HDDV} = 1378 \frac{mi}{yr} \times 54 \text{ vehicles} = 74,412 \frac{mi}{yr}$$

$$VMT_{MC} = 1378 \frac{mi}{yr} \times 18 \text{ vehicles} = 24,804 \frac{mi}{yr}$$

Step 3 – Select emission factors. EFs for vehicles in CY2025 are provided in Table 5-19. The CO EFs for a base in Alabama for 2025 are provided in the sub-table below.

Vehicle Category	CO Emission Factor (g/mi)
LDGV	4.405
LDGT	4.220
HDGV	10.726
LDDV	6.821
LDDT	5.903
HDDV	1.637
MC	11.859

Step 4 – Calculate emissions. Emissions are calculated using the vehicle miles traveled as calculated in Step 2, the EFs recorded in Step 3, and Equation 5-6. First, the CO emissions from each vehicle category are individually calculated and then summed for total CO emissions. Also, since no information was provided regarding the use of alternative fuels, a FERF value of “0” is used.

$$E(Pol)_{Total} = \sum_{i=1}^n \left[VMT_i \times EF(Pol)_i \times \frac{FERF(Pol)}{100} \times 0.002205 \right]$$

$$E(CO)_{LDGV} = 892,944 \frac{mi}{yr} \times 4.405 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 8,673.19 \frac{lb}{yr}$$

$$E(CO)_{LDDV} = 24,804 \frac{mi}{yr} \times 4.220 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 230.80 \frac{lb}{yr}$$

$$E(CO)_{LDGT} = 1,339,416 \frac{mi}{yr} \times 10.726 \frac{g}{mi} \times \left[1 - \frac{0\%}{100\%} \right] \times 0.002205 \frac{lb}{g} = 31,678.30 \frac{lb}{yr}$$

$$E(CO)_{LDDT} = 24,804 \frac{\text{mi}}{\text{yr}} \times 6.821 \frac{\text{g}}{\text{mi}} \times \left[1 - \frac{0\%}{100\%}\right] \times 0.002205 \frac{\text{lb}}{\text{g}} = 373.06 \frac{\text{lb}}{\text{yr}}$$

$$E(CO)_{HDGV} = 99,216 \frac{\text{mi}}{\text{yr}} \times 5.903 \frac{\text{g}}{\text{mi}} \times \left[1 - \frac{0\%}{100\%}\right] \times 0.002205 \frac{\text{lb}}{\text{g}} = 1,291.41 \frac{\text{lb}}{\text{yr}}$$

$$E(CO)_{HDDV} = 74,412 \frac{\text{mi}}{\text{yr}} \times 1.637 \frac{\text{g}}{\text{mi}} \times \left[1 - \frac{0\%}{100\%}\right] \times 0.002205 \frac{\text{lb}}{\text{g}} = 268.60 \frac{\text{lb}}{\text{yr}}$$

$$E(CO)_{MC} = 24,804 \frac{\text{mi}}{\text{yr}} \times 11.859 \frac{\text{g}}{\text{mi}} \times \left[1 - \frac{0\%}{100\%}\right] \times 0.002205 \frac{\text{lb}}{\text{g}} = 648.55 \frac{\text{lb}}{\text{yr}}$$

The total CO emissions are calculated by summing the CO emissions from each contributing vehicle category as shown:

$$E(Pol)_{Total} = \sum_{i=1}^n E(Pol)_i$$

$$E(CO)_{Total} = (8,673.19 + 230.80 + 31,678.30 + 373.06 + 1,291.41 + 268.60 + 648.55) \frac{\text{lb}}{\text{yr}}$$

$$E(CO)_{TOTAL} = 43,163.91 \frac{\text{lb}}{\text{yr}}$$

5.5.4 Problem 4 – Calculating POV Emissions Using Method 3

A DAF base is interested in determining the NO_x generated by the operation of POVs driven on base. There are approximately 600 POVs that average 3,700 miles per year, but no vehicle studies have been conducted to describe the vehicle mix. Using the typical DAF vehicle mix, determine the NO_x generated by the operation of these vehicles on base for CY 2025. The base is in Colorado.

Step 1 – Gather fleet data. The problem statement provided information regard the number of POVs (N=600) and the average vehicle miles driven by each vehicle (AVM = 3,700 miles per year).

Step 2 – Group vehicle categories. The first step is to determine the total annual vehicle miles traveled (VMT_{Total}) for all vehicles. The problem statement provided information regarding the average vehicle miles traveled for all POVs (AVM), but not the average miles traveled for each vehicle category (AVM_i). Therefore, the appropriate method for calculating the total annual vehicle miles traveled for all vehicles utilizes Equation 5-4 as shown:

$$VMT_{Total} = AVM \times N$$

$$VMT_{Total} = 3,700 \frac{mi}{yr} \times 600 = 2,220,000 \frac{mi}{yr}$$

Since the typical vehicle mix is assumed for this example, the vehicle mix (MIX_i) for each category for POVs has been extracted from Table 5-2 and presented in the following table.

Vehicle Category	POV Vehicle Mix (%)
LDGV	41.00
LDDV	0.52
LDGT	46.4
LDDT	0.66
HDGV	3.39
HDDV	2.51
MC	1.88
LDGV (H)	0.09
LDGT (H)	0.09
LDGV (V)	2.14
LDGT (V)	1.32

Step 3 – Select emission factors. The EFs for CY 2025 POVs are presented in Table 5-19. The EFs for NO_x in Colorado have been extracted from the table and presented in the table below.

Vehicle Category	NO _x Emission Factor (g/mi)
LDGV	0.139
LDDV	0.205
LDGT	0.693
LDDT	0.245
HDGV	0.406
HDDV	2.901
MC	0.750

Step 4 – Calculate emissions. First, a total composite EF is calculated by taking the product of the EF for each vehicle category (EF(Pol)_i) – from the table in Step 3 above), the vehicle mix value for the corresponding vehicle category (MIX_i – from the table in Step 2), and the appropriate FERF from Table 5-7. FERF for electric vehicles are assumed to be 100%. These values are calculated as follows:

$$EF(Pol)_{Total} = \sum_{i=1}^n \left\{ EF(Pol)_i \times \frac{MIX_i}{100} \times \left[1 - \frac{FERF(Pol)}{100} \right] \right\}$$

$$EF(NO_X)_{LDGV} = 0.139 \frac{g}{mi} \times \left(\frac{41.00\%}{100\%} \right) \times \left[1 - \frac{0\%}{100\%} \right] = \mathbf{0.0570} \frac{g}{mi}$$

$$EF(NO_X)_{LDDV} = 0.205 \frac{g}{mi} \times \left(\frac{0.52\%}{100\%} \right) \times \left[1 - \frac{0\%}{100\%} \right] = \mathbf{0.0011} \frac{g}{mi}$$

$$EF(NO_X)_{LDGT} = 0.693 \frac{g}{mi} \times \left(\frac{46.4\%}{100\%} \right) \times \left[1 - \frac{0\%}{100\%} \right] = \mathbf{0.322} \frac{g}{mi}$$

$$EF(NO_X)_{LDDT} = 0.245 \frac{g}{mi} \times \left(\frac{0.66\%}{100\%} \right) \times \left[1 - \frac{0\%}{100\%} \right] = \mathbf{0.0016} \frac{g}{mi}$$

$$EF(NO_X)_{HDGV} = 0.406 \frac{g}{mi} \times \left(\frac{3.39\%}{100\%} \right) \times \left[1 - \frac{0\%}{100\%} \right] = \mathbf{0.014} \frac{g}{mi}$$

$$EF(NO_X)_{HDDV} = 2.901 \frac{g}{mi} \times \left(\frac{2.745\%}{100\%} \right) \times \left[1 - \frac{0\%}{100\%} \right] = \mathbf{0.080} \frac{g}{mi}$$

$$EF(NO_X)_{MC} = 0.750 \frac{g}{mi} \times \left(\frac{1.88\%}{100\%} \right) \times \left[1 - \frac{0\%}{100\%} \right] = \mathbf{0.014} \frac{g}{mi}$$

$$EF(NO_X)_{LDGV(H)} = 0.139 \frac{g}{mi} \times \left(\frac{0.09\%}{100\%} \right) \times \left[1 - \frac{75\%}{100\%} \right] = \mathbf{0.00003} \frac{g}{mi}$$

$$EF(NO_X)_{LDGT(H)} = 0.693 \frac{g}{mi} \times \left(\frac{0.09\%}{100\%} \right) \times \left[1 - \frac{75\%}{100\%} \right] = \mathbf{0.0002} \frac{g}{mi}$$

$$EF(NO_X)_{LDGV(V)} = 0.139 \frac{g}{mi} \times \left(\frac{2.14\%}{100\%} \right) \times \left[1 - \frac{100\%}{100\%} \right] = \mathbf{0.00} \frac{g}{mi}$$

$$EF(NO_X)_{LDGT(V)} = 0.693 \frac{g}{mi} \times \left(\frac{1.32\%}{100\%} \right) \times \left[1 - \frac{100\%}{100\%} \right] = \mathbf{0.00} \frac{g}{mi}$$

Next, sum these values for a total composite emission factor ($EF(Pol)_{Total}$) as shown:

$$EF(Pol)_{Total} = \sum_{i=1}^n EF(Pol)_i$$

$$EF(NO_X)_{Total} = (0.0570 + 0.0011 + 0.322 + 0.0016 + 0.014 + 0.080 + 0.014 + 0.00003 + 0.0002 + 0.00 + 0.00) \frac{g}{mi} = \mathbf{0.490} \frac{g}{mi}$$

Finally, using the total vehicle miles traveled (VMT_{Total}) from Step 2, and the total composite EF, the total NO_X emissions are calculated using Equation 5-8 as shown:

$$E(Pol)_{Total} = VMT_{Total} \times EF(Pol)_{Total} \times 0.002205$$

$$E(NO_X)_{Total} = 2,220,000 \frac{mi}{yr} \times 0.490 \frac{g}{mi} \times 0.002205 \frac{lb}{g}$$

$$E(NO_X)_{Total} = 2,398.60 \frac{lb}{yr}$$

5.5.5 Problem 5 – Calculating Fugitive PM Emissions

Determine the fugitive PM₁₀ generated from the POVs and GOVs provided in Problem 1 given that the base is in central Alabama. It can be assumed that 100% of all miles traveled by POVs are on paved roads, whereas GOVs traveled 90% on paved roads and 10% on unpaved roads.

Step 1 – Gather fleet data. Calculation of fugitive PM₁₀ emissions from on-road vehicle operation requires that the total vehicle miles driven (VMT_{Total}) for POVs and GOVs is known. These values have been calculated in Step 1 of Problem 1: **VMT_{Total-POV} = 1,925,586** and **VMT_{Total-GOV} = 173,394 miles/year**.

Step 2 – Select emission factors. Fugitive PM₁₀ EFs are provided in Table 5-8. For POVs, the EFs for paved and unpaved roads are **0.058** and **466.206 g/mi**, respectively. Similarly, for GOVs, the EFs for paved and unpaved roads are **0.069** and **505.981 g/mi**, respectively.

Once selected, the EFs must be corrected to account for precipitation at the base. It is given that the base is in central Alabama. Based on this information, a review of Figure 5-1 reveals that the base is estimated to have 110 days in the year with precipitation of 0.01 inches or more. The EFs are corrected using this value and Equation 5-1 or Equation 5-2.

For POVs:

$$EF(Pol)_{CP} = EF(Pol)_P \times \left(1 - \frac{P}{4N}\right)$$

$$EF(PM_{10})_{CP} = 0.058 \frac{g}{mi} \times \left(1 - \frac{110}{4 \times 365}\right)$$

$$EF(PM_{10})_{CP} = 0.058 \frac{g}{mi} \times \left(1 - \frac{110}{1460}\right) = \mathbf{0.054 \frac{g}{mi}}$$

For GOVs:

$$EF(PM_{10})_{CP} = 0.069 \frac{g}{mi} \times \left(1 - \frac{110}{4 \times 365}\right)$$

$$EF(PM_{10})_{CP} = 0.069 \frac{g}{mi} \times \left(1 - \frac{110}{1460}\right) = \mathbf{0.064 \frac{g}{mi}}$$

$$EF(Pol)_{CU} = EF(Pol)_U \times \left(1 - \frac{P}{N}\right)$$

$$EF(PM_{10})_{CU} = 505.981 \frac{g}{mi} \times \left(1 - \frac{110}{365}\right) = \mathbf{353.494 \frac{g}{mi}}$$

Step 3 – Calculate emissions. Using the VMT_{Total} for POVs and GOVs as recorded in Step 1, the estimated percentage of driving on paved and unpaved roads (as given in the problem statement), and Equation 5-17, emissions are calculated as follows:

$$E(Pol)_{Total} = VMT_{Total} \times \left[\left(\frac{\%VMT_P}{100} \times EF(Pol)_{CP} \right) + \left(\frac{\%VMT_U}{100} \times EF(Pol)_{CU} \right) \right] \times 0.002205$$

For POVs:

$$E(PM_{10})_{Total} = 1,925,586 \frac{mi}{yr} \times \left[\left(\frac{100\%}{100\%} \times 0.054 \frac{g}{mi} \right) + (0) \right] \times 0.002205 \frac{lb}{g}$$

$$E(PM_{10})_{Total} = 1,925,586 \frac{mi}{yr} \times \left[\left(1 \times 0.054 \frac{g}{mi} \right) \right] \times 0.002205 \frac{lb}{g}$$

$$\boxed{E(PM_{10})_{Total} = \mathbf{229.28 \frac{lb}{yr}}}$$

For GOVs:

$$E(PM_{10})_{Total} = 173,394 \frac{mi}{yr} \times \left[\left(\frac{90\%}{100\%} \times 0.064 \frac{g}{mi} \right) + \left(\frac{10\%}{100\%} \times 353.494 \frac{g}{mi} \right) \right] \times 0.002205 \frac{lb}{g}$$

$$E(PM_{10})_{Total} = 173,394 \frac{mi}{yr} \times \left[\left(0.9 \times 0.064 \frac{g}{mi} \right) + \left(0.1 \times 353.494 \frac{g}{mi} \right) \right] \times 0.002205 \frac{lb}{g}$$

$$E(PM_{10})_{Total} = 173,394 \frac{mi}{yr} \times \left[\left(0.0576 \frac{g}{mi} \right) + \left(35.3494 \frac{g}{mi} \right) \right] \times 0.002205 \frac{lb}{g}$$

$$E(PM_{10})_{Total} = 173,394 \frac{mi}{yr} \times \left[35.407 \frac{g}{mi} \right] \times 0.002205 \frac{lb}{g}$$

$$\boxed{E(PM_{10})_{Total} = 13,537.29 \frac{lb}{yr}}$$

Table 5-9. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2025 POV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	4.470	0.332	0.258	0.003	0.028	0.011	0.048
ALASKA	All Vehicles	5.883	0.331	0.268	0.001	0.028	0.012	0.047
ARIZONA	All Vehicles	4.120	0.336	0.261	0.002	0.027	0.010	0.048
ARKANSAS	All Vehicles	4.393	0.320	0.257	0.003	0.026	0.010	0.047
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	3.993	0.308	0.267	0.003	0.028	0.011	0.047
CONNECTICUT	All Vehicles	3.718	0.291	0.247	0.003	0.028	0.011	0.048
DELAWARE	All Vehicles	3.780	0.296	0.250	0.003	0.029	0.011	0.048
DISTRICT OF COLUMBIA	All Vehicles	3.818	0.301	0.248	0.003	0.034	0.012	0.050
FLORIDA	All Vehicles	4.799	0.354	0.246	0.003	0.030	0.011	0.049
GEORGIA	All Vehicles	4.211	0.324	0.256	0.003	0.029	0.011	0.048
HAWAII	All Vehicles	4.650	0.339	0.243	0.003	0.030	0.011	0.048
IDAHO	All Vehicles	4.331	0.315	0.283	0.003	0.027	0.011	0.047
ILLINOIS	All Vehicles	4.161	0.311	0.260	0.003	0.030	0.012	0.048
INDIANA	All Vehicles	4.328	0.315	0.265	0.003	0.030	0.012	0.048
IOWA	All Vehicles	4.387	0.315	0.269	0.003	0.027	0.011	0.047
KANSAS	All Vehicles	4.392	0.317	0.266	0.003	0.026	0.010	0.047
KENTUCKY	All Vehicles	4.361	0.313	0.262	0.003	0.026	0.010	0.047
LOUISIANA	All Vehicles	4.490	0.334	0.248	0.003	0.026	0.010	0.047
MAINE	All Vehicles	4.176	0.302	0.273	0.003	0.026	0.011	0.046
MARYLAND	All Vehicles	3.785	0.297	0.254	0.003	0.028	0.011	0.048
MASSACHUSETTS	All Vehicles	3.811	0.299	0.257	0.003	0.031	0.012	0.049
MICHIGAN	All Vehicles	4.372	0.314	0.271	0.002	0.030	0.012	0.048
MINNESOTA	All Vehicles	4.427	0.321	0.277	0.003	0.028	0.012	0.047
MISSISSIPPI	All Vehicles	4.431	0.327	0.254	0.003	0.025	0.010	0.047
MISSOURI	All Vehicles	4.206	0.309	0.257	0.003	0.026	0.010	0.047
MONTANA	All Vehicles	4.353	0.313	0.284	0.003	0.026	0.011	0.046

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	4.405	0.317	0.271	0.003	0.026	0.011	0.046
NEVADA	All Vehicles	4.013	0.304	0.273	0.002	0.029	0.011	0.048
NEW HAMPSHIRE	All Vehicles	3.794	0.294	0.256	0.003	0.027	0.011	0.047
NEW JERSEY	All Vehicles	3.688	0.282	0.247	0.003	0.022	0.009	0.046
NEW MEXICO	All Vehicles	4.144	0.328	0.275	0.003	0.025	0.010	0.047
NEW YORK	All Vehicles	3.827	0.295	0.260	0.003	0.029	0.011	0.048
NORTH CAROLINA	All Vehicles	4.089	0.315	0.258	0.003	0.028	0.011	0.048
NORTH DAKOTA	All Vehicles	4.528	0.328	0.281	0.003	0.028	0.012	0.046
OHIO	All Vehicles	4.218	0.310	0.262	0.003	0.029	0.011	0.048
OKLAHOMA	All Vehicles	4.399	0.323	0.260	0.003	0.025	0.010	0.047
OREGON	All Vehicles	3.903	0.284	0.263	0.003	0.027	0.011	0.047
PACIFIC ISLANDS	All Vehicles	4.047	0.303	0.256	0.003	0.027	0.011	0.047
PENNSYLVANIA	All Vehicles	3.950	0.298	0.258	0.003	0.028	0.011	0.048
PUERTO RICO	All Vehicles	5.022	0.362	0.232	0.003	0.028	0.010	0.048
RHODE ISLAND	All Vehicles	3.695	0.291	0.246	0.003	0.029	0.011	0.048
SOUTH CAROLINA	All Vehicles	4.435	0.327	0.259	0.003	0.026	0.010	0.047
SOUTH DAKOTA	All Vehicles	4.429	0.318	0.279	0.003	0.025	0.011	0.046
TENNESSEE	All Vehicles	4.417	0.324	0.263	0.003	0.028	0.011	0.048
TEXAS	All Vehicles	4.193	0.319	0.244	0.003	0.026	0.010	0.047
UTAH	All Vehicles	4.034	0.311	0.271	0.003	0.028	0.011	0.047
VERMONT	All Vehicles	3.881	0.295	0.260	0.003	0.025	0.011	0.046
VIRGIN ISLANDS	All Vehicles	5.006	0.348	0.222	0.003	0.024	0.009	0.046
VIRGINIA	All Vehicles	4.151	0.308	0.260	0.003	0.027	0.010	0.047
WASHINGTON	All Vehicles	4.152	0.300	0.275	0.003	0.027	0.011	0.047
WEST VIRGINIA	All Vehicles	4.258	0.311	0.265	0.003	0.026	0.010	0.047
WISCONSIN	All Vehicles	4.247	0.311	0.270	0.003	0.027	0.012	0.047
WYOMING	All Vehicles	4.394	0.319	0.287	0.003	0.025	0.011	0.046

Table 5-10. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2026 POV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	4.158	0.318	0.233	0.003	0.027	0.010	0.046
ALASKA	All Vehicles	5.445	0.315	0.244	0.001	0.027	0.011	0.045
ARIZONA	All Vehicles	3.843	0.323	0.236	0.002	0.026	0.010	0.046
ARKANSAS	All Vehicles	4.089	0.306	0.232	0.003	0.025	0.010	0.045
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	3.714	0.295	0.242	0.002	0.027	0.011	0.046
CONNECTICUT	All Vehicles	3.432	0.278	0.225	0.003	0.028	0.011	0.046
DELAWARE	All Vehicles	3.498	0.283	0.226	0.003	0.028	0.011	0.047
DISTRICT OF COLUMBIA	All Vehicles	3.549	0.289	0.226	0.003	0.033	0.012	0.048
FLORIDA	All Vehicles	4.468	0.339	0.222	0.003	0.029	0.011	0.047
GEORGIA	All Vehicles	3.908	0.310	0.231	0.003	0.028	0.011	0.047
HAWAII	All Vehicles	4.330	0.325	0.220	0.003	0.029	0.010	0.047
IDAHO	All Vehicles	4.027	0.301	0.256	0.003	0.026	0.011	0.045
ILLINOIS	All Vehicles	3.851	0.297	0.236	0.003	0.029	0.012	0.046
INDIANA	All Vehicles	4.023	0.301	0.240	0.003	0.029	0.011	0.046
IOWA	All Vehicles	4.082	0.301	0.243	0.003	0.026	0.011	0.045
KANSAS	All Vehicles	4.088	0.304	0.240	0.003	0.025	0.010	0.045
KENTUCKY	All Vehicles	4.059	0.299	0.237	0.002	0.025	0.010	0.045
LOUISIANA	All Vehicles	4.183	0.320	0.224	0.003	0.026	0.010	0.046
MAINE	All Vehicles	3.880	0.289	0.247	0.003	0.025	0.011	0.045
MARYLAND	All Vehicles	3.509	0.284	0.230	0.003	0.027	0.011	0.046
MASSACHUSETTS	All Vehicles	3.509	0.285	0.234	0.003	0.030	0.012	0.047
MICHIGAN	All Vehicles	4.065	0.300	0.245	0.002	0.029	0.012	0.046
MINNESOTA	All Vehicles	4.118	0.307	0.251	0.003	0.028	0.012	0.045
MISSISSIPPI	All Vehicles	4.128	0.313	0.229	0.003	0.024	0.009	0.045
MISSOURI	All Vehicles	3.905	0.295	0.233	0.003	0.025	0.010	0.045
MONTANA	All Vehicles	4.051	0.299	0.257	0.003	0.025	0.011	0.045

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	4.101	0.303	0.245	0.003	0.025	0.010	0.045
NEVADA	All Vehicles	3.729	0.292	0.247	0.002	0.028	0.011	0.047
NEW HAMPSHIRE	All Vehicles	3.505	0.280	0.232	0.003	0.026	0.011	0.045
NEW JERSEY	All Vehicles	3.430	0.271	0.223	0.003	0.022	0.009	0.044
NEW MEXICO	All Vehicles	3.856	0.314	0.248	0.003	0.024	0.010	0.045
NEW YORK	All Vehicles	3.538	0.282	0.236	0.003	0.028	0.011	0.046
NORTH CAROLINA	All Vehicles	3.793	0.301	0.233	0.003	0.027	0.010	0.046
NORTH DAKOTA	All Vehicles	4.219	0.314	0.255	0.003	0.027	0.012	0.045
OHIO	All Vehicles	3.917	0.296	0.238	0.002	0.028	0.011	0.046
OKLAHOMA	All Vehicles	4.096	0.309	0.235	0.003	0.025	0.010	0.045
OREGON	All Vehicles	3.616	0.272	0.238	0.003	0.026	0.010	0.046
PACIFIC ISLANDS	All Vehicles	3.758	0.290	0.231	0.003	0.026	0.010	0.046
PENNSYLVANIA	All Vehicles	3.648	0.284	0.233	0.003	0.027	0.011	0.046
PUERTO RICO	All Vehicles	4.683	0.346	0.210	0.003	0.027	0.010	0.047
RHODE ISLAND	All Vehicles	3.440	0.279	0.224	0.003	0.029	0.011	0.047
SOUTH CAROLINA	All Vehicles	4.129	0.313	0.234	0.003	0.026	0.010	0.046
SOUTH DAKOTA	All Vehicles	4.128	0.304	0.252	0.003	0.024	0.011	0.044
TENNESSEE	All Vehicles	4.107	0.310	0.238	0.003	0.027	0.011	0.046
TEXAS	All Vehicles	3.896	0.305	0.220	0.003	0.026	0.010	0.046
UTAH	All Vehicles	3.746	0.298	0.245	0.003	0.027	0.011	0.046
VERMONT	All Vehicles	3.594	0.282	0.235	0.003	0.025	0.011	0.045
VIRGIN ISLANDS	All Vehicles	4.677	0.333	0.201	0.003	0.023	0.009	0.044
VIRGINIA	All Vehicles	3.860	0.295	0.236	0.003	0.026	0.010	0.046
WASHINGTON	All Vehicles	3.854	0.286	0.249	0.003	0.027	0.010	0.046
WEST VIRGINIA	All Vehicles	3.961	0.297	0.240	0.003	0.025	0.010	0.045
WISCONSIN	All Vehicles	3.945	0.297	0.245	0.003	0.026	0.011	0.045
WYOMING	All Vehicles	4.092	0.305	0.259	0.003	0.024	0.011	0.044

Table 5-11. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2027 POV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	3.980	0.309	0.211	0.003	0.026	0.010	0.045
ALASKA	All Vehicles	5.208	0.305	0.222	0.001	0.027	0.011	0.044
ARIZONA	All Vehicles	3.679	0.314	0.213	0.002	0.026	0.010	0.045
ARKANSAS	All Vehicles	3.914	0.298	0.210	0.003	0.024	0.009	0.044
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	3.556	0.288	0.220	0.002	0.027	0.011	0.044
CONNECTICUT	All Vehicles	3.248	0.268	0.202	0.003	0.027	0.010	0.045
DELAWARE	All Vehicles	3.343	0.275	0.206	0.003	0.027	0.010	0.045
DISTRICT OF COLUMBIA	All Vehicles	3.394	0.282	0.206	0.003	0.032	0.012	0.047
FLORIDA	All Vehicles	4.275	0.329	0.202	0.003	0.028	0.010	0.046
GEORGIA	All Vehicles	3.740	0.301	0.210	0.003	0.027	0.010	0.045
HAWAII	All Vehicles	4.144	0.315	0.199	0.002	0.028	0.010	0.045
IDAHO	All Vehicles	3.856	0.293	0.233	0.003	0.026	0.010	0.044
ILLINOIS	All Vehicles	3.683	0.289	0.214	0.003	0.028	0.011	0.045
INDIANA	All Vehicles	3.852	0.293	0.218	0.002	0.028	0.011	0.045
IOWA	All Vehicles	3.910	0.293	0.221	0.003	0.025	0.010	0.044
KANSAS	All Vehicles	3.915	0.295	0.218	0.003	0.024	0.010	0.044
KENTUCKY	All Vehicles	3.887	0.291	0.215	0.002	0.024	0.010	0.044
LOUISIANA	All Vehicles	4.003	0.311	0.203	0.003	0.025	0.009	0.044
MAINE	All Vehicles	3.717	0.281	0.225	0.003	0.024	0.010	0.043
MARYLAND	All Vehicles	3.357	0.276	0.209	0.003	0.026	0.010	0.045
MASSACHUSETTS	All Vehicles	3.353	0.277	0.213	0.003	0.029	0.011	0.046
MICHIGAN	All Vehicles	3.894	0.292	0.223	0.002	0.028	0.012	0.045
MINNESOTA	All Vehicles	3.946	0.298	0.228	0.003	0.027	0.012	0.044
MISSISSIPPI	All Vehicles	3.951	0.304	0.208	0.003	0.024	0.009	0.044
MISSOURI	All Vehicles	3.737	0.287	0.211	0.003	0.024	0.010	0.044
MONTANA	All Vehicles	3.881	0.291	0.234	0.003	0.025	0.010	0.043

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	3.927	0.295	0.223	0.003	0.025	0.010	0.043
NEVADA	All Vehicles	3.568	0.285	0.224	0.002	0.028	0.010	0.045
NEW HAMPSHIRE	All Vehicles	3.353	0.273	0.211	0.003	0.025	0.010	0.044
NEW JERSEY	All Vehicles	3.283	0.264	0.203	0.003	0.021	0.009	0.043
NEW MEXICO	All Vehicles	3.691	0.306	0.225	0.003	0.024	0.009	0.044
NEW YORK	All Vehicles	3.388	0.274	0.215	0.003	0.027	0.011	0.045
NORTH CAROLINA	All Vehicles	3.632	0.293	0.212	0.003	0.026	0.010	0.045
NORTH DAKOTA	All Vehicles	4.045	0.305	0.232	0.003	0.027	0.012	0.043
OHIO	All Vehicles	3.742	0.287	0.215	0.002	0.027	0.011	0.044
OKLAHOMA	All Vehicles	3.921	0.301	0.213	0.003	0.024	0.009	0.044
OREGON	All Vehicles	3.459	0.265	0.216	0.002	0.026	0.010	0.044
PACIFIC ISLANDS	All Vehicles	3.595	0.282	0.210	0.003	0.026	0.010	0.044
PENNSYLVANIA	All Vehicles	3.492	0.276	0.212	0.003	0.026	0.011	0.044
PUERTO RICO	All Vehicles	4.481	0.336	0.190	0.003	0.026	0.010	0.045
RHODE ISLAND	All Vehicles	3.294	0.272	0.204	0.003	0.028	0.011	0.045
SOUTH CAROLINA	All Vehicles	3.952	0.304	0.212	0.003	0.025	0.010	0.044
SOUTH DAKOTA	All Vehicles	3.956	0.296	0.229	0.003	0.024	0.010	0.043
TENNESSEE	All Vehicles	3.932	0.301	0.216	0.003	0.027	0.010	0.045
TEXAS	All Vehicles	3.713	0.295	0.199	0.003	0.025	0.009	0.044
UTAH	All Vehicles	3.585	0.290	0.223	0.003	0.027	0.011	0.044
VERMONT	All Vehicles	3.440	0.274	0.214	0.003	0.024	0.010	0.043
VIRGIN ISLANDS	All Vehicles	4.475	0.323	0.182	0.003	0.023	0.009	0.043
VIRGINIA	All Vehicles	3.695	0.287	0.214	0.003	0.025	0.010	0.044
WASHINGTON	All Vehicles	3.689	0.279	0.226	0.003	0.026	0.010	0.044
WEST VIRGINIA	All Vehicles	3.793	0.289	0.218	0.003	0.024	0.010	0.044
WISCONSIN	All Vehicles	3.778	0.289	0.223	0.003	0.025	0.011	0.044
WYOMING	All Vehicles	3.921	0.297	0.236	0.003	0.024	0.010	0.043

Table 5-12. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2028 POV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	3.810	0.301	0.193	0.003	0.026	0.010	0.043
ALASKA	All Vehicles	4.988	0.298	0.204	0.001	0.026	0.011	0.043
ARIZONA	All Vehicles	3.524	0.306	0.195	0.002	0.025	0.009	0.043
ARKANSAS	All Vehicles	3.748	0.291	0.192	0.003	0.024	0.009	0.042
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	3.407	0.281	0.202	0.002	0.026	0.010	0.043
CONNECTICUT	All Vehicles	3.112	0.262	0.185	0.003	0.026	0.010	0.043
DELAWARE	All Vehicles	3.200	0.269	0.188	0.003	0.027	0.010	0.044
DISTRICT OF COLUMBIA	All Vehicles	3.251	0.275	0.189	0.003	0.031	0.012	0.045
FLORIDA	All Vehicles	4.091	0.320	0.184	0.003	0.028	0.010	0.044
GEORGIA	All Vehicles	3.582	0.293	0.192	0.003	0.026	0.010	0.044
HAWAII	All Vehicles	3.966	0.307	0.182	0.002	0.028	0.010	0.044
IDAHO	All Vehicles	3.695	0.285	0.213	0.003	0.025	0.010	0.042
ILLINOIS	All Vehicles	3.526	0.282	0.196	0.002	0.027	0.011	0.043
INDIANA	All Vehicles	3.690	0.286	0.200	0.002	0.027	0.011	0.043
IOWA	All Vehicles	3.747	0.285	0.202	0.002	0.025	0.010	0.042
KANSAS	All Vehicles	3.750	0.288	0.199	0.002	0.024	0.009	0.042
KENTUCKY	All Vehicles	3.723	0.284	0.196	0.002	0.024	0.010	0.042
LOUISIANA	All Vehicles	3.832	0.303	0.185	0.003	0.024	0.009	0.043
MAINE	All Vehicles	3.562	0.274	0.206	0.003	0.024	0.010	0.042
MARYLAND	All Vehicles	3.215	0.270	0.191	0.003	0.026	0.010	0.043
MASSACHUSETTS	All Vehicles	3.208	0.270	0.195	0.003	0.029	0.011	0.044
MICHIGAN	All Vehicles	3.732	0.284	0.204	0.002	0.027	0.011	0.043
MINNESOTA	All Vehicles	3.783	0.291	0.209	0.003	0.026	0.011	0.043
MISSISSIPPI	All Vehicles	3.783	0.297	0.190	0.003	0.023	0.009	0.042
MISSOURI	All Vehicles	3.578	0.280	0.193	0.002	0.024	0.009	0.042
MONTANA	All Vehicles	3.721	0.284	0.214	0.003	0.024	0.010	0.042

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	3.763	0.287	0.204	0.002	0.024	0.010	0.042
NEVADA	All Vehicles	3.418	0.278	0.205	0.002	0.027	0.010	0.044
NEW HAMPSHIRE	All Vehicles	3.211	0.266	0.193	0.003	0.025	0.010	0.043
NEW JERSEY	All Vehicles	3.145	0.258	0.185	0.003	0.021	0.008	0.041
NEW MEXICO	All Vehicles	3.535	0.298	0.205	0.002	0.023	0.009	0.042
NEW YORK	All Vehicles	3.249	0.268	0.197	0.003	0.027	0.010	0.043
NORTH CAROLINA	All Vehicles	3.480	0.286	0.193	0.003	0.025	0.010	0.043
NORTH DAKOTA	All Vehicles	3.880	0.298	0.212	0.003	0.026	0.012	0.042
OHIO	All Vehicles	3.586	0.280	0.197	0.002	0.026	0.011	0.043
OKLAHOMA	All Vehicles	3.755	0.293	0.194	0.003	0.023	0.009	0.042
OREGON	All Vehicles	3.312	0.259	0.198	0.002	0.025	0.010	0.043
PACIFIC ISLANDS	All Vehicles	3.443	0.275	0.192	0.003	0.025	0.010	0.043
PENNSYLVANIA	All Vehicles	3.345	0.269	0.193	0.003	0.026	0.010	0.043
PUERTO RICO	All Vehicles	4.289	0.327	0.173	0.003	0.026	0.009	0.044
RHODE ISLAND	All Vehicles	3.157	0.266	0.187	0.003	0.027	0.010	0.044
SOUTH CAROLINA	All Vehicles	3.784	0.296	0.194	0.003	0.024	0.009	0.043
SOUTH DAKOTA	All Vehicles	3.793	0.289	0.209	0.003	0.023	0.010	0.041
TENNESSEE	All Vehicles	3.765	0.294	0.197	0.003	0.026	0.010	0.043
TEXAS	All Vehicles	3.555	0.287	0.181	0.003	0.024	0.009	0.043
UTAH	All Vehicles	3.435	0.283	0.204	0.002	0.026	0.010	0.043
VERMONT	All Vehicles	3.296	0.268	0.196	0.003	0.024	0.010	0.042
VIRGIN ISLANDS	All Vehicles	4.284	0.314	0.166	0.003	0.022	0.008	0.042
VIRGINIA	All Vehicles	3.539	0.280	0.195	0.003	0.025	0.010	0.043
WASHINGTON	All Vehicles	3.533	0.272	0.207	0.003	0.025	0.010	0.043
WEST VIRGINIA	All Vehicles	3.633	0.282	0.199	0.003	0.024	0.010	0.042
WISCONSIN	All Vehicles	3.620	0.282	0.204	0.003	0.025	0.011	0.042
WYOMING	All Vehicles	3.759	0.289	0.215	0.003	0.023	0.010	0.042

Table 5-13. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2029 POV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	3.667	0.294	0.177	0.003	0.025	0.009	0.043
ALASKA	All Vehicles	4.806	0.290	0.189	0.001	0.025	0.011	0.042
ARIZONA	All Vehicles	3.393	0.299	0.179	0.002	0.025	0.009	0.043
ARKANSAS	All Vehicles	3.608	0.284	0.176	0.002	0.023	0.009	0.042
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	3.284	0.275	0.186	0.002	0.025	0.010	0.042
CONNECTICUT	All Vehicles	2.999	0.256	0.170	0.003	0.026	0.010	0.043
DELAWARE	All Vehicles	3.081	0.263	0.173	0.003	0.026	0.010	0.043
DISTRICT OF COLUMBIA	All Vehicles	3.130	0.269	0.174	0.003	0.031	0.011	0.045
FLORIDA	All Vehicles	3.937	0.312	0.169	0.003	0.027	0.010	0.044
GEORGIA	All Vehicles	3.449	0.286	0.176	0.003	0.026	0.010	0.043
HAWAII	All Vehicles	3.816	0.300	0.167	0.002	0.027	0.010	0.043
IDAHO	All Vehicles	3.560	0.279	0.196	0.003	0.025	0.010	0.042
ILLINOIS	All Vehicles	3.395	0.275	0.181	0.002	0.027	0.011	0.043
INDIANA	All Vehicles	3.555	0.279	0.184	0.002	0.027	0.011	0.043
IOWA	All Vehicles	3.611	0.279	0.186	0.002	0.024	0.010	0.042
KANSAS	All Vehicles	3.612	0.281	0.183	0.002	0.023	0.009	0.041
KENTUCKY	All Vehicles	3.586	0.277	0.180	0.002	0.023	0.009	0.042
LOUISIANA	All Vehicles	3.689	0.296	0.170	0.003	0.024	0.009	0.042
MAINE	All Vehicles	3.434	0.268	0.190	0.003	0.023	0.010	0.041
MARYLAND	All Vehicles	3.096	0.264	0.175	0.003	0.025	0.010	0.043
MASSACHUSETTS	All Vehicles	3.088	0.264	0.180	0.003	0.028	0.011	0.043
MICHIGAN	All Vehicles	3.597	0.278	0.188	0.002	0.027	0.011	0.042
MINNESOTA	All Vehicles	3.647	0.284	0.192	0.003	0.026	0.011	0.042
MISSISSIPPI	All Vehicles	3.642	0.290	0.174	0.003	0.023	0.009	0.042
MISSOURI	All Vehicles	3.445	0.274	0.177	0.002	0.023	0.009	0.042
MONTANA	All Vehicles	3.586	0.278	0.197	0.002	0.024	0.010	0.041

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	3.626	0.281	0.187	0.002	0.024	0.010	0.041
NEVADA	All Vehicles	3.291	0.272	0.188	0.002	0.026	0.010	0.043
NEW HAMPSHIRE	All Vehicles	3.093	0.260	0.178	0.003	0.024	0.010	0.042
NEW JERSEY	All Vehicles	3.030	0.252	0.170	0.002	0.020	0.008	0.041
NEW MEXICO	All Vehicles	3.404	0.292	0.188	0.002	0.023	0.009	0.042
NEW YORK	All Vehicles	3.133	0.261	0.182	0.003	0.026	0.010	0.043
NORTH CAROLINA	All Vehicles	3.351	0.279	0.178	0.003	0.025	0.010	0.042
NORTH DAKOTA	All Vehicles	3.742	0.291	0.196	0.003	0.025	0.011	0.041
OHIO	All Vehicles	3.454	0.274	0.181	0.002	0.026	0.010	0.042
OKLAHOMA	All Vehicles	3.615	0.286	0.178	0.002	0.023	0.009	0.042
OREGON	All Vehicles	3.189	0.253	0.182	0.002	0.025	0.010	0.042
PACIFIC ISLANDS	All Vehicles	3.315	0.269	0.176	0.003	0.025	0.009	0.042
PENNSYLVANIA	All Vehicles	3.222	0.263	0.178	0.003	0.025	0.010	0.042
PUERTO RICO	All Vehicles	4.127	0.319	0.159	0.003	0.025	0.009	0.043
RHODE ISLAND	All Vehicles	3.042	0.260	0.173	0.003	0.027	0.010	0.043
SOUTH CAROLINA	All Vehicles	3.643	0.290	0.178	0.003	0.024	0.009	0.042
SOUTH DAKOTA	All Vehicles	3.657	0.282	0.193	0.003	0.023	0.010	0.041
TENNESSEE	All Vehicles	3.625	0.287	0.181	0.003	0.025	0.010	0.043
TEXAS	All Vehicles	3.423	0.280	0.166	0.003	0.024	0.009	0.042
UTAH	All Vehicles	3.309	0.276	0.188	0.002	0.026	0.010	0.042
VERMONT	All Vehicles	3.176	0.262	0.181	0.003	0.023	0.010	0.041
VIRGIN ISLANDS	All Vehicles	4.122	0.306	0.152	0.003	0.022	0.008	0.041
VIRGINIA	All Vehicles	3.408	0.273	0.180	0.003	0.024	0.009	0.042
WASHINGTON	All Vehicles	3.403	0.266	0.190	0.003	0.025	0.010	0.042
WEST VIRGINIA	All Vehicles	3.500	0.275	0.183	0.003	0.023	0.009	0.042
WISCONSIN	All Vehicles	3.488	0.275	0.188	0.003	0.024	0.010	0.041
WYOMING	All Vehicles	3.625	0.283	0.198	0.002	0.023	0.010	0.041

Table 5-14. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2025 GOV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	4.254	0.264	0.783	0.003	0.057	0.026	0.047
ALASKA	All Vehicles	5.086	0.285	0.828	0.002	0.055	0.026	0.046
ARIZONA	All Vehicles	4.067	0.261	0.837	0.003	0.056	0.026	0.047
ARKANSAS	All Vehicles	4.166	0.254	0.773	0.003	0.052	0.024	0.046
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	3.858	0.255	0.824	0.003	0.056	0.026	0.046
CONNECTICUT	All Vehicles	3.721	0.252	0.803	0.003	0.058	0.027	0.047
DELAWARE	All Vehicles	3.771	0.251	0.801	0.003	0.059	0.027	0.047
DISTRICT OF COLUMBIA	All Vehicles	3.877	0.265	0.859	0.003	0.072	0.032	0.048
FLORIDA	All Vehicles	4.599	0.280	0.781	0.004	0.062	0.028	0.048
GEORGIA	All Vehicles	4.108	0.263	0.795	0.003	0.059	0.027	0.047
HAWAII	All Vehicles	4.446	0.271	0.771	0.003	0.063	0.028	0.047
IDAHO	All Vehicles	4.050	0.257	0.828	0.003	0.054	0.025	0.046
ILLINOIS	All Vehicles	4.006	0.263	0.814	0.003	0.058	0.027	0.047
INDIANA	All Vehicles	4.096	0.263	0.813	0.003	0.058	0.027	0.047
IOWA	All Vehicles	4.083	0.257	0.794	0.003	0.052	0.025	0.046
KANSAS	All Vehicles	4.137	0.255	0.792	0.003	0.052	0.024	0.046
KENTUCKY	All Vehicles	4.111	0.252	0.785	0.003	0.051	0.024	0.046
LOUISIANA	All Vehicles	4.307	0.262	0.762	0.003	0.054	0.025	0.047
MAINE	All Vehicles	3.893	0.250	0.793	0.003	0.051	0.024	0.046
MARYLAND	All Vehicles	3.770	0.252	0.799	0.003	0.057	0.026	0.047
MASSACHUSETTS	All Vehicles	3.811	0.263	0.836	0.003	0.064	0.029	0.047
MICHIGAN	All Vehicles	4.107	0.265	0.819	0.003	0.058	0.027	0.047
MINNESOTA	All Vehicles	4.093	0.267	0.811	0.003	0.055	0.026	0.046
MISSISSIPPI	All Vehicles	4.196	0.254	0.756	0.003	0.051	0.024	0.046
MISSOURI	All Vehicles	4.022	0.251	0.782	0.003	0.051	0.024	0.046
MONTANA	All Vehicles	4.026	0.255	0.820	0.003	0.051	0.025	0.046

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	4.114	0.256	0.801	0.003	0.052	0.025	0.046
NEVADA	All Vehicles	3.971	0.245	0.862	0.003	0.059	0.027	0.047
NEW HAMPSHIRE	All Vehicles	3.714	0.249	0.795	0.003	0.053	0.025	0.046
NEW JERSEY	All Vehicles	3.611	0.228	0.764	0.003	0.046	0.022	0.046
NEW MEXICO	All Vehicles	3.951	0.254	0.816	0.003	0.051	0.024	0.046
NEW YORK	All Vehicles	3.785	0.255	0.814	0.003	0.058	0.027	0.047
NORTH CAROLINA	All Vehicles	3.988	0.256	0.790	0.003	0.056	0.026	0.047
NORTH DAKOTA	All Vehicles	4.111	0.267	0.812	0.003	0.052	0.025	0.046
OHIO	All Vehicles	4.018	0.260	0.804	0.003	0.057	0.027	0.047
OKLAHOMA	All Vehicles	4.166	0.255	0.777	0.003	0.052	0.024	0.046
OREGON	All Vehicles	3.784	0.239	0.807	0.003	0.055	0.026	0.047
PACIFIC ISLANDS	All Vehicles	3.931	0.249	0.793	0.003	0.055	0.026	0.047
PENNSYLVANIA	All Vehicles	3.847	0.251	0.801	0.003	0.055	0.026	0.047
PUERTO RICO	All Vehicles	4.802	0.282	0.740	0.004	0.059	0.027	0.047
RHODE ISLAND	All Vehicles	3.699	0.253	0.812	0.003	0.060	0.028	0.047
SOUTH CAROLINA	All Vehicles	4.215	0.258	0.779	0.003	0.053	0.025	0.047
SOUTH DAKOTA	All Vehicles	4.074	0.255	0.806	0.003	0.048	0.024	0.046
TENNESSEE	All Vehicles	4.204	0.263	0.801	0.003	0.057	0.026	0.047
TEXAS	All Vehicles	4.103	0.253	0.766	0.003	0.054	0.025	0.047
UTAH	All Vehicles	3.912	0.258	0.838	0.003	0.056	0.026	0.047
VERMONT	All Vehicles	3.710	0.245	0.783	0.003	0.050	0.024	0.046
VIRGIN ISLANDS	All Vehicles	4.687	0.261	0.671	0.003	0.051	0.024	0.045
VIRGINIA	All Vehicles	3.998	0.253	0.792	0.003	0.054	0.025	0.047
WASHINGTON	All Vehicles	3.964	0.254	0.821	0.003	0.055	0.026	0.047
WEST VIRGINIA	All Vehicles	4.009	0.252	0.784	0.003	0.051	0.024	0.046
WISCONSIN	All Vehicles	3.960	0.256	0.798	0.003	0.052	0.025	0.046
WYOMING	All Vehicles	4.055	0.256	0.824	0.003	0.049	0.024	0.046

Table 5-15. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2026 GOV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	3.713	0.236	0.717	0.003	0.054	0.024	0.046
ALASKA	All Vehicles	4.479	0.257	0.757	0.002	0.053	0.024	0.045
ARIZONA	All Vehicles	3.548	0.234	0.765	0.002	0.054	0.024	0.046
ARKANSAS	All Vehicles	3.644	0.228	0.705	0.003	0.050	0.023	0.045
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	3.362	0.229	0.754	0.003	0.053	0.024	0.045
CONNECTICUT	All Vehicles	3.207	0.225	0.737	0.003	0.056	0.025	0.046
DELAWARE	All Vehicles	3.258	0.224	0.735	0.003	0.057	0.025	0.046
DISTRICT OF COLUMBIA	All Vehicles	3.351	0.237	0.795	0.003	0.069	0.030	0.047
FLORIDA	All Vehicles	4.013	0.250	0.717	0.003	0.060	0.026	0.047
GEORGIA	All Vehicles	3.568	0.235	0.729	0.003	0.056	0.025	0.046
HAWAII	All Vehicles	3.875	0.241	0.709	0.003	0.060	0.026	0.046
IDAHO	All Vehicles	3.542	0.231	0.756	0.003	0.051	0.024	0.045
ILLINOIS	All Vehicles	3.477	0.235	0.745	0.003	0.056	0.025	0.046
INDIANA	All Vehicles	3.573	0.235	0.745	0.003	0.056	0.025	0.046
IOWA	All Vehicles	3.577	0.231	0.724	0.003	0.050	0.023	0.045
KANSAS	All Vehicles	3.624	0.229	0.721	0.003	0.049	0.023	0.045
KENTUCKY	All Vehicles	3.601	0.226	0.715	0.003	0.049	0.022	0.045
LOUISIANA	All Vehicles	3.766	0.234	0.695	0.003	0.052	0.023	0.046
MAINE	All Vehicles	3.404	0.225	0.723	0.003	0.048	0.023	0.045
MARYLAND	All Vehicles	3.264	0.225	0.731	0.003	0.055	0.025	0.046
MASSACHUSETTS	All Vehicles	3.277	0.234	0.770	0.003	0.061	0.027	0.046
MICHIGAN	All Vehicles	3.586	0.238	0.749	0.003	0.055	0.025	0.046
MINNESOTA	All Vehicles	3.587	0.241	0.742	0.003	0.053	0.024	0.045
MISSISSIPPI	All Vehicles	3.674	0.228	0.689	0.003	0.049	0.022	0.045
MISSOURI	All Vehicles	3.511	0.225	0.713	0.003	0.049	0.023	0.045
MONTANA	All Vehicles	3.531	0.229	0.746	0.003	0.048	0.023	0.045

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	3.606	0.230	0.730	0.003	0.049	0.023	0.045
NEVADA	All Vehicles	3.445	0.218	0.789	0.003	0.057	0.025	0.046
NEW HAMPSHIRE	All Vehicles	3.217	0.223	0.726	0.003	0.051	0.024	0.045
NEW JERSEY	All Vehicles	3.153	0.205	0.694	0.003	0.044	0.021	0.045
NEW MEXICO	All Vehicles	3.454	0.228	0.743	0.003	0.048	0.022	0.045
NEW YORK	All Vehicles	3.273	0.228	0.746	0.003	0.056	0.025	0.046
NORTH CAROLINA	All Vehicles	3.465	0.229	0.723	0.003	0.054	0.024	0.046
NORTH DAKOTA	All Vehicles	3.618	0.241	0.740	0.003	0.050	0.024	0.045
OHIO	All Vehicles	3.501	0.232	0.736	0.003	0.054	0.025	0.046
OKLAHOMA	All Vehicles	3.646	0.229	0.708	0.003	0.049	0.022	0.045
OREGON	All Vehicles	3.284	0.213	0.738	0.003	0.052	0.024	0.046
PACIFIC ISLANDS	All Vehicles	3.419	0.222	0.725	0.003	0.053	0.024	0.046
PENNSYLVANIA	All Vehicles	3.330	0.224	0.731	0.003	0.053	0.024	0.046
PUERTO RICO	All Vehicles	4.203	0.252	0.678	0.003	0.056	0.025	0.046
RHODE ISLAND	All Vehicles	3.211	0.226	0.746	0.003	0.057	0.026	0.046
SOUTH CAROLINA	All Vehicles	3.685	0.231	0.711	0.003	0.051	0.023	0.046
SOUTH DAKOTA	All Vehicles	3.588	0.230	0.733	0.003	0.046	0.022	0.045
TENNESSEE	All Vehicles	3.669	0.235	0.733	0.003	0.054	0.024	0.046
TEXAS	All Vehicles	3.570	0.226	0.700	0.003	0.052	0.023	0.046
UTAH	All Vehicles	3.404	0.231	0.766	0.003	0.054	0.024	0.046
VERMONT	All Vehicles	3.229	0.220	0.714	0.003	0.048	0.023	0.045
VIRGIN ISLANDS	All Vehicles	4.124	0.234	0.612	0.003	0.049	0.022	0.044
VIRGINIA	All Vehicles	3.485	0.226	0.723	0.003	0.052	0.023	0.046
WASHINGTON	All Vehicles	3.451	0.227	0.750	0.003	0.053	0.024	0.046
WEST VIRGINIA	All Vehicles	3.507	0.226	0.715	0.003	0.049	0.023	0.045
WISCONSIN	All Vehicles	3.465	0.230	0.728	0.003	0.050	0.023	0.045
WYOMING	All Vehicles	3.563	0.230	0.749	0.003	0.047	0.022	0.045

Table 5-16. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2027 GOV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	3.409	0.216	0.638	0.003	0.052	0.023	0.045
ALASKA	All Vehicles	4.151	0.238	0.675	0.002	0.051	0.023	0.045
ARIZONA	All Vehicles	3.249	0.214	0.680	0.002	0.051	0.022	0.045
ARKANSAS	All Vehicles	3.348	0.210	0.627	0.003	0.048	0.021	0.044
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	3.085	0.211	0.672	0.003	0.051	0.023	0.045
CONNECTICUT	All Vehicles	2.904	0.205	0.656	0.003	0.053	0.023	0.045
DELAWARE	All Vehicles	2.977	0.206	0.656	0.003	0.054	0.024	0.045
DISTRICT OF COLUMBIA	All Vehicles	3.063	0.217	0.715	0.003	0.067	0.028	0.046
FLORIDA	All Vehicles	3.683	0.229	0.640	0.003	0.058	0.024	0.046
GEORGIA	All Vehicles	3.271	0.215	0.650	0.003	0.054	0.023	0.045
HAWAII	All Vehicles	3.557	0.221	0.634	0.003	0.058	0.025	0.045
IDAHO	All Vehicles	3.258	0.213	0.672	0.003	0.049	0.022	0.044
ILLINOIS	All Vehicles	3.189	0.216	0.665	0.003	0.054	0.024	0.045
INDIANA	All Vehicles	3.284	0.217	0.664	0.003	0.054	0.024	0.045
IOWA	All Vehicles	3.292	0.213	0.644	0.003	0.048	0.022	0.044
KANSAS	All Vehicles	3.332	0.211	0.641	0.003	0.047	0.021	0.044
KENTUCKY	All Vehicles	3.310	0.208	0.635	0.003	0.047	0.021	0.044
LOUISIANA	All Vehicles	3.455	0.215	0.618	0.003	0.049	0.021	0.045
MAINE	All Vehicles	3.131	0.208	0.643	0.003	0.046	0.021	0.044
MARYLAND	All Vehicles	2.985	0.206	0.652	0.003	0.052	0.023	0.045
MASSACHUSETTS	All Vehicles	2.996	0.215	0.689	0.003	0.059	0.025	0.046
MICHIGAN	All Vehicles	3.300	0.219	0.668	0.003	0.053	0.024	0.045
MINNESOTA	All Vehicles	3.308	0.223	0.661	0.003	0.051	0.023	0.044
MISSISSIPPI	All Vehicles	3.374	0.210	0.612	0.003	0.047	0.021	0.044
MISSOURI	All Vehicles	3.222	0.207	0.633	0.003	0.047	0.021	0.044
MONTANA	All Vehicles	3.251	0.212	0.663	0.003	0.046	0.021	0.044

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	3.319	0.213	0.649	0.003	0.047	0.021	0.044
NEVADA	All Vehicles	3.151	0.200	0.703	0.003	0.054	0.024	0.045
NEW HAMPSHIRE	All Vehicles	2.946	0.206	0.647	0.003	0.049	0.022	0.044
NEW JERSEY	All Vehicles	2.885	0.188	0.615	0.003	0.042	0.019	0.044
NEW MEXICO	All Vehicles	3.170	0.211	0.660	0.003	0.046	0.021	0.044
NEW YORK	All Vehicles	2.999	0.209	0.666	0.003	0.054	0.023	0.045
NORTH CAROLINA	All Vehicles	3.177	0.210	0.645	0.003	0.052	0.023	0.045
NORTH DAKOTA	All Vehicles	3.342	0.224	0.659	0.003	0.048	0.022	0.044
OHIO	All Vehicles	3.209	0.214	0.656	0.003	0.052	0.023	0.045
OKLAHOMA	All Vehicles	3.350	0.210	0.630	0.003	0.047	0.021	0.044
OREGON	All Vehicles	3.009	0.196	0.657	0.003	0.050	0.022	0.045
PACIFIC ISLANDS	All Vehicles	3.133	0.204	0.645	0.003	0.051	0.022	0.045
PENNSYLVANIA	All Vehicles	3.051	0.205	0.651	0.003	0.051	0.022	0.045
PUERTO RICO	All Vehicles	3.860	0.231	0.604	0.003	0.054	0.023	0.045
RHODE ISLAND	All Vehicles	2.938	0.208	0.666	0.003	0.055	0.024	0.045
SOUTH CAROLINA	All Vehicles	3.384	0.212	0.632	0.003	0.049	0.021	0.045
SOUTH DAKOTA	All Vehicles	3.309	0.213	0.650	0.003	0.044	0.020	0.044
TENNESSEE	All Vehicles	3.370	0.216	0.653	0.003	0.052	0.023	0.045
TEXAS	All Vehicles	3.258	0.206	0.621	0.003	0.050	0.022	0.045
UTAH	All Vehicles	3.122	0.213	0.682	0.003	0.052	0.023	0.045
VERMONT	All Vehicles	2.962	0.203	0.634	0.003	0.046	0.021	0.044
VIRGIN ISLANDS	All Vehicles	3.790	0.215	0.544	0.003	0.047	0.020	0.044
VIRGINIA	All Vehicles	3.197	0.208	0.644	0.003	0.049	0.022	0.045
WASHINGTON	All Vehicles	3.169	0.209	0.668	0.003	0.051	0.022	0.045
WEST VIRGINIA	All Vehicles	3.223	0.208	0.635	0.003	0.047	0.021	0.044
WISCONSIN	All Vehicles	3.190	0.213	0.647	0.003	0.048	0.022	0.044
WYOMING	All Vehicles	3.282	0.213	0.665	0.003	0.045	0.021	0.044

Table 5-17. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2028 GOV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	3.207	0.205	0.576	0.003	0.050	0.021	0.044
ALASKA	All Vehicles	3.924	0.226	0.610	0.002	0.049	0.021	0.044
ARIZONA	All Vehicles	3.055	0.203	0.613	0.002	0.050	0.021	0.044
ARKANSAS	All Vehicles	3.150	0.198	0.565	0.003	0.046	0.020	0.044
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	2.904	0.200	0.607	0.003	0.049	0.021	0.044
CONNECTICUT	All Vehicles	2.732	0.194	0.593	0.003	0.052	0.022	0.044
DELAWARE	All Vehicles	2.797	0.195	0.593	0.003	0.053	0.022	0.044
DISTRICT OF COLUMBIA	All Vehicles	2.881	0.205	0.650	0.003	0.065	0.027	0.045
FLORIDA	All Vehicles	3.465	0.216	0.579	0.003	0.056	0.023	0.045
GEORGIA	All Vehicles	3.078	0.203	0.588	0.003	0.052	0.022	0.044
HAWAII	All Vehicles	3.345	0.208	0.574	0.003	0.056	0.023	0.044
IDAHO	All Vehicles	3.070	0.202	0.606	0.003	0.047	0.020	0.044
ILLINOIS	All Vehicles	3.001	0.205	0.600	0.003	0.052	0.022	0.044
INDIANA	All Vehicles	3.093	0.205	0.600	0.003	0.052	0.022	0.044
IOWA	All Vehicles	3.102	0.202	0.581	0.003	0.046	0.020	0.043
KANSAS	All Vehicles	3.138	0.200	0.577	0.003	0.045	0.020	0.043
KENTUCKY	All Vehicles	3.116	0.197	0.572	0.003	0.045	0.019	0.044
LOUISIANA	All Vehicles	3.250	0.203	0.557	0.003	0.048	0.020	0.044
MAINE	All Vehicles	2.950	0.197	0.580	0.003	0.045	0.020	0.043
MARYLAND	All Vehicles	2.806	0.195	0.589	0.003	0.051	0.021	0.044
MASSACHUSETTS	All Vehicles	2.816	0.204	0.624	0.003	0.057	0.024	0.045
MICHIGAN	All Vehicles	3.110	0.208	0.604	0.003	0.051	0.022	0.044
MINNESOTA	All Vehicles	3.121	0.212	0.597	0.003	0.049	0.021	0.043
MISSISSIPPI	All Vehicles	3.174	0.198	0.552	0.003	0.045	0.019	0.043
MISSOURI	All Vehicles	3.032	0.196	0.570	0.003	0.045	0.020	0.044
MONTANA	All Vehicles	3.065	0.201	0.597	0.003	0.045	0.020	0.043

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	3.128	0.202	0.584	0.003	0.045	0.020	0.043
NEVADA	All Vehicles	2.962	0.189	0.635	0.003	0.053	0.022	0.044
NEW HAMPSHIRE	All Vehicles	2.771	0.195	0.584	0.003	0.047	0.021	0.044
NEW JERSEY	All Vehicles	2.713	0.178	0.552	0.003	0.040	0.018	0.043
NEW MEXICO	All Vehicles	2.983	0.199	0.594	0.003	0.045	0.019	0.043
NEW YORK	All Vehicles	2.826	0.198	0.603	0.003	0.052	0.022	0.044
NORTH CAROLINA	All Vehicles	2.989	0.198	0.582	0.003	0.050	0.021	0.044
NORTH DAKOTA	All Vehicles	3.155	0.213	0.594	0.003	0.047	0.021	0.043
OHIO	All Vehicles	3.023	0.202	0.593	0.003	0.051	0.022	0.044
OKLAHOMA	All Vehicles	3.152	0.199	0.567	0.003	0.046	0.019	0.043
OREGON	All Vehicles	2.830	0.185	0.593	0.003	0.048	0.021	0.044
PACIFIC ISLANDS	All Vehicles	2.947	0.193	0.582	0.003	0.049	0.021	0.044
PENNSYLVANIA	All Vehicles	2.871	0.194	0.588	0.003	0.049	0.021	0.044
PUERTO RICO	All Vehicles	3.631	0.218	0.545	0.003	0.052	0.022	0.044
RHODE ISLAND	All Vehicles	2.764	0.197	0.603	0.003	0.053	0.023	0.044
SOUTH CAROLINA	All Vehicles	3.184	0.201	0.569	0.003	0.047	0.020	0.044
SOUTH DAKOTA	All Vehicles	3.122	0.202	0.584	0.003	0.043	0.019	0.043
TENNESSEE	All Vehicles	3.172	0.205	0.589	0.003	0.050	0.021	0.044
TEXAS	All Vehicles	3.063	0.194	0.560	0.003	0.048	0.020	0.044
UTAH	All Vehicles	2.938	0.202	0.616	0.003	0.050	0.021	0.044
VERMONT	All Vehicles	2.789	0.193	0.572	0.003	0.044	0.020	0.043
VIRGIN ISLANDS	All Vehicles	3.565	0.202	0.491	0.003	0.045	0.019	0.043
VIRGINIA	All Vehicles	3.008	0.197	0.580	0.003	0.048	0.020	0.044
WASHINGTON	All Vehicles	2.983	0.198	0.603	0.003	0.049	0.021	0.044
WEST VIRGINIA	All Vehicles	3.035	0.197	0.572	0.003	0.045	0.020	0.043
WISCONSIN	All Vehicles	3.006	0.202	0.583	0.003	0.046	0.020	0.043
WYOMING	All Vehicles	3.094	0.202	0.598	0.003	0.043	0.019	0.043

Table 5-18. Air Force/State/Territory-Specific On-Road Vehicle Composite Emission Factors – 2029 GOV

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALABAMA	All Vehicles	3.093	0.197	0.526	0.003	0.049	0.020	0.044
ALASKA	All Vehicles	3.783	0.219	0.558	0.002	0.047	0.020	0.043
ARIZONA	All Vehicles	2.949	0.195	0.559	0.002	0.048	0.020	0.044
ARKANSAS	All Vehicles	3.039	0.191	0.515	0.003	0.045	0.019	0.043
CALIFORNIA	All Vehicles	0.000	0.000	0.000	0.000	0.000	0.000	0.000
COLORADO	All Vehicles	2.804	0.193	0.554	0.003	0.048	0.020	0.043
CONNECTICUT	All Vehicles	2.639	0.188	0.543	0.003	0.050	0.021	0.044
DELAWARE	All Vehicles	2.699	0.188	0.543	0.003	0.051	0.021	0.044
DISTRICT OF COLUMBIA	All Vehicles	2.781	0.198	0.597	0.003	0.063	0.025	0.045
FLORIDA	All Vehicles	3.341	0.208	0.529	0.003	0.054	0.022	0.044
GEORGIA	All Vehicles	2.970	0.196	0.538	0.003	0.051	0.021	0.044
HAWAII	All Vehicles	3.225	0.200	0.526	0.003	0.055	0.022	0.044
IDAHO	All Vehicles	2.962	0.195	0.553	0.003	0.046	0.019	0.043
ILLINOIS	All Vehicles	2.894	0.197	0.549	0.003	0.051	0.021	0.044
INDIANA	All Vehicles	2.984	0.198	0.549	0.003	0.051	0.021	0.044
IOWA	All Vehicles	2.994	0.195	0.530	0.003	0.045	0.019	0.043
KANSAS	All Vehicles	3.028	0.192	0.526	0.003	0.044	0.019	0.043
KENTUCKY	All Vehicles	3.006	0.190	0.521	0.003	0.044	0.018	0.043
LOUISIANA	All Vehicles	3.135	0.196	0.508	0.003	0.046	0.019	0.044
MAINE	All Vehicles	2.848	0.190	0.529	0.003	0.043	0.019	0.043
MARYLAND	All Vehicles	2.708	0.188	0.539	0.003	0.049	0.020	0.044
MASSACHUSETTS	All Vehicles	2.717	0.197	0.573	0.003	0.055	0.023	0.044
MICHIGAN	All Vehicles	3.001	0.201	0.552	0.003	0.050	0.021	0.044
MINNESOTA	All Vehicles	3.013	0.205	0.546	0.003	0.048	0.020	0.043
MISSISSIPPI	All Vehicles	3.062	0.191	0.503	0.003	0.044	0.018	0.043
MISSOURI	All Vehicles	2.925	0.189	0.520	0.003	0.044	0.019	0.043
MONTANA	All Vehicles	2.958	0.194	0.545	0.003	0.043	0.019	0.043

State	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
NEBRASKA	All Vehicles	3.018	0.195	0.533	0.003	0.044	0.019	0.043
NEVADA	All Vehicles	2.859	0.182	0.580	0.003	0.051	0.021	0.044
NEW HAMPSHIRE	All Vehicles	2.675	0.188	0.533	0.003	0.046	0.019	0.043
NEW JERSEY	All Vehicles	2.620	0.172	0.502	0.003	0.039	0.017	0.043
NEW MEXICO	All Vehicles	2.878	0.192	0.541	0.003	0.043	0.018	0.043
NEW YORK	All Vehicles	2.731	0.191	0.552	0.003	0.050	0.021	0.044
NORTH CAROLINA	All Vehicles	2.884	0.191	0.532	0.003	0.049	0.020	0.044
NORTH DAKOTA	All Vehicles	3.047	0.206	0.542	0.003	0.045	0.020	0.043
OHIO	All Vehicles	2.917	0.195	0.542	0.003	0.049	0.021	0.043
OKLAHOMA	All Vehicles	3.041	0.192	0.517	0.003	0.044	0.018	0.043
OREGON	All Vehicles	2.730	0.179	0.541	0.003	0.047	0.020	0.043
PACIFIC ISLANDS	All Vehicles	2.844	0.186	0.532	0.003	0.048	0.020	0.044
PENNSYLVANIA	All Vehicles	2.772	0.188	0.536	0.003	0.047	0.020	0.044
PUERTO RICO	All Vehicles	3.501	0.209	0.498	0.003	0.051	0.021	0.044
RHODE ISLAND	All Vehicles	2.671	0.191	0.552	0.003	0.052	0.021	0.044
SOUTH CAROLINA	All Vehicles	3.071	0.193	0.519	0.003	0.046	0.019	0.043
SOUTH DAKOTA	All Vehicles	3.014	0.195	0.532	0.003	0.041	0.018	0.043
TENNESSEE	All Vehicles	3.060	0.197	0.538	0.003	0.049	0.020	0.044
TEXAS	All Vehicles	2.956	0.187	0.511	0.003	0.047	0.019	0.043
UTAH	All Vehicles	2.836	0.195	0.562	0.003	0.048	0.020	0.043
VERMONT	All Vehicles	2.693	0.186	0.522	0.003	0.043	0.018	0.043
VIRGIN ISLANDS	All Vehicles	3.438	0.194	0.448	0.003	0.044	0.018	0.042
VIRGINIA	All Vehicles	2.902	0.190	0.530	0.003	0.046	0.019	0.044
WASHINGTON	All Vehicles	2.878	0.191	0.551	0.003	0.047	0.020	0.043
WEST VIRGINIA	All Vehicles	2.928	0.190	0.522	0.003	0.044	0.019	0.043
WISCONSIN	All Vehicles	2.901	0.195	0.532	0.003	0.045	0.019	0.043
WYOMING	All Vehicles	2.987	0.196	0.545	0.003	0.042	0.018	0.043

Table 5-19. On-Road Vehicle Criteria Pollutant Emission Factors – 2025

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.405	0.311	0.138	0.003	0.024	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.220	0.260	0.202	0.003	0.024	0.008	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.726	0.824	0.699	0.007	0.051	0.025	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.821	0.185	0.241	0.001	0.026	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.903	0.268	0.390	0.001	0.024	0.010	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.637	0.132	2.725	0.004	0.172	0.088	0.066
	Gasoline	MC	Motorcycles	11.859	2.627	0.617	0.003	0.032	0.021	0.053
Alaska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	5.938	0.321	0.145	0.001	0.024	0.009	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	5.666	0.283	0.207	0.001	0.025	0.010	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	13.864	0.749	0.623	0.002	0.052	0.026	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.681	0.234	0.244	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.171	0.304	0.403	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.581	0.166	2.927	0.004	0.163	0.084	0.066
	Gasoline	MC	Motorcycles	12.847	1.848	0.729	0.001	0.027	0.017	0.054
Arizona	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.998	0.307	0.132	0.002	0.023	0.007	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.886	0.261	0.197	0.002	0.024	0.008	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.781	0.799	0.668	0.004	0.050	0.024	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.188	0.175	0.261	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	6.187	0.263	0.428	0.001	0.024	0.010	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.657	0.128	2.966	0.004	0.170	0.087	0.066
	Gasoline	MC	Motorcycles	11.878	2.988	0.729	0.002	0.032	0.021	0.054
Arkansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.313	0.304	0.138	0.002	0.022	0.007	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.162	0.251	0.203	0.003	0.022	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.499	0.775	0.670	0.006	0.047	0.023	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.588	0.186	0.243	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.733	0.261	0.394	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.581	0.128	2.676	0.004	0.160	0.082	0.066
	Gasoline	MC	Motorcycles	11.806	2.480	0.644	0.003	0.030	0.021	0.055
Colorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.851	0.286	0.139	0.002	0.024	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.750	0.246	0.205	0.003	0.025	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.922	0.722	0.693	0.006	0.052	0.026	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.031	0.200	0.245	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.452	0.281	0.406	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.605	0.146	2.901	0.004	0.166	0.086	0.066
	Gasoline	MC	Motorcycles	12.071	2.409	0.750	0.003	0.032	0.022	0.054
Connecticut	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.484	0.261	0.124	0.002	0.024	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.533	0.240	0.185	0.003	0.025	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.357	0.709	0.640	0.006	0.052	0.026	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.036	0.195	0.238	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.556	0.289	0.398	0.001	0.024	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.649	0.156	2.868	0.004	0.177	0.090	0.065
	Gasoline	MC	Motorcycles	11.758	2.216	0.686	0.003	0.031	0.021	0.054
Delaware	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.602	0.270	0.127	0.002	0.025	0.008	0.053
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.542	0.238	0.189	0.003	0.025	0.009	0.045
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.578	0.739	0.653	0.007	0.053	0.026	0.091
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.372	0.195	0.240	0.001	0.026	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.679	0.284	0.393	0.001	0.025	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.660	0.148	2.851	0.004	0.180	0.091	0.065
	Gasoline	MC	Motorcycles	11.697	2.262	0.659	0.003	0.032	0.021	0.053
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.661	0.266	0.120	0.003	0.028	0.009	0.055
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.551	0.242	0.176	0.003	0.030	0.010	0.046
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.650	0.787	0.661	0.007	0.063	0.029	0.096
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.675	0.197	0.238	0.001	0.030	0.010	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.980	0.308	0.392	0.001	0.030	0.011	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.857	0.176	3.154	0.004	0.222	0.109	0.065
	Gasoline	MC	Motorcycles	11.596	2.426	0.619	0.003	0.034	0.022	0.050

Table 5-19. On-Road Vehicle Criteria Pollutant Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.751	0.319	0.127	0.003	0.025	0.008	0.053
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.560	0.282	0.188	0.004	0.026	0.009	0.045
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	11.293	0.917	0.682	0.008	0.055	0.025	0.093
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.604	0.175	0.239	0.001	0.028	0.010	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	6.497	0.275	0.385	0.001	0.027	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.752	0.135	2.756	0.004	0.191	0.096	0.065
	Gasoline	MC	Motorcycles	11.802	2.931	0.539	0.003	0.033	0.022	0.052
Georgia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.058	0.294	0.133	0.003	0.024	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.991	0.257	0.198	0.004	0.025	0.009	0.045
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.435	0.818	0.692	0.007	0.053	0.025	0.091
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.725	0.185	0.239	0.001	0.026	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.912	0.276	0.391	0.001	0.025	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.670	0.139	2.794	0.004	0.179	0.091	0.065
	Gasoline	MC	Motorcycles	11.856	2.645	0.620	0.003	0.032	0.022	0.053
Hawaii	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.589	0.307	0.124	0.002	0.025	0.007	0.053
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.402	0.271	0.185	0.003	0.026	0.008	0.045
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.934	0.894	0.663	0.006	0.055	0.026	0.092
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.218	0.169	0.235	0.001	0.028	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	6.239	0.267	0.380	0.001	0.027	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.740	0.131	2.725	0.004	0.194	0.097	0.064
	Gasoline	MC	Motorcycles	12.209	2.750	0.584	0.003	0.034	0.022	0.052
Idaho	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.278	0.305	0.156	0.002	0.023	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.075	0.251	0.225	0.003	0.024	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.405	0.729	0.734	0.006	0.050	0.026	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.035	0.208	0.248	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.354	0.276	0.405	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.571	0.142	2.857	0.004	0.160	0.083	0.066
	Gasoline	MC	Motorcycles	11.875	2.234	0.767	0.003	0.031	0.021	0.055
Illinois	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.008	0.286	0.136	0.002	0.025	0.009	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.956	0.255	0.200	0.003	0.026	0.010	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.057	0.762	0.673	0.006	0.055	0.028	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.233	0.199	0.240	0.001	0.026	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.583	0.285	0.396	0.001	0.025	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.643	0.150	2.874	0.004	0.173	0.088	0.066
	Gasoline	MC	Motorcycles	12.109	2.277	0.673	0.003	0.033	0.022	0.053
Indiana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.254	0.295	0.141	0.002	0.025	0.009	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.077	0.255	0.206	0.003	0.026	0.010	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.426	0.773	0.692	0.006	0.055	0.028	0.091
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.257	0.201	0.240	0.001	0.026	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.544	0.283	0.393	0.001	0.025	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.636	0.148	2.855	0.004	0.174	0.088	0.066
	Gasoline	MC	Motorcycles	11.974	2.284	0.673	0.003	0.033	0.022	0.053
Iowa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.354	0.308	0.148	0.002	0.023	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.132	0.252	0.213	0.003	0.023	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.419	0.730	0.690	0.006	0.050	0.026	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.081	0.207	0.244	0.001	0.023	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.362	0.272	0.396	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.555	0.138	2.744	0.004	0.157	0.081	0.066
	Gasoline	MC	Motorcycles	11.834	2.146	0.701	0.003	0.030	0.021	0.055
Kansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.311	0.302	0.144	0.002	0.022	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.167	0.252	0.211	0.003	0.022	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.499	0.748	0.684	0.006	0.048	0.024	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.337	0.194	0.244	0.001	0.023	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.571	0.265	0.398	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.567	0.132	2.738	0.004	0.156	0.081	0.066
	Gasoline	MC	Motorcycles	11.833	2.387	0.683	0.003	0.030	0.021	0.055

Table 5-19. On-Road Vehicle Criteria Pollutant Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Kentucky	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.265	0.299	0.142	0.002	0.022	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.138	0.248	0.208	0.003	0.022	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.429	0.749	0.671	0.006	0.048	0.024	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.298	0.192	0.243	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.548	0.262	0.396	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.563	0.129	2.722	0.004	0.153	0.080	0.066
	Gasoline	MC	Motorcycles	12.067	2.323	0.678	0.003	0.031	0.022	0.056
Louisiana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.400	0.311	0.131	0.003	0.022	0.007	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.263	0.262	0.194	0.004	0.023	0.008	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.703	0.827	0.665	0.007	0.049	0.023	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.110	0.179	0.241	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	6.122	0.261	0.390	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.622	0.125	2.650	0.004	0.164	0.085	0.066
	Gasoline	MC	Motorcycles	11.887	2.718	0.591	0.003	0.031	0.021	0.054
Maine	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.128	0.301	0.152	0.003	0.022	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.905	0.242	0.215	0.003	0.022	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.086	0.688	0.703	0.007	0.048	0.025	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.736	0.214	0.244	0.001	0.022	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.134	0.271	0.397	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.520	0.139	2.728	0.004	0.152	0.079	0.066
	Gasoline	MC	Motorcycles	11.947	1.935	0.751	0.003	0.029	0.021	0.056
Maryland	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.592	0.268	0.130	0.003	0.023	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.565	0.241	0.195	0.004	0.024	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.476	0.740	0.664	0.007	0.052	0.025	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.279	0.190	0.240	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.675	0.281	0.397	0.001	0.024	0.010	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.638	0.146	2.819	0.004	0.173	0.088	0.065
	Gasoline	MC	Motorcycles	11.834	2.313	0.665	0.003	0.032	0.021	0.054
Massachusetts	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.574	0.265	0.129	0.002	0.026	0.008	0.053
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.630	0.248	0.194	0.003	0.027	0.010	0.045
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.610	0.740	0.667	0.007	0.057	0.028	0.092
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.102	0.201	0.238	0.001	0.027	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.612	0.302	0.396	0.001	0.027	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.719	0.169	3.000	0.004	0.193	0.097	0.065
	Gasoline	MC	Motorcycles	11.704	2.240	0.675	0.003	0.033	0.021	0.052
Michigan	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.285	0.294	0.145	0.002	0.025	0.009	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.144	0.259	0.212	0.003	0.026	0.010	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.398	0.754	0.698	0.005	0.055	0.028	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.046	0.205	0.241	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.435	0.286	0.397	0.001	0.024	0.010	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.620	0.152	2.860	0.004	0.171	0.087	0.065
	Gasoline	MC	Motorcycles	12.150	2.177	0.700	0.002	0.033	0.022	0.054
Minnesota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.373	0.308	0.152	0.003	0.024	0.009	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.195	0.265	0.220	0.003	0.025	0.010	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.456	0.747	0.726	0.007	0.053	0.028	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.861	0.208	0.243	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.213	0.277	0.400	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.565	0.149	2.799	0.004	0.162	0.082	0.065
	Gasoline	MC	Motorcycles	11.998	2.106	0.716	0.003	0.031	0.021	0.055
Mississippi	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.366	0.315	0.138	0.003	0.021	0.007	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.189	0.252	0.201	0.003	0.021	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.553	0.792	0.678	0.007	0.047	0.023	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.749	0.183	0.243	0.001	0.023	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.806	0.254	0.390	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.567	0.122	2.601	0.004	0.158	0.082	0.066
	Gasoline	MC	Motorcycles	11.910	2.549	0.628	0.003	0.030	0.021	0.055

Table 5-19. On-Road Vehicle Criteria Pollutant Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Missouri	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.064	0.291	0.137	0.002	0.022	0.007	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.002	0.247	0.202	0.003	0.022	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.183	0.739	0.660	0.006	0.048	0.024	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.296	0.192	0.243	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.577	0.265	0.397	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.568	0.132	2.720	0.004	0.155	0.081	0.066
	Gasoline	MC	Motorcycles	11.969	2.317	0.674	0.003	0.030	0.021	0.056
Montana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.330	0.312	0.159	0.002	0.022	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.085	0.249	0.227	0.003	0.022	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.353	0.699	0.722	0.006	0.048	0.025	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.874	0.215	0.249	0.001	0.022	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.213	0.272	0.405	0.001	0.021	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.532	0.138	2.815	0.004	0.151	0.079	0.066
	Gasoline	MC	Motorcycles	11.918	2.101	0.783	0.003	0.030	0.021	0.056
Nebraska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.348	0.306	0.149	0.002	0.022	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.167	0.253	0.215	0.003	0.023	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.486	0.730	0.692	0.006	0.048	0.025	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.150	0.203	0.245	0.001	0.023	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.428	0.269	0.399	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.557	0.136	2.770	0.004	0.154	0.080	0.066
	Gasoline	MC	Motorcycles	11.844	2.258	0.708	0.003	0.030	0.021	0.055
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.859	0.285	0.139	0.002	0.025	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.763	0.237	0.209	0.003	0.026	0.009	0.045
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.846	0.619	0.709	0.005	0.054	0.026	0.091
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.804	0.186	0.257	0.001	0.026	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.993	0.279	0.422	0.001	0.026	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.684	0.141	3.051	0.004	0.179	0.091	0.066
	Gasoline	MC	Motorcycles	12.273	2.655	0.756	0.002	0.033	0.022	0.053
New Hampshire	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.592	0.276	0.134	0.002	0.023	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.592	0.240	0.197	0.003	0.023	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.566	0.691	0.657	0.007	0.050	0.026	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.880	0.206	0.242	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.336	0.280	0.399	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.570	0.146	2.794	0.004	0.161	0.083	0.065
	Gasoline	MC	Motorcycles	11.843	2.075	0.728	0.003	0.030	0.021	0.055
New Jersey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.544	0.279	0.133	0.002	0.019	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.430	0.218	0.187	0.003	0.019	0.007	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.261	0.649	0.610	0.006	0.042	0.022	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.074	0.198	0.248	0.001	0.020	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.359	0.252	0.400	0.001	0.019	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.507	0.122	2.681	0.004	0.141	0.075	0.067
	Gasoline	MC	Motorcycles	11.826	2.041	0.728	0.003	0.028	0.020	0.057
New Mexico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.051	0.317	0.148	0.002	0.021	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.897	0.252	0.217	0.003	0.021	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.083	0.743	0.705	0.006	0.046	0.023	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.272	0.192	0.253	0.001	0.023	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.498	0.259	0.412	0.001	0.021	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.553	0.127	2.823	0.004	0.154	0.080	0.066
	Gasoline	MC	Motorcycles	11.826	2.621	0.762	0.003	0.030	0.021	0.055
New York	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.611	0.269	0.134	0.003	0.024	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.632	0.243	0.201	0.003	0.025	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.653	0.725	0.673	0.007	0.053	0.026	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.056	0.200	0.239	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.516	0.289	0.396	0.001	0.025	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.642	0.154	2.872	0.004	0.176	0.089	0.065
	Gasoline	MC	Motorcycles	11.806	2.172	0.690	0.003	0.032	0.021	0.053

Table 5-19. On-Road Vehicle Criteria Pollutant Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.923	0.290	0.135	0.003	0.023	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.868	0.250	0.201	0.003	0.024	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.229	0.786	0.693	0.007	0.051	0.025	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.498	0.188	0.240	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.734	0.271	0.392	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.627	0.136	2.761	0.004	0.171	0.087	0.065
	Gasoline	MC	Motorcycles	11.883	2.516	0.646	0.003	0.032	0.021	0.054
North Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.554	0.329	0.158	0.003	0.024	0.010	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.255	0.267	0.224	0.003	0.025	0.011	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.476	0.727	0.724	0.007	0.053	0.029	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.814	0.218	0.247	0.001	0.023	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.093	0.272	0.402	0.001	0.021	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.526	0.142	2.786	0.004	0.153	0.078	0.066
	Gasoline	MC	Motorcycles	12.021	2.027	0.746	0.003	0.030	0.021	0.055
Ohio	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.100	0.287	0.139	0.002	0.024	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.996	0.252	0.204	0.003	0.025	0.010	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.211	0.755	0.680	0.006	0.053	0.027	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.114	0.198	0.240	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.485	0.281	0.395	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.616	0.148	2.818	0.004	0.170	0.087	0.065
	Gasoline	MC	Motorcycles	11.992	2.279	0.683	0.003	0.032	0.022	0.054
Oklahoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.320	0.308	0.140	0.002	0.021	0.007	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.172	0.253	0.206	0.003	0.022	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.487	0.769	0.677	0.006	0.047	0.023	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.561	0.187	0.245	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.714	0.260	0.397	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.571	0.128	2.683	0.004	0.158	0.082	0.066
	Gasoline	MC	Motorcycles	11.818	2.511	0.661	0.003	0.030	0.021	0.055
Oregon	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.750	0.269	0.139	0.002	0.023	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.661	0.226	0.202	0.003	0.024	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.831	0.654	0.675	0.006	0.050	0.025	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.941	0.198	0.241	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.361	0.276	0.396	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.596	0.142	2.835	0.004	0.165	0.085	0.066
	Gasoline	MC	Motorcycles	11.930	2.151	0.734	0.003	0.031	0.021	0.054
Pacific Islands	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.900	0.281	0.134	0.002	0.023	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.820	0.241	0.198	0.003	0.024	0.008	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.984	0.731	0.668	0.006	0.050	0.025	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.339	0.188	0.241	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.629	0.270	0.395	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.614	0.136	2.784	0.004	0.167	0.086	0.066
	Gasoline	MC	Motorcycles	11.880	2.394	0.670	0.003	0.031	0.021	0.054
Pennsylvania	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.784	0.274	0.135	0.003	0.023	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.724	0.240	0.198	0.003	0.024	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.881	0.729	0.670	0.007	0.051	0.026	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.126	0.199	0.241	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.510	0.280	0.397	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.604	0.144	2.818	0.004	0.165	0.085	0.066
	Gasoline	MC	Motorcycles	11.905	2.245	0.691	0.003	0.031	0.021	0.054
Puerto Rico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.966	0.323	0.119	0.003	0.023	0.007	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.825	0.290	0.179	0.004	0.024	0.008	0.045
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	11.512	0.933	0.641	0.008	0.051	0.024	0.091
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.996	0.166	0.238	0.001	0.026	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	6.803	0.265	0.384	0.001	0.025	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.727	0.126	2.597	0.004	0.181	0.092	0.065
	Gasoline	MC	Motorcycles	11.854	3.040	0.515	0.003	0.032	0.022	0.053

Table 5-19. On-Road Vehicle Criteria Pollutant Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Rhode Island	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.507	0.264	0.122	0.002	0.025	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.450	0.236	0.181	0.003	0.026	0.009	0.045
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.527	0.720	0.650	0.007	0.054	0.026	0.091
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.070	0.199	0.238	0.001	0.026	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.570	0.294	0.396	0.001	0.025	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.672	0.159	2.918	0.004	0.181	0.092	0.065
	Gasoline	MC	Motorcycles	11.730	2.224	0.680	0.003	0.032	0.021	0.053
South Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.354	0.309	0.140	0.003	0.022	0.007	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.197	0.256	0.204	0.003	0.023	0.008	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.663	0.799	0.694	0.007	0.049	0.024	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.709	0.185	0.242	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.828	0.262	0.392	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.599	0.127	2.699	0.004	0.162	0.084	0.066
	Gasoline	MC	Motorcycles	11.893	2.563	0.634	0.003	0.031	0.021	0.055
South Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.390	0.316	0.156	0.003	0.021	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.185	0.254	0.223	0.003	0.022	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.450	0.710	0.708	0.007	0.047	0.025	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.911	0.207	0.249	0.001	0.021	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.183	0.260	0.405	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.511	0.131	2.763	0.004	0.143	0.075	0.067
	Gasoline	MC	Motorcycles	12.046	2.135	0.742	0.003	0.030	0.021	0.057
Tennessee	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.319	0.299	0.140	0.002	0.024	0.008	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.189	0.259	0.206	0.003	0.025	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.657	0.801	0.698	0.007	0.052	0.025	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.533	0.189	0.241	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.767	0.275	0.394	0.001	0.024	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.639	0.139	2.799	0.004	0.171	0.087	0.066
	Gasoline	MC	Motorcycles	11.925	2.525	0.643	0.003	0.032	0.022	0.054
Texas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.051	0.291	0.126	0.003	0.022	0.007	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.982	0.250	0.187	0.003	0.023	0.008	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.028	0.792	0.651	0.007	0.049	0.024	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.006	0.177	0.243	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	6.075	0.262	0.396	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.625	0.127	2.685	0.004	0.166	0.085	0.065
	Gasoline	MC	Motorcycles	11.910	2.669	0.614	0.003	0.032	0.022	0.054
Utah	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.883	0.286	0.141	0.002	0.024	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.811	0.250	0.209	0.003	0.025	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.929	0.735	0.698	0.006	0.052	0.026	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.189	0.200	0.248	0.001	0.025	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.563	0.283	0.411	0.001	0.024	0.010	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.621	0.147	2.949	0.004	0.168	0.086	0.066
	Gasoline	MC	Motorcycles	11.919	2.437	0.758	0.003	0.032	0.021	0.054
Vermont	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.760	0.293	0.140	0.003	0.022	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.630	0.236	0.201	0.003	0.022	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.596	0.669	0.660	0.007	0.048	0.025	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.782	0.215	0.245	0.001	0.022	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.161	0.271	0.398	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.519	0.138	2.727	0.004	0.151	0.079	0.066
	Gasoline	MC	Motorcycles	11.952	1.939	0.751	0.003	0.029	0.021	0.056
Virgin Islands	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	5.048	0.346	0.122	0.003	0.021	0.006	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.762	0.264	0.174	0.004	0.020	0.007	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	11.049	0.879	0.604	0.007	0.045	0.022	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	8.119	0.168	0.245	0.001	0.023	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	6.571	0.236	0.380	0.001	0.021	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.565	0.108	2.290	0.004	0.160	0.081	0.064
	Gasoline	MC	Motorcycles	11.886	2.574	0.530	0.003	0.030	0.021	0.055

Table 5-19. On-Road Vehicle Criteria Pollutant Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.021	0.288	0.138	0.003	0.023	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.924	0.246	0.203	0.003	0.023	0.008	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.187	0.755	0.694	0.007	0.049	0.024	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.311	0.191	0.241	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.631	0.272	0.395	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.600	0.136	2.760	0.004	0.163	0.084	0.066
Washington	Gasoline	MC	Motorcycles	11.872	2.346	0.665	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.007	0.277	0.147	0.002	0.023	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.936	0.244	0.217	0.003	0.024	0.009	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.332	0.738	0.718	0.006	0.051	0.025	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.860	0.198	0.239	0.001	0.024	0.009	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.365	0.281	0.396	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.606	0.146	2.855	0.004	0.166	0.086	0.066
West Virginia	Gasoline	MC	Motorcycles	11.873	2.199	0.727	0.003	0.031	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.167	0.299	0.145	0.002	0.022	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.020	0.247	0.210	0.003	0.022	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.302	0.736	0.686	0.006	0.048	0.024	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.055	0.197	0.242	0.001	0.023	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.383	0.265	0.394	0.001	0.021	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.550	0.133	2.704	0.004	0.155	0.080	0.066
Wisconsin	Gasoline	MC	Motorcycles	12.002	2.256	0.696	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.170	0.302	0.148	0.002	0.023	0.009	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.009	0.252	0.214	0.003	0.024	0.010	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.140	0.718	0.695	0.007	0.050	0.027	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.844	0.207	0.244	0.001	0.023	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.181	0.269	0.399	0.001	0.021	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.537	0.139	2.756	0.004	0.154	0.079	0.066
Wyoming	Gasoline	MC	Motorcycles	12.075	2.061	0.724	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.371	0.319	0.161	0.002	0.022	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.133	0.252	0.229	0.003	0.022	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.405	0.695	0.721	0.006	0.047	0.025	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.892	0.215	0.252	0.001	0.022	0.008	0.015
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	5.230	0.269	0.409	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.523	0.134	2.825	0.004	0.147	0.077	0.067
Wyoming	Gasoline	MC	Motorcycles	11.939	2.157	0.795	0.003	0.029	0.021	0.056

Table 5-20. On-Road Vehicle Criteria Pollutant Emission Factors – 2026

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.200	0.301	0.124	0.003	0.023	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.838	0.244	0.178	0.003	0.023	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.841	0.777	0.619	0.007	0.050	0.024	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.099	0.121	0.172	0.001	0.024	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.159	0.182	0.308	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.584	0.118	2.551	0.004	0.163	0.080	0.066
	Gasoline	MC	Motorcycles	11.705	2.617	0.615	0.003	0.032	0.021	0.054
Alaska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	5.607	0.308	0.131	0.001	0.024	0.009	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	5.140	0.266	0.184	0.001	0.024	0.010	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	12.696	0.705	0.554	0.002	0.050	0.025	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.054	0.172	0.174	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.585	0.222	0.317	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.530	0.152	2.733	0.004	0.154	0.076	0.067
	Gasoline	MC	Motorcycles	12.642	1.845	0.727	0.001	0.027	0.017	0.055
Arizona	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.817	0.298	0.117	0.002	0.022	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.550	0.246	0.174	0.002	0.023	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.996	0.756	0.592	0.004	0.049	0.023	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.465	0.112	0.185	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.404	0.178	0.338	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.602	0.114	2.772	0.004	0.161	0.079	0.067
	Gasoline	MC	Motorcycles	11.728	2.973	0.727	0.002	0.032	0.021	0.054
Arkansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.110	0.294	0.124	0.002	0.021	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.790	0.236	0.179	0.003	0.021	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.650	0.731	0.594	0.006	0.046	0.023	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.897	0.124	0.173	0.001	0.022	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.065	0.179	0.311	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.529	0.115	2.498	0.004	0.151	0.075	0.067
	Gasoline	MC	Motorcycles	11.653	2.471	0.642	0.003	0.030	0.021	0.055
Colorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.656	0.277	0.126	0.002	0.023	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.419	0.232	0.182	0.003	0.024	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.140	0.683	0.616	0.006	0.051	0.026	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.383	0.138	0.175	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.803	0.198	0.320	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.553	0.132	2.711	0.004	0.158	0.078	0.066
	Gasoline	MC	Motorcycles	11.914	2.401	0.748	0.003	0.032	0.022	0.055
Connecticut	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.296	0.252	0.111	0.002	0.023	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.178	0.225	0.164	0.003	0.024	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.615	0.672	0.569	0.006	0.051	0.025	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.377	0.133	0.169	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.851	0.202	0.314	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.597	0.141	2.689	0.004	0.168	0.082	0.065
	Gasoline	MC	Motorcycles	11.604	2.209	0.684	0.003	0.031	0.021	0.054
Delaware	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.413	0.261	0.114	0.002	0.024	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.200	0.224	0.167	0.003	0.025	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.800	0.699	0.580	0.007	0.052	0.025	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.679	0.131	0.170	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.951	0.196	0.311	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.608	0.134	2.674	0.004	0.171	0.083	0.066
	Gasoline	MC	Motorcycles	11.544	2.253	0.657	0.003	0.032	0.021	0.053
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.479	0.258	0.107	0.002	0.027	0.009	0.053
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.237	0.230	0.157	0.003	0.029	0.010	0.044
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.833	0.745	0.588	0.007	0.061	0.028	0.094
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.944	0.129	0.168	0.001	0.028	0.009	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.103	0.211	0.312	0.001	0.029	0.011	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.802	0.160	2.981	0.004	0.212	0.101	0.065
	Gasoline	MC	Motorcycles	11.444	2.415	0.617	0.003	0.034	0.022	0.050

Table 5-20. On-Road Vehicle Criteria Pollutant Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.539	0.309	0.113	0.003	0.025	0.007	0.052
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.150	0.264	0.167	0.004	0.025	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.328	0.865	0.604	0.008	0.054	0.025	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.820	0.108	0.169	0.001	0.026	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.587	0.182	0.306	0.001	0.026	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.695	0.119	2.587	0.004	0.182	0.088	0.066
	Gasoline	MC	Motorcycles	11.649	2.917	0.538	0.003	0.033	0.022	0.052
Georgia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.860	0.284	0.119	0.003	0.024	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.615	0.241	0.175	0.003	0.024	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.596	0.772	0.615	0.007	0.052	0.025	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.010	0.121	0.170	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.143	0.188	0.310	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.617	0.125	2.619	0.004	0.170	0.083	0.066
	Gasoline	MC	Motorcycles	11.702	2.635	0.618	0.003	0.032	0.022	0.053
Hawaii	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.387	0.297	0.111	0.002	0.024	0.007	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.004	0.254	0.164	0.003	0.025	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.994	0.844	0.587	0.006	0.054	0.025	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.459	0.103	0.166	0.001	0.026	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.373	0.176	0.302	0.001	0.026	0.010	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.685	0.116	2.565	0.004	0.185	0.089	0.065
	Gasoline	MC	Motorcycles	12.054	2.736	0.583	0.003	0.033	0.022	0.052
Idaho	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.066	0.294	0.140	0.002	0.023	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.708	0.236	0.199	0.003	0.023	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.575	0.688	0.651	0.006	0.049	0.025	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.384	0.146	0.177	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.751	0.195	0.319	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.519	0.128	2.667	0.004	0.152	0.075	0.067
	Gasoline	MC	Motorcycles	11.719	2.228	0.765	0.003	0.030	0.021	0.055
Illinois	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.799	0.276	0.122	0.002	0.024	0.009	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.574	0.239	0.178	0.003	0.026	0.010	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.239	0.720	0.597	0.006	0.054	0.027	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.566	0.136	0.171	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.893	0.200	0.313	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.590	0.136	2.690	0.004	0.165	0.080	0.066
	Gasoline	MC	Motorcycles	11.952	2.268	0.671	0.003	0.033	0.022	0.054
Indiana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.046	0.285	0.127	0.002	0.025	0.009	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.707	0.239	0.182	0.003	0.025	0.010	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.572	0.729	0.613	0.006	0.054	0.027	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.584	0.137	0.171	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.864	0.197	0.311	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.584	0.134	2.673	0.004	0.165	0.081	0.067
	Gasoline	MC	Motorcycles	11.819	2.276	0.671	0.003	0.032	0.022	0.054
Iowa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.139	0.297	0.133	0.002	0.022	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.764	0.237	0.189	0.003	0.023	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.592	0.689	0.611	0.006	0.048	0.025	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.427	0.145	0.174	0.001	0.022	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.773	0.192	0.311	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.504	0.125	2.560	0.004	0.148	0.073	0.067
	Gasoline	MC	Motorcycles	11.679	2.139	0.699	0.003	0.030	0.021	0.055
Kansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.104	0.292	0.129	0.002	0.021	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.796	0.237	0.187	0.003	0.022	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.666	0.706	0.606	0.006	0.046	0.023	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.676	0.133	0.174	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.946	0.185	0.314	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.516	0.119	2.552	0.004	0.147	0.073	0.067
	Gasoline	MC	Motorcycles	11.678	2.379	0.680	0.003	0.030	0.021	0.056

Table 5-20. On-Road Vehicle Criteria Pollutant Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Kentucky	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.061	0.289	0.127	0.002	0.021	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.768	0.233	0.184	0.003	0.022	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.609	0.707	0.594	0.006	0.046	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.639	0.131	0.174	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.934	0.183	0.312	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.510	0.116	2.534	0.004	0.145	0.072	0.067
Louisiana	Gasoline	MC	Motorcycles	11.911	2.315	0.676	0.003	0.031	0.022	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.198	0.302	0.118	0.003	0.022	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.885	0.246	0.171	0.003	0.022	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.840	0.781	0.590	0.007	0.047	0.023	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.377	0.115	0.172	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.361	0.177	0.309	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.568	0.111	2.474	0.004	0.155	0.077	0.067
Maine	Gasoline	MC	Motorcycles	11.733	2.706	0.589	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.916	0.291	0.137	0.002	0.021	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.551	0.228	0.191	0.003	0.022	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.305	0.650	0.623	0.007	0.047	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.102	0.152	0.175	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.598	0.193	0.311	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.471	0.126	2.544	0.004	0.144	0.072	0.067
Maryland	Gasoline	MC	Motorcycles	11.790	1.929	0.749	0.003	0.029	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.410	0.259	0.117	0.003	0.023	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.229	0.227	0.172	0.003	0.024	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.727	0.700	0.590	0.007	0.050	0.025	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.602	0.128	0.170	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.961	0.194	0.314	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.586	0.132	2.640	0.004	0.164	0.080	0.066
Massachusetts	Gasoline	MC	Motorcycles	11.681	2.304	0.663	0.003	0.032	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.376	0.256	0.116	0.002	0.025	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.256	0.233	0.172	0.003	0.027	0.010	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.815	0.699	0.592	0.007	0.056	0.027	0.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.428	0.136	0.168	0.001	0.025	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.859	0.211	0.314	0.001	0.026	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.666	0.154	2.821	0.004	0.183	0.089	0.065
Michigan	Gasoline	MC	Motorcycles	11.550	2.233	0.673	0.003	0.033	0.021	0.052
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.076	0.284	0.130	0.002	0.024	0.009	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.770	0.243	0.188	0.002	0.026	0.010	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.551	0.711	0.619	0.005	0.054	0.028	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.392	0.142	0.171	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.782	0.202	0.313	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.568	0.138	2.677	0.004	0.162	0.079	0.066
Minnesota	Gasoline	MC	Motorcycles	11.994	2.170	0.698	0.002	0.033	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.156	0.297	0.137	0.003	0.024	0.009	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.821	0.249	0.195	0.003	0.025	0.010	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.620	0.705	0.644	0.007	0.052	0.027	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.241	0.148	0.173	0.001	0.022	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.648	0.198	0.315	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.517	0.136	2.618	0.004	0.154	0.075	0.066
Mississippi	Gasoline	MC	Motorcycles	11.841	2.099	0.714	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.163	0.305	0.124	0.003	0.021	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.816	0.237	0.177	0.003	0.021	0.007	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.705	0.747	0.600	0.007	0.045	0.022	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.040	0.120	0.173	0.001	0.022	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.132	0.173	0.307	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.516	0.109	2.428	0.004	0.149	0.074	0.066
	Gasoline	MC	Motorcycles	11.755	2.539	0.626	0.003	0.030	0.021	0.056

Table 5-20. On-Road Vehicle Criteria Pollutant Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Missouri	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.861	0.282	0.123	0.002	0.021	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.633	0.232	0.179	0.003	0.022	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.383	0.698	0.585	0.006	0.046	0.023	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.636	0.131	0.173	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.948	0.185	0.313	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.516	0.119	2.535	0.004	0.147	0.073	0.067
	Gasoline	MC	Motorcycles	11.814	2.309	0.672	0.003	0.030	0.021	0.056
Montana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.114	0.301	0.143	0.002	0.022	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.724	0.234	0.201	0.003	0.022	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.550	0.660	0.640	0.006	0.047	0.025	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.240	0.154	0.178	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.669	0.194	0.318	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.481	0.125	2.621	0.004	0.143	0.071	0.067
	Gasoline	MC	Motorcycles	11.762	2.095	0.781	0.003	0.030	0.021	0.056
Nebraska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.137	0.296	0.134	0.002	0.022	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.798	0.238	0.191	0.003	0.022	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.662	0.689	0.613	0.006	0.047	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.503	0.142	0.175	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.835	0.190	0.315	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.505	0.122	2.580	0.004	0.146	0.073	0.067
	Gasoline	MC	Motorcycles	11.689	2.251	0.705	0.003	0.030	0.021	0.056
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.674	0.276	0.124	0.002	0.024	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.416	0.224	0.184	0.002	0.025	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.053	0.584	0.628	0.005	0.053	0.025	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.085	0.122	0.182	0.001	0.025	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.203	0.191	0.334	0.001	0.025	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.629	0.126	2.857	0.004	0.170	0.083	0.067
	Gasoline	MC	Motorcycles	12.117	2.643	0.753	0.002	0.033	0.022	0.053
New Hampshire	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.393	0.266	0.120	0.002	0.022	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.239	0.225	0.175	0.003	0.023	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.826	0.653	0.584	0.007	0.049	0.025	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.236	0.144	0.172	0.001	0.022	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.724	0.199	0.314	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.519	0.132	2.610	0.004	0.152	0.075	0.066
	Gasoline	MC	Motorcycles	11.687	2.068	0.725	0.003	0.030	0.021	0.055
New Jersey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.362	0.271	0.120	0.002	0.018	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.121	0.206	0.166	0.003	0.018	0.007	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.595	0.615	0.542	0.006	0.041	0.021	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.432	0.138	0.178	0.001	0.019	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.830	0.177	0.314	0.001	0.018	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.455	0.109	2.487	0.004	0.133	0.067	0.068
	Gasoline	MC	Motorcycles	11.671	2.034	0.726	0.003	0.028	0.020	0.058
New Mexico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.855	0.307	0.133	0.002	0.021	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.546	0.238	0.191	0.003	0.021	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.294	0.702	0.624	0.006	0.045	0.023	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.607	0.131	0.181	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.893	0.180	0.324	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.501	0.114	2.630	0.004	0.145	0.072	0.067
	Gasoline	MC	Motorcycles	11.672	2.612	0.760	0.003	0.030	0.021	0.056
New York	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.416	0.259	0.121	0.002	0.024	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.275	0.228	0.179	0.003	0.025	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.923	0.686	0.602	0.007	0.052	0.025	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.392	0.137	0.170	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.824	0.202	0.313	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.590	0.140	2.692	0.004	0.167	0.082	0.066
	Gasoline	MC	Motorcycles	11.652	2.164	0.688	0.003	0.031	0.021	0.054

Table 5-20. On-Road Vehicle Criteria Pollutant Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.730	0.281	0.121	0.003	0.023	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.502	0.234	0.178	0.003	0.023	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.430	0.742	0.617	0.007	0.050	0.024	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.803	0.124	0.171	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.022	0.186	0.310	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.575	0.122	2.584	0.004	0.162	0.079	0.066
	Gasoline	MC	Motorcycles	11.728	2.506	0.644	0.003	0.031	0.021	0.054
North Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.328	0.317	0.143	0.003	0.024	0.010	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.886	0.252	0.199	0.003	0.024	0.011	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.661	0.686	0.642	0.007	0.051	0.028	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.205	0.158	0.176	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.589	0.196	0.316	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.478	0.130	2.598	0.004	0.145	0.071	0.067
	Gasoline	MC	Motorcycles	11.863	2.022	0.744	0.003	0.030	0.021	0.056
Ohio	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.897	0.277	0.125	0.002	0.024	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.626	0.237	0.181	0.003	0.025	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.383	0.712	0.603	0.006	0.052	0.026	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.457	0.136	0.170	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.825	0.196	0.312	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.565	0.134	2.638	0.004	0.162	0.079	0.066
	Gasoline	MC	Motorcycles	11.837	2.272	0.681	0.003	0.032	0.022	0.054
Oklahoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.116	0.298	0.126	0.002	0.021	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.800	0.238	0.182	0.003	0.021	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.643	0.726	0.600	0.006	0.046	0.022	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.874	0.125	0.174	0.001	0.022	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.056	0.179	0.313	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.519	0.114	2.504	0.004	0.149	0.074	0.067
	Gasoline	MC	Motorcycles	11.664	2.501	0.659	0.003	0.030	0.021	0.056
Oregon	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.556	0.260	0.125	0.002	0.023	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.311	0.212	0.179	0.003	0.023	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.049	0.618	0.599	0.006	0.049	0.024	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.293	0.136	0.172	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.733	0.193	0.312	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.544	0.128	2.649	0.004	0.157	0.077	0.067
	Gasoline	MC	Motorcycles	11.774	2.144	0.732	0.003	0.031	0.021	0.055
Pacific Islands	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.709	0.272	0.120	0.002	0.022	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.465	0.226	0.175	0.003	0.023	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.187	0.691	0.592	0.006	0.049	0.024	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.666	0.126	0.171	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.950	0.186	0.312	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.562	0.122	2.603	0.004	0.159	0.078	0.066
	Gasoline	MC	Motorcycles	11.726	2.385	0.668	0.003	0.031	0.021	0.054
Pennsylvania	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.581	0.264	0.120	0.002	0.023	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.352	0.225	0.175	0.003	0.024	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.098	0.688	0.594	0.007	0.050	0.025	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.463	0.136	0.172	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.852	0.196	0.313	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.552	0.130	2.632	0.004	0.156	0.077	0.067
	Gasoline	MC	Motorcycles	11.749	2.237	0.689	0.003	0.031	0.021	0.055
Puerto Rico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.750	0.313	0.107	0.003	0.023	0.007	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.404	0.273	0.158	0.004	0.024	0.008	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.538	0.881	0.568	0.008	0.050	0.023	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.195	0.101	0.169	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.861	0.175	0.306	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.669	0.111	2.433	0.004	0.172	0.084	0.066
	Gasoline	MC	Motorcycles	11.701	3.024	0.513	0.003	0.032	0.022	0.053

Table 5-20. On-Road Vehicle Criteria Pollutant Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Rhode Island	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.331	0.255	0.110	0.002	0.024	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.153	0.224	0.162	0.003	0.025	0.009	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.776	0.683	0.579	0.006	0.053	0.026	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.404	0.135	0.169	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.850	0.205	0.313	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.619	0.144	2.737	0.004	0.172	0.084	0.066
South Carolina	Gasoline	MC	Motorcycles	11.576	2.216	0.678	0.003	0.032	0.021	0.053
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.151	0.300	0.125	0.003	0.022	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.821	0.240	0.181	0.003	0.022	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.807	0.754	0.615	0.007	0.047	0.023	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.003	0.122	0.173	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.129	0.179	0.310	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.546	0.113	2.519	0.004	0.153	0.076	0.067
South Dakota	Gasoline	MC	Motorcycles	11.738	2.552	0.632	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.175	0.305	0.141	0.003	0.021	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.822	0.240	0.198	0.003	0.021	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.663	0.670	0.627	0.007	0.046	0.025	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.309	0.149	0.178	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.696	0.187	0.318	0.001	0.019	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.461	0.118	2.566	0.004	0.135	0.068	0.068
Tennessee	Gasoline	MC	Motorcycles	11.888	2.128	0.740	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.115	0.289	0.125	0.002	0.023	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.809	0.243	0.182	0.003	0.024	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.785	0.755	0.618	0.007	0.051	0.025	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.841	0.126	0.171	0.001	0.024	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.049	0.189	0.311	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.585	0.124	2.618	0.004	0.162	0.080	0.067
Texas	Gasoline	MC	Motorcycles	11.771	2.515	0.641	0.003	0.032	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.858	0.282	0.113	0.003	0.022	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.613	0.234	0.166	0.003	0.022	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.223	0.748	0.577	0.007	0.048	0.023	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.281	0.114	0.173	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.315	0.177	0.313	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.571	0.113	2.510	0.004	0.158	0.078	0.066
Utah	Gasoline	MC	Motorcycles	11.757	2.657	0.612	0.003	0.032	0.022	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.686	0.277	0.127	0.002	0.023	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.463	0.235	0.185	0.003	0.024	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.141	0.694	0.619	0.006	0.051	0.025	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.529	0.137	0.176	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.887	0.199	0.324	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.569	0.133	2.756	0.004	0.159	0.079	0.067
Vermont	Gasoline	MC	Motorcycles	11.763	2.429	0.755	0.003	0.031	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.554	0.282	0.127	0.002	0.021	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.284	0.222	0.178	0.003	0.022	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.874	0.632	0.586	0.007	0.046	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.147	0.153	0.175	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.626	0.193	0.312	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.469	0.125	2.542	0.004	0.142	0.071	0.067
Virgin Islands	Gasoline	MC	Motorcycles	11.795	1.934	0.748	0.003	0.029	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.828	0.336	0.109	0.003	0.020	0.006	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.359	0.248	0.154	0.003	0.020	0.007	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.115	0.828	0.534	0.007	0.044	0.021	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.293	0.104	0.175	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	4.771	0.156	0.299	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.514	0.095	2.145	0.004	0.152	0.074	0.065
Virgin Islands	Gasoline	MC	Motorcycles	11.732	2.558	0.528	0.003	0.030	0.021	0.055

Table 5-20. On-Road Vehicle Criteria Pollutant Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.827	0.278	0.124	0.003	0.022	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.568	0.232	0.180	0.003	0.023	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.380	0.713	0.616	0.007	0.048	0.024	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.634	0.128	0.171	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.956	0.188	0.312	0.001	0.022	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.547	0.122	2.577	0.004	0.154	0.076	0.067
Washington	Gasoline	MC	Motorcycles	11.718	2.337	0.663	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.808	0.267	0.132	0.002	0.023	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.570	0.229	0.193	0.003	0.023	0.009	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.502	0.697	0.637	0.006	0.049	0.024	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.221	0.136	0.170	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.727	0.197	0.313	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.554	0.132	2.668	0.004	0.158	0.078	0.067
West Virginia	Gasoline	MC	Motorcycles	11.718	2.192	0.725	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.964	0.289	0.130	0.002	0.021	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.657	0.232	0.186	0.003	0.022	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.489	0.695	0.608	0.006	0.047	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.404	0.135	0.172	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.791	0.185	0.310	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.499	0.120	2.522	0.004	0.147	0.073	0.067
Wisconsin	Gasoline	MC	Motorcycles	11.846	2.249	0.694	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.956	0.292	0.134	0.002	0.022	0.009	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.643	0.237	0.189	0.003	0.023	0.010	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.348	0.678	0.616	0.007	0.049	0.026	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.226	0.147	0.174	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.646	0.192	0.314	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.487	0.127	2.570	0.004	0.146	0.072	0.067
Wyoming	Gasoline	MC	Motorcycles	11.917	2.054	0.722	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.154	0.308	0.145	0.002	0.021	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.772	0.238	0.203	0.003	0.021	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.613	0.656	0.639	0.006	0.046	0.024	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.263	0.154	0.180	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.701	0.193	0.321	0.001	0.019	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.471	0.121	2.626	0.004	0.138	0.070	0.068
Wyoming	Gasoline	MC	Motorcycles	11.782	2.151	0.792	0.003	0.029	0.021	0.057

Table 5-21. On-Road Vehicle Criteria Pollutant Emission Factors – 2027

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.050	0.295	0.112	0.003	0.022	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.665	0.237	0.162	0.003	0.023	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.010	0.722	0.549	0.007	0.049	0.023	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.344	0.128	0.180	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.179	0.123	0.210	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.532	0.105	2.316	0.004	0.156	0.073	0.067
	Gasoline	MC	Motorcycles	11.582	2.607	0.614	0.003	0.031	0.021	0.054
Alaska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	5.392	0.300	0.120	0.001	0.023	0.009	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.915	0.258	0.168	0.001	0.024	0.010	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	11.660	0.657	0.493	0.002	0.049	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.263	0.178	0.183	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.708	0.164	0.215	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.481	0.140	2.479	0.004	0.147	0.070	0.068
	Gasoline	MC	Motorcycles	12.482	1.843	0.725	0.001	0.026	0.017	0.055
Arizona	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.682	0.291	0.105	0.002	0.022	0.007	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.389	0.239	0.158	0.002	0.023	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.249	0.703	0.525	0.004	0.047	0.022	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.722	0.119	0.194	0.001	0.024	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.388	0.118	0.230	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.550	0.101	2.513	0.004	0.154	0.072	0.067
	Gasoline	MC	Motorcycles	11.607	2.959	0.725	0.002	0.031	0.021	0.054
Arkansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.964	0.288	0.112	0.002	0.021	0.007	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.620	0.229	0.162	0.003	0.021	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.851	0.680	0.526	0.006	0.045	0.022	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.135	0.131	0.181	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.108	0.123	0.211	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.479	0.103	2.263	0.004	0.144	0.068	0.067
	Gasoline	MC	Motorcycles	11.530	2.462	0.641	0.003	0.030	0.021	0.056
Colorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.524	0.271	0.114	0.002	0.022	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.267	0.226	0.165	0.003	0.024	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.406	0.637	0.547	0.006	0.049	0.025	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.603	0.145	0.183	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.886	0.140	0.217	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.503	0.120	2.460	0.004	0.150	0.071	0.067
	Gasoline	MC	Motorcycles	11.789	2.395	0.746	0.003	0.032	0.022	0.055
Connecticut	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.150	0.245	0.099	0.002	0.022	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.981	0.216	0.146	0.003	0.024	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.896	0.625	0.502	0.006	0.049	0.024	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.598	0.139	0.177	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.914	0.142	0.213	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.546	0.128	2.446	0.004	0.160	0.075	0.066
	Gasoline	MC	Motorcycles	11.482	2.202	0.682	0.003	0.031	0.021	0.054
Delaware	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.286	0.257	0.103	0.002	0.023	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.051	0.217	0.151	0.003	0.024	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.071	0.652	0.514	0.006	0.050	0.024	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.910	0.138	0.179	0.001	0.025	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.000	0.135	0.211	0.001	0.023	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.557	0.121	2.432	0.004	0.163	0.076	0.067
	Gasoline	MC	Motorcycles	11.422	2.245	0.656	0.003	0.032	0.021	0.054
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.353	0.253	0.097	0.002	0.027	0.008	0.051
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.090	0.223	0.142	0.003	0.029	0.010	0.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.083	0.696	0.523	0.007	0.059	0.027	0.091
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.186	0.137	0.177	0.001	0.028	0.009	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.114	0.144	0.212	0.001	0.027	0.010	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.747	0.145	2.728	0.004	0.204	0.093	0.066
	Gasoline	MC	Motorcycles	11.324	2.407	0.615	0.003	0.034	0.022	0.050

Table 5-21. On-Road Vehicle Criteria Pollutant Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.377	0.303	0.102	0.003	0.024	0.007	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.963	0.256	0.151	0.004	0.025	0.008	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.425	0.803	0.536	0.008	0.052	0.024	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.090	0.116	0.178	0.001	0.026	0.009	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.525	0.119	0.209	0.001	0.025	0.009	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.640	0.105	2.354	0.004	0.174	0.081	0.067
Georgia	Gasoline	MC	Motorcycles	11.527	2.903	0.536	0.003	0.033	0.022	0.052
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.721	0.278	0.107	0.003	0.023	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.453	0.234	0.159	0.003	0.024	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.804	0.718	0.546	0.007	0.050	0.024	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.253	0.128	0.179	0.001	0.025	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.161	0.127	0.211	0.001	0.023	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.565	0.112	2.380	0.004	0.162	0.076	0.067
Hawaii	Gasoline	MC	Motorcycles	11.579	2.625	0.616	0.003	0.032	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.232	0.291	0.100	0.002	0.024	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.823	0.246	0.148	0.003	0.025	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.112	0.783	0.521	0.006	0.052	0.024	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.717	0.111	0.175	0.001	0.026	0.009	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.349	0.113	0.206	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.632	0.102	2.338	0.004	0.177	0.082	0.066
Idaho	Gasoline	MC	Motorcycles	11.929	2.723	0.581	0.003	0.033	0.022	0.053
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.921	0.288	0.127	0.002	0.022	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.544	0.228	0.181	0.003	0.023	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.800	0.640	0.577	0.006	0.048	0.024	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.603	0.152	0.186	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.849	0.139	0.216	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.470	0.116	2.416	0.004	0.144	0.068	0.068
Illinois	Gasoline	MC	Motorcycles	11.596	2.222	0.763	0.003	0.030	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.659	0.270	0.110	0.002	0.024	0.009	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.411	0.232	0.161	0.003	0.025	0.010	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.478	0.671	0.531	0.006	0.052	0.026	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.793	0.143	0.179	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.959	0.140	0.213	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.539	0.123	2.442	0.004	0.157	0.074	0.067
Indiana	Gasoline	MC	Motorcycles	11.828	2.262	0.670	0.003	0.033	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.902	0.279	0.115	0.002	0.024	0.009	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.543	0.232	0.165	0.003	0.025	0.010	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.778	0.679	0.544	0.006	0.052	0.026	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.812	0.144	0.180	0.001	0.025	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.938	0.138	0.211	0.001	0.023	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.534	0.121	2.428	0.004	0.158	0.074	0.067
Iowa	Gasoline	MC	Motorcycles	11.696	2.269	0.669	0.003	0.032	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.991	0.291	0.121	0.002	0.022	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.598	0.230	0.171	0.003	0.022	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.818	0.641	0.542	0.006	0.047	0.024	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.649	0.152	0.182	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.870	0.136	0.212	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.455	0.113	2.319	0.004	0.141	0.067	0.067
Kansas	Gasoline	MC	Motorcycles	11.556	2.133	0.698	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.958	0.287	0.117	0.002	0.021	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.627	0.229	0.169	0.003	0.021	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.882	0.657	0.537	0.006	0.045	0.022	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.905	0.139	0.183	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.013	0.129	0.213	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.466	0.107	2.309	0.004	0.140	0.067	0.068
Kansas	Gasoline	MC	Motorcycles	11.555	2.371	0.679	0.003	0.030	0.021	0.056

Table 5-21. On-Road Vehicle Criteria Pollutant Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Kentucky	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.916	0.283	0.115	0.002	0.021	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.600	0.226	0.167	0.003	0.021	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.832	0.658	0.527	0.006	0.045	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.867	0.137	0.182	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.001	0.127	0.212	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.460	0.104	2.291	0.004	0.138	0.066	0.068
Louisiana	Gasoline	MC	Motorcycles	11.787	2.307	0.675	0.003	0.031	0.022	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.049	0.295	0.106	0.003	0.021	0.007	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.709	0.238	0.155	0.003	0.022	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.021	0.725	0.523	0.007	0.046	0.022	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.631	0.122	0.180	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.346	0.118	0.210	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.516	0.099	2.241	0.004	0.148	0.070	0.068
Maine	Gasoline	MC	Motorcycles	11.610	2.695	0.588	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.775	0.285	0.125	0.002	0.021	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.394	0.221	0.174	0.003	0.021	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.573	0.606	0.553	0.007	0.045	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.312	0.159	0.183	0.001	0.021	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.724	0.139	0.211	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.423	0.114	2.304	0.004	0.137	0.065	0.067
Maryland	Gasoline	MC	Motorcycles	11.666	1.925	0.747	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.286	0.254	0.106	0.003	0.022	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.081	0.220	0.156	0.003	0.023	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.020	0.653	0.524	0.007	0.049	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.830	0.135	0.179	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.007	0.134	0.213	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.535	0.119	2.399	0.004	0.157	0.074	0.066
Massachusetts	Gasoline	MC	Motorcycles	11.559	2.296	0.661	0.003	0.032	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.248	0.250	0.105	0.002	0.024	0.008	0.050
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.105	0.226	0.156	0.003	0.026	0.010	0.042
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.086	0.653	0.527	0.006	0.054	0.026	0.088
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.652	0.144	0.177	0.001	0.025	0.009	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.916	0.148	0.213	0.001	0.024	0.009	0.017
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.614	0.140	2.572	0.004	0.176	0.081	0.066
Michigan	Gasoline	MC	Motorcycles	11.428	2.227	0.672	0.003	0.032	0.021	0.053
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.932	0.278	0.118	0.002	0.024	0.009	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.604	0.236	0.171	0.002	0.025	0.010	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.766	0.663	0.549	0.005	0.052	0.027	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.613	0.149	0.180	0.001	0.024	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.869	0.143	0.213	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.518	0.126	2.432	0.004	0.155	0.073	0.067
Minnesota	Gasoline	MC	Motorcycles	11.870	2.164	0.696	0.002	0.033	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.007	0.291	0.124	0.003	0.023	0.009	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.655	0.242	0.177	0.003	0.024	0.010	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.844	0.657	0.571	0.007	0.051	0.026	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.457	0.154	0.181	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.776	0.143	0.213	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.469	0.124	2.377	0.004	0.147	0.069	0.067
Mississippi	Gasoline	MC	Motorcycles	11.716	2.094	0.712	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.015	0.299	0.112	0.003	0.020	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.645	0.230	0.161	0.003	0.020	0.007	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.901	0.694	0.532	0.007	0.044	0.022	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.282	0.127	0.182	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.164	0.117	0.209	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.466	0.097	2.200	0.004	0.142	0.067	0.067
	Gasoline	MC	Motorcycles	11.632	2.529	0.625	0.003	0.030	0.021	0.056

Table 5-21. On-Road Vehicle Criteria Pollutant Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Missouri	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.720	0.276	0.111	0.002	0.021	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.468	0.225	0.162	0.003	0.021	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.625	0.650	0.519	0.006	0.045	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.864	0.137	0.181	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.010	0.129	0.213	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.466	0.107	2.294	0.004	0.140	0.066	0.068
Montana	Gasoline	MC	Motorcycles	11.690	2.301	0.670	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.967	0.295	0.130	0.002	0.021	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.561	0.227	0.182	0.003	0.022	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.796	0.614	0.567	0.006	0.046	0.024	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.454	0.161	0.187	0.001	0.021	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.786	0.140	0.216	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.432	0.113	2.371	0.004	0.135	0.065	0.068
Nebraska	Gasoline	MC	Motorcycles	11.638	2.090	0.779	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.989	0.290	0.121	0.002	0.021	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.631	0.231	0.173	0.003	0.022	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.888	0.641	0.544	0.006	0.046	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.726	0.148	0.184	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.922	0.135	0.214	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.456	0.110	2.334	0.004	0.138	0.066	0.068
Nevada	Gasoline	MC	Motorcycles	11.566	2.245	0.704	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.542	0.271	0.112	0.002	0.023	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.261	0.217	0.167	0.002	0.024	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.302	0.547	0.557	0.005	0.051	0.025	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.330	0.129	0.191	0.001	0.025	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.208	0.129	0.227	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.576	0.113	2.594	0.004	0.162	0.076	0.067
New Hampshire	Gasoline	MC	Motorcycles	11.992	2.632	0.752	0.002	0.033	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.266	0.261	0.109	0.002	0.022	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.091	0.218	0.159	0.003	0.023	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.133	0.609	0.518	0.006	0.047	0.024	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.451	0.150	0.181	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.819	0.142	0.213	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.470	0.120	2.367	0.004	0.145	0.069	0.067
New Jersey	Gasoline	MC	Motorcycles	11.564	2.063	0.724	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.240	0.266	0.109	0.002	0.018	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.978	0.200	0.150	0.003	0.018	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.948	0.573	0.481	0.006	0.039	0.020	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.652	0.144	0.186	0.001	0.019	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.916	0.125	0.214	0.001	0.017	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.405	0.098	2.243	0.004	0.126	0.061	0.069
New Mexico	Gasoline	MC	Motorcycles	11.548	2.028	0.725	0.003	0.028	0.020	0.058
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.716	0.301	0.120	0.002	0.020	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.386	0.230	0.173	0.003	0.021	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.546	0.652	0.552	0.006	0.044	0.022	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.835	0.138	0.189	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.968	0.125	0.220	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.452	0.102	2.379	0.004	0.138	0.066	0.068
New York	Gasoline	MC	Motorcycles	11.549	2.604	0.758	0.003	0.029	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.292	0.254	0.109	0.002	0.023	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.131	0.221	0.163	0.003	0.024	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.234	0.641	0.537	0.007	0.050	0.025	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.614	0.144	0.178	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.894	0.142	0.212	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.539	0.127	2.447	0.004	0.159	0.075	0.067
New York	Gasoline	MC	Motorcycles	11.529	2.158	0.687	0.003	0.031	0.021	0.054

Table 5-21. On-Road Vehicle Criteria Pollutant Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.598	0.275	0.109	0.003	0.022	0.007	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.344	0.227	0.161	0.003	0.023	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.680	0.690	0.549	0.007	0.048	0.023	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.038	0.131	0.179	0.001	0.024	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.064	0.127	0.211	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.524	0.110	2.346	0.004	0.155	0.073	0.067
North Dakota	Gasoline	MC	Motorcycles	11.605	2.498	0.642	0.003	0.031	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.173	0.310	0.130	0.002	0.023	0.010	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.719	0.244	0.180	0.003	0.024	0.010	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.900	0.639	0.569	0.007	0.050	0.027	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.418	0.165	0.185	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.736	0.143	0.214	0.001	0.019	0.007	0.016
Ohio	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.431	0.118	2.353	0.004	0.138	0.065	0.067
	Gasoline	MC	Motorcycles	11.738	2.017	0.742	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.752	0.271	0.112	0.002	0.023	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.452	0.229	0.164	0.003	0.024	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.607	0.663	0.534	0.006	0.050	0.025	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.680	0.143	0.179	0.001	0.023	0.008	0.016
Oklahoma	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.905	0.138	0.212	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.515	0.121	2.396	0.004	0.154	0.072	0.067
	Gasoline	MC	Motorcycles	11.714	2.265	0.680	0.003	0.032	0.022	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.970	0.292	0.114	0.002	0.020	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.630	0.230	0.165	0.003	0.021	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.848	0.675	0.531	0.006	0.044	0.022	0.084
Oregon	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.111	0.132	0.183	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.101	0.123	0.213	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.470	0.102	2.268	0.004	0.142	0.067	0.067
	Gasoline	MC	Motorcycles	11.541	2.492	0.657	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.426	0.256	0.113	0.002	0.022	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.160	0.206	0.162	0.003	0.023	0.008	0.040
Pacific Islands	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.316	0.577	0.531	0.006	0.048	0.023	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.510	0.143	0.180	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.827	0.135	0.212	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.494	0.116	2.403	0.004	0.149	0.070	0.067
	Gasoline	MC	Motorcycles	11.650	2.138	0.730	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.575	0.267	0.108	0.002	0.022	0.007	0.048
Pennsylvania	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.306	0.219	0.158	0.003	0.023	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.435	0.643	0.525	0.006	0.048	0.023	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.896	0.133	0.180	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.008	0.128	0.212	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.511	0.110	2.361	0.004	0.151	0.071	0.067
	Gasoline	MC	Motorcycles	11.604	2.377	0.667	0.003	0.031	0.021	0.055
Puerto Rico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.451	0.259	0.109	0.002	0.022	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.201	0.218	0.159	0.003	0.023	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.371	0.642	0.527	0.007	0.049	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.686	0.143	0.180	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.923	0.138	0.213	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.502	0.117	2.387	0.004	0.149	0.070	0.067
	Gasoline	MC	Motorcycles	11.626	2.231	0.687	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.580	0.306	0.096	0.003	0.022	0.007	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.206	0.264	0.143	0.004	0.023	0.008	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.621	0.817	0.504	0.007	0.049	0.023	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.477	0.108	0.177	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.751	0.112	0.209	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.614	0.098	2.211	0.004	0.164	0.077	0.067
	Gasoline	MC	Motorcycles	11.578	3.008	0.512	0.003	0.032	0.021	0.054

Table 5-21. On-Road Vehicle Criteria Pollutant Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Rhode Island	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.211	0.251	0.100	0.002	0.023	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.013	0.218	0.147	0.003	0.025	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.073	0.639	0.515	0.006	0.051	0.025	0.087
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.626	0.142	0.177	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.912	0.144	0.213	0.001	0.023	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.568	0.131	2.490	0.004	0.165	0.077	0.066
South Carolina	Gasoline	MC	Motorcycles	11.454	2.210	0.677	0.003	0.032	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.003	0.294	0.113	0.003	0.021	0.007	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.649	0.233	0.164	0.003	0.022	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.996	0.700	0.545	0.007	0.046	0.022	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.245	0.129	0.181	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.156	0.121	0.211	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.495	0.101	2.281	0.004	0.146	0.069	0.068
South Dakota	Gasoline	MC	Motorcycles	11.616	2.543	0.631	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.026	0.299	0.128	0.002	0.021	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.655	0.232	0.180	0.003	0.021	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.915	0.624	0.556	0.007	0.044	0.024	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.524	0.155	0.187	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.824	0.135	0.216	0.001	0.018	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.413	0.107	2.316	0.004	0.128	0.061	0.068
Tennessee	Gasoline	MC	Motorcycles	11.764	2.123	0.738	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.969	0.283	0.113	0.002	0.023	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.638	0.236	0.165	0.003	0.024	0.009	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.969	0.702	0.548	0.006	0.049	0.024	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.078	0.133	0.180	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.087	0.130	0.212	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.534	0.112	2.375	0.004	0.155	0.073	0.067
Texas	Gasoline	MC	Motorcycles	11.648	2.507	0.640	0.003	0.032	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.710	0.274	0.101	0.002	0.021	0.007	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.427	0.226	0.148	0.003	0.022	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.446	0.694	0.510	0.007	0.046	0.022	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.532	0.121	0.181	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.308	0.119	0.213	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.519	0.101	2.276	0.004	0.150	0.071	0.067
Utah	Gasoline	MC	Motorcycles	11.635	2.645	0.611	0.003	0.031	0.022	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.552	0.271	0.115	0.002	0.023	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.308	0.228	0.168	0.003	0.024	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.404	0.647	0.550	0.006	0.049	0.025	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.754	0.144	0.185	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.954	0.140	0.220	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.518	0.121	2.500	0.004	0.152	0.072	0.067
Vermont	Gasoline	MC	Motorcycles	11.639	2.422	0.754	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.422	0.277	0.115	0.002	0.021	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.136	0.215	0.162	0.003	0.021	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.192	0.589	0.520	0.007	0.045	0.024	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.358	0.160	0.184	0.001	0.021	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.747	0.139	0.212	0.001	0.018	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.421	0.113	2.301	0.004	0.135	0.065	0.067
Virgin Islands	Gasoline	MC	Motorcycles	11.671	1.929	0.746	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.655	0.328	0.098	0.003	0.019	0.006	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.162	0.239	0.139	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	9.234	0.767	0.473	0.007	0.043	0.021	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.577	0.111	0.183	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.703	0.101	0.205	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.465	0.083	1.948	0.004	0.145	0.068	0.066
Virgin Islands	Gasoline	MC	Motorcycles	11.609	2.543	0.527	0.003	0.030	0.021	0.056

Table 5-21. On-Road Vehicle Criteria Pollutant Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.690	0.273	0.113	0.003	0.021	0.007	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.408	0.225	0.164	0.003	0.022	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.618	0.664	0.546	0.007	0.047	0.023	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.864	0.135	0.180	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.008	0.130	0.212	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.497	0.110	2.336	0.004	0.147	0.070	0.067
Washington	Gasoline	MC	Motorcycles	11.596	2.329	0.661	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.672	0.262	0.120	0.002	0.022	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.410	0.222	0.175	0.003	0.023	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.727	0.649	0.565	0.006	0.048	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.436	0.143	0.179	0.001	0.023	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.819	0.139	0.212	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.504	0.120	2.420	0.004	0.150	0.071	0.067
West Virginia	Gasoline	MC	Motorcycles	11.595	2.187	0.723	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.823	0.283	0.118	0.002	0.021	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.494	0.225	0.169	0.003	0.021	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.723	0.646	0.539	0.006	0.045	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.624	0.142	0.181	0.001	0.021	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.882	0.130	0.211	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.450	0.108	2.284	0.004	0.140	0.066	0.067
Wisconsin	Gasoline	MC	Motorcycles	11.723	2.242	0.693	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.813	0.286	0.122	0.002	0.022	0.009	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.481	0.230	0.172	0.003	0.023	0.010	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.605	0.632	0.547	0.007	0.048	0.025	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.440	0.154	0.182	0.001	0.021	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.775	0.138	0.213	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.440	0.115	2.328	0.004	0.139	0.066	0.067
Wyoming	Gasoline	MC	Motorcycles	11.792	2.049	0.720	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.005	0.302	0.132	0.002	0.021	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.607	0.231	0.184	0.003	0.021	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.864	0.611	0.566	0.006	0.044	0.023	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.478	0.161	0.189	0.001	0.020	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.812	0.139	0.218	0.001	0.018	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.422	0.110	2.371	0.004	0.131	0.063	0.068
Wyoming	Gasoline	MC	Motorcycles	11.658	2.146	0.790	0.003	0.029	0.021	0.057

Table 5-22. On-Road Vehicle Criteria Pollutant Emission Factors – 2028

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.907	0.291	0.102	0.003	0.022	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.480	0.228	0.145	0.003	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.442	0.698	0.517	0.007	0.048	0.023	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.299	0.100	0.142	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.778	0.100	0.167	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.489	0.095	2.105	0.004	0.149	0.067	0.068
Alaska	Gasoline	MC	Motorcycles	11.473	2.592	0.613	0.003	0.031	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	5.193	0.295	0.111	0.001	0.022	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.681	0.249	0.153	0.001	0.023	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.973	0.634	0.468	0.002	0.048	0.024	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.210	0.150	0.144	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.355	0.142	0.171	0.001	0.020	0.007	0.016
Arizona	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.438	0.129	2.251	0.004	0.140	0.063	0.068
	Gasoline	MC	Motorcycles	12.342	1.836	0.723	0.001	0.026	0.017	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.553	0.287	0.096	0.002	0.021	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.220	0.230	0.141	0.002	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.722	0.680	0.496	0.004	0.047	0.022	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.692	0.092	0.152	0.001	0.023	0.008	0.017
Arkansas	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.969	0.096	0.183	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.505	0.090	2.280	0.004	0.147	0.066	0.068
	Gasoline	MC	Motorcycles	11.501	2.941	0.723	0.002	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.824	0.284	0.102	0.002	0.020	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.438	0.220	0.146	0.003	0.021	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.300	0.657	0.496	0.006	0.044	0.021	0.082
Colorado	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.092	0.104	0.143	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.716	0.101	0.168	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.436	0.092	2.053	0.004	0.138	0.062	0.068
	Gasoline	MC	Motorcycles	11.422	2.448	0.639	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.399	0.267	0.104	0.002	0.022	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.108	0.218	0.149	0.003	0.023	0.009	0.039
Connecticut	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.884	0.615	0.515	0.006	0.049	0.024	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.555	0.118	0.144	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.515	0.118	0.173	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.460	0.109	2.234	0.004	0.144	0.065	0.068
	Gasoline	MC	Motorcycles	11.678	2.383	0.745	0.003	0.031	0.022	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.038	0.241	0.090	0.002	0.022	0.007	0.047
Delaware	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.836	0.209	0.132	0.003	0.023	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.411	0.605	0.473	0.006	0.049	0.024	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.549	0.112	0.139	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.537	0.119	0.169	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.503	0.117	2.227	0.004	0.153	0.069	0.067
	Gasoline	MC	Motorcycles	11.373	2.191	0.681	0.003	0.031	0.021	0.055
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.168	0.253	0.094	0.002	0.023	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.895	0.210	0.136	0.003	0.024	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.575	0.632	0.489	0.006	0.050	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.862	0.110	0.141	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.615	0.112	0.168	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.514	0.110	2.214	0.004	0.156	0.070	0.067
District of Columbia	Gasoline	MC	Motorcycles	11.315	2.233	0.654	0.003	0.031	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.234	0.250	0.089	0.002	0.026	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.939	0.216	0.129	0.003	0.028	0.010	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.545	0.673	0.493	0.007	0.058	0.027	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.140	0.107	0.139	0.001	0.027	0.009	0.018
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.714	0.118	0.168	0.001	0.027	0.010	0.017
District of Columbia	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.701	0.132	2.498	0.004	0.196	0.086	0.067
	Gasoline	MC	Motorcycles	11.217	2.394	0.614	0.003	0.034	0.022	0.051

Table 5-22. On-Road Vehicle Criteria Pollutant Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.223	0.298	0.093	0.003	0.023	0.007	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.763	0.246	0.136	0.003	0.024	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.813	0.777	0.505	0.007	0.051	0.024	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.055	0.087	0.140	0.001	0.025	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.087	0.095	0.166	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.594	0.094	2.145	0.004	0.167	0.074	0.067
Georgia	Gasoline	MC	Motorcycles	11.419	2.886	0.535	0.003	0.033	0.022	0.053
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.591	0.274	0.098	0.003	0.022	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.280	0.225	0.143	0.003	0.023	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.279	0.696	0.517	0.007	0.049	0.023	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.209	0.100	0.141	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.760	0.104	0.167	0.001	0.022	0.008	0.016
Hawaii	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.521	0.100	2.166	0.004	0.155	0.070	0.067
	Gasoline	MC	Motorcycles	11.470	2.611	0.615	0.003	0.032	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.084	0.286	0.090	0.002	0.023	0.007	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.629	0.236	0.133	0.003	0.024	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.516	0.758	0.492	0.006	0.051	0.024	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.677	0.082	0.137	0.001	0.025	0.008	0.017
Idaho	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.929	0.090	0.164	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.588	0.091	2.134	0.004	0.170	0.076	0.066
	Gasoline	MC	Motorcycles	11.819	2.707	0.580	0.003	0.033	0.022	0.053
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.783	0.284	0.116	0.002	0.022	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.370	0.220	0.163	0.003	0.022	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.269	0.619	0.544	0.006	0.047	0.024	0.082
Illinois	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.553	0.125	0.146	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.483	0.117	0.172	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.428	0.106	2.192	0.004	0.138	0.062	0.068
	Gasoline	MC	Motorcycles	11.487	2.211	0.761	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.527	0.266	0.101	0.002	0.023	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.238	0.224	0.145	0.003	0.025	0.010	0.039
Indiana	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.977	0.651	0.503	0.006	0.052	0.026	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.749	0.116	0.141	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.580	0.117	0.169	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.496	0.112	2.220	0.004	0.150	0.067	0.068
	Gasoline	MC	Motorcycles	11.717	2.250	0.668	0.003	0.033	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.764	0.275	0.105	0.002	0.023	0.008	0.047
Iowa	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.368	0.224	0.149	0.003	0.024	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.234	0.657	0.514	0.006	0.051	0.026	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.766	0.117	0.142	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.562	0.116	0.168	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.491	0.110	2.208	0.004	0.151	0.068	0.068
	Gasoline	MC	Motorcycles	11.587	2.258	0.668	0.003	0.032	0.022	0.054
Kansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.850	0.286	0.111	0.002	0.021	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.422	0.222	0.154	0.003	0.022	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.287	0.620	0.511	0.006	0.046	0.024	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.600	0.125	0.144	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.502	0.115	0.168	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.413	0.103	2.103	0.004	0.135	0.061	0.068
Kansas	Gasoline	MC	Motorcycles	11.447	2.122	0.696	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.819	0.282	0.107	0.002	0.020	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.448	0.221	0.153	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.340	0.635	0.507	0.006	0.044	0.022	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.862	0.113	0.144	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.632	0.108	0.170	0.001	0.019	0.007	0.016
Kansas	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.423	0.097	2.092	0.004	0.134	0.061	0.068
	Gasoline	MC	Motorcycles	11.447	2.359	0.677	0.003	0.030	0.021	0.056

Table 5-22. On-Road Vehicle Criteria Pollutant Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Kentucky	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.779	0.279	0.105	0.002	0.020	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.421	0.218	0.150	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.297	0.636	0.497	0.006	0.044	0.022	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.823	0.111	0.144	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.621	0.106	0.169	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.418	0.094	2.074	0.004	0.131	0.060	0.069
Louisiana	Gasoline	MC	Motorcycles	11.677	2.295	0.673	0.003	0.031	0.022	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.906	0.291	0.096	0.003	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.522	0.229	0.139	0.003	0.021	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.456	0.701	0.493	0.007	0.045	0.022	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.590	0.094	0.142	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.928	0.095	0.167	0.001	0.020	0.008	0.016
Maine	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.471	0.088	2.032	0.004	0.141	0.064	0.068
	Gasoline	MC	Motorcycles	11.502	2.679	0.586	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.641	0.280	0.114	0.002	0.020	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.228	0.214	0.157	0.003	0.021	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.072	0.586	0.522	0.007	0.045	0.023	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.256	0.132	0.145	0.001	0.020	0.007	0.016
Maryland	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.370	0.118	0.168	0.001	0.018	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.382	0.104	2.089	0.004	0.130	0.059	0.068
	Gasoline	MC	Motorcycles	11.556	1.916	0.746	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.168	0.250	0.096	0.003	0.021	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.926	0.213	0.141	0.003	0.023	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.536	0.633	0.497	0.007	0.048	0.023	0.084
Massachusetts	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.783	0.107	0.141	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.621	0.112	0.169	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.492	0.108	2.182	0.004	0.150	0.067	0.067
	Gasoline	MC	Motorcycles	11.452	2.284	0.660	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.130	0.246	0.096	0.002	0.024	0.008	0.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.945	0.218	0.141	0.003	0.026	0.010	0.040
Michigan	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.619	0.635	0.501	0.006	0.053	0.026	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.603	0.115	0.139	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.537	0.124	0.169	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.570	0.128	2.347	0.004	0.169	0.075	0.067
	Gasoline	MC	Motorcycles	11.320	2.215	0.670	0.003	0.032	0.021	0.053
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.794	0.273	0.108	0.002	0.023	0.009	0.047
Minnesota	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.429	0.227	0.154	0.002	0.025	0.010	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.231	0.642	0.519	0.005	0.052	0.026	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.567	0.121	0.141	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.500	0.121	0.169	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.476	0.115	2.211	0.004	0.148	0.067	0.068
	Gasoline	MC	Motorcycles	11.760	2.153	0.694	0.002	0.033	0.022	0.055
Mississippi	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.867	0.286	0.114	0.002	0.023	0.009	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.479	0.234	0.160	0.003	0.024	0.010	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.316	0.636	0.539	0.007	0.050	0.026	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.417	0.128	0.143	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.423	0.122	0.169	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.429	0.114	2.160	0.004	0.141	0.063	0.067
Missouri	Gasoline	MC	Motorcycles	11.606	2.084	0.711	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.874	0.294	0.102	0.003	0.020	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.461	0.221	0.144	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.346	0.670	0.501	0.007	0.043	0.021	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.236	0.100	0.144	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.766	0.095	0.166	0.001	0.019	0.007	0.016
Montana	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.423	0.087	1.995	0.004	0.136	0.061	0.068
	Gasoline	MC	Motorcycles	11.523	2.515	0.624	0.003	0.030	0.021	0.056

Table 5-22. On-Road Vehicle Criteria Pollutant Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Missouri	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.588	0.271	0.102	0.002	0.020	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.293	0.216	0.146	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.111	0.629	0.491	0.006	0.044	0.022	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.820	0.111	0.143	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.629	0.108	0.169	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.423	0.096	2.078	0.004	0.133	0.061	0.068
Montana	Gasoline	MC	Motorcycles	11.580	2.289	0.669	0.003	0.030	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.827	0.290	0.119	0.002	0.021	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.388	0.220	0.164	0.003	0.021	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.276	0.594	0.535	0.006	0.045	0.024	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.402	0.133	0.148	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.428	0.119	0.172	0.001	0.018	0.007	0.016
Nebraska	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.390	0.103	2.147	0.004	0.129	0.059	0.068
	Gasoline	MC	Motorcycles	11.528	2.081	0.777	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.848	0.285	0.111	0.002	0.021	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.453	0.223	0.156	0.003	0.021	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.354	0.620	0.513	0.006	0.045	0.023	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.681	0.121	0.145	0.001	0.021	0.007	0.016
Nevada	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.551	0.114	0.170	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.413	0.100	2.114	0.004	0.132	0.060	0.068
	Gasoline	MC	Motorcycles	11.457	2.233	0.702	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.417	0.267	0.102	0.002	0.023	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.097	0.210	0.150	0.002	0.024	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.786	0.538	0.530	0.005	0.050	0.024	0.085
New Hampshire	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.287	0.101	0.150	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.802	0.106	0.180	0.001	0.023	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.531	0.102	2.358	0.004	0.155	0.070	0.068
	Gasoline	MC	Motorcycles	11.881	2.616	0.750	0.002	0.033	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.148	0.257	0.100	0.002	0.021	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.935	0.211	0.143	0.003	0.022	0.009	0.039
New Jersey	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.676	0.592	0.492	0.006	0.047	0.024	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.399	0.123	0.143	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.454	0.120	0.169	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.428	0.110	2.149	0.004	0.138	0.063	0.068
	Gasoline	MC	Motorcycles	11.455	2.053	0.722	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.123	0.262	0.099	0.002	0.018	0.007	0.044
New Mexico	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.829	0.193	0.135	0.003	0.018	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.491	0.554	0.453	0.006	0.039	0.020	0.080
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.601	0.118	0.148	0.001	0.018	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.544	0.104	0.170	0.001	0.016	0.006	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.363	0.088	2.025	0.004	0.119	0.055	0.069
	Gasoline	MC	Motorcycles	11.439	2.017	0.723	0.003	0.028	0.020	0.059
New York	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.584	0.296	0.109	0.002	0.020	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.217	0.222	0.156	0.003	0.020	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.027	0.630	0.522	0.006	0.043	0.021	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.788	0.111	0.149	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.591	0.104	0.175	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.410	0.092	2.154	0.004	0.132	0.060	0.068
New York	Gasoline	MC	Motorcycles	11.441	2.591	0.756	0.003	0.029	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.176	0.250	0.100	0.002	0.022	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.978	0.213	0.147	0.003	0.024	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.800	0.624	0.513	0.007	0.049	0.024	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.563	0.116	0.140	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.519	0.119	0.169	0.001	0.022	0.008	0.016
New York	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.496	0.116	2.227	0.004	0.152	0.068	0.067
	Gasoline	MC	Motorcycles	11.421	2.147	0.685	0.003	0.031	0.021	0.054

Table 5-22. On-Road Vehicle Criteria Pollutant Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.474	0.271	0.100	0.003	0.022	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.176	0.218	0.145	0.003	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.166	0.668	0.520	0.007	0.048	0.023	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.992	0.104	0.141	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.674	0.104	0.167	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.481	0.099	2.132	0.004	0.148	0.067	0.067
North Dakota	Gasoline	MC	Motorcycles	11.497	2.484	0.641	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.028	0.305	0.119	0.002	0.023	0.009	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.543	0.236	0.163	0.003	0.023	0.010	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.380	0.618	0.537	0.007	0.049	0.026	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.377	0.138	0.146	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.389	0.123	0.170	0.001	0.019	0.007	0.016
Ohio	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.391	0.109	2.134	0.004	0.132	0.059	0.068
	Gasoline	MC	Motorcycles	11.628	2.008	0.741	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.620	0.267	0.103	0.002	0.022	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.283	0.221	0.148	0.003	0.024	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.077	0.641	0.504	0.006	0.050	0.025	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.635	0.115	0.141	0.001	0.022	0.007	0.017
Oklahoma	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.533	0.116	0.168	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.473	0.110	2.178	0.004	0.148	0.066	0.067
	Gasoline	MC	Motorcycles	11.604	2.254	0.678	0.003	0.032	0.022	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.830	0.287	0.104	0.002	0.020	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.448	0.222	0.148	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.299	0.652	0.501	0.006	0.044	0.021	0.082
Oregon	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.067	0.105	0.144	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.711	0.101	0.169	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.427	0.092	2.056	0.004	0.136	0.061	0.068
	Gasoline	MC	Motorcycles	11.433	2.478	0.656	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.303	0.252	0.103	0.002	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.000	0.199	0.146	0.003	0.022	0.008	0.039
Pacific Islands	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.816	0.561	0.502	0.006	0.047	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.460	0.115	0.142	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.462	0.113	0.168	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.452	0.105	2.181	0.004	0.142	0.064	0.068
	Gasoline	MC	Motorcycles	11.541	2.127	0.728	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.448	0.263	0.099	0.002	0.021	0.007	0.046
Pennsylvania	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.140	0.211	0.143	0.003	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.919	0.624	0.497	0.006	0.047	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.852	0.105	0.142	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.625	0.106	0.168	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.469	0.099	2.144	0.004	0.145	0.065	0.068
	Gasoline	MC	Motorcycles	11.496	2.364	0.665	0.003	0.031	0.021	0.055
Puerto Rico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.328	0.255	0.100	0.002	0.022	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.043	0.210	0.143	0.003	0.023	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.870	0.621	0.499	0.006	0.048	0.024	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.637	0.116	0.142	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.547	0.115	0.169	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.459	0.107	2.166	0.004	0.142	0.064	0.068
Puerto Rico	Gasoline	MC	Motorcycles	11.517	2.220	0.686	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.419	0.301	0.087	0.003	0.021	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.994	0.253	0.129	0.003	0.023	0.008	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.995	0.791	0.475	0.007	0.048	0.022	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.448	0.080	0.139	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.292	0.088	0.166	0.001	0.022	0.008	0.016
Puerto Rico	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.568	0.086	2.012	0.004	0.157	0.071	0.067
	Gasoline	MC	Motorcycles	11.470	2.989	0.511	0.003	0.032	0.021	0.054

Table 5-22. On-Road Vehicle Criteria Pollutant Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Rhode Island	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.097	0.247	0.091	0.002	0.023	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.869	0.211	0.133	0.003	0.024	0.009	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.557	0.617	0.484	0.006	0.050	0.024	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.577	0.114	0.139	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.535	0.120	0.169	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.524	0.119	2.268	0.004	0.158	0.071	0.067
South Carolina	Gasoline	MC	Motorcycles	11.346	2.199	0.675	0.003	0.032	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.862	0.289	0.103	0.003	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.466	0.224	0.147	0.003	0.021	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.438	0.677	0.513	0.007	0.045	0.022	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.200	0.101	0.143	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.758	0.099	0.168	0.001	0.020	0.007	0.016
South Dakota	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.451	0.090	2.068	0.004	0.139	0.063	0.068
	Gasoline	MC	Motorcycles	11.507	2.529	0.630	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.885	0.294	0.117	0.002	0.020	0.008	0.044
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.479	0.224	0.162	0.003	0.021	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.396	0.602	0.524	0.007	0.044	0.023	0.080
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.486	0.130	0.148	0.001	0.019	0.007	0.016
Tennessee	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.469	0.115	0.172	0.001	0.017	0.006	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.372	0.097	2.093	0.004	0.122	0.056	0.069
	Gasoline	MC	Motorcycles	11.653	2.113	0.736	0.003	0.029	0.021	0.058
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.829	0.279	0.103	0.002	0.022	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.457	0.227	0.149	0.003	0.023	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.410	0.680	0.517	0.006	0.048	0.024	0.084
Texas	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.034	0.105	0.141	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.695	0.107	0.168	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.490	0.101	2.157	0.004	0.148	0.067	0.068
	Gasoline	MC	Motorcycles	11.539	2.494	0.638	0.003	0.032	0.022	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.579	0.270	0.092	0.002	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.254	0.217	0.133	0.003	0.021	0.008	0.039
Utah	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.918	0.672	0.480	0.007	0.046	0.022	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.492	0.094	0.143	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.894	0.096	0.169	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.476	0.090	2.066	0.004	0.144	0.065	0.068
	Gasoline	MC	Motorcycles	11.527	2.629	0.610	0.003	0.031	0.022	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.426	0.267	0.105	0.002	0.022	0.008	0.046
Vermont	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.146	0.220	0.152	0.003	0.023	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.894	0.626	0.520	0.006	0.049	0.024	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.708	0.117	0.146	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.576	0.118	0.175	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.474	0.110	2.270	0.004	0.145	0.066	0.068
	Gasoline	MC	Motorcycles	11.530	2.410	0.752	0.003	0.031	0.021	0.055
Virgin Islands	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.299	0.272	0.106	0.002	0.020	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.980	0.208	0.146	0.003	0.021	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.737	0.571	0.493	0.007	0.044	0.023	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.302	0.133	0.145	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.391	0.118	0.168	0.001	0.018	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.380	0.104	2.085	0.004	0.129	0.059	0.068
Virgin Islands	Gasoline	MC	Motorcycles	11.561	1.920	0.745	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.491	0.323	0.089	0.003	0.019	0.006	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.952	0.229	0.125	0.003	0.019	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.630	0.739	0.445	0.007	0.042	0.020	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.539	0.083	0.145	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.255	0.079	0.163	0.001	0.019	0.007	0.015
Virgin Islands	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.423	0.073	1.771	0.004	0.139	0.062	0.066
	Gasoline	MC	Motorcycles	11.500	2.526	0.526	0.003	0.030	0.021	0.056

Table 5-22. On-Road Vehicle Criteria Pollutant Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.560	0.269	0.103	0.003	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.238	0.217	0.147	0.003	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.090	0.643	0.514	0.007	0.046	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.816	0.108	0.142	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.624	0.108	0.168	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.454	0.099	2.119	0.004	0.140	0.064	0.068
Washington	Gasoline	MC	Motorcycles	11.487	2.317	0.660	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.542	0.258	0.109	0.002	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.241	0.214	0.158	0.003	0.023	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.196	0.629	0.534	0.006	0.047	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.386	0.116	0.141	0.001	0.022	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.453	0.117	0.169	0.001	0.021	0.008	0.016
West Virginia	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.461	0.109	2.197	0.004	0.143	0.065	0.068
	Gasoline	MC	Motorcycles	11.486	2.176	0.722	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.688	0.279	0.108	0.002	0.020	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.321	0.217	0.152	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.194	0.625	0.508	0.006	0.045	0.023	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.575	0.115	0.143	0.001	0.020	0.007	0.016
Wisconsin	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.512	0.109	0.167	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.408	0.098	2.070	0.004	0.133	0.060	0.068
	Gasoline	MC	Motorcycles	11.613	2.231	0.691	0.003	0.030	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.678	0.281	0.111	0.002	0.021	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.310	0.222	0.155	0.003	0.022	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.102	0.611	0.516	0.006	0.047	0.025	0.081
Wyoming	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.398	0.127	0.144	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.421	0.118	0.169	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.400	0.105	2.111	0.004	0.133	0.060	0.068
	Gasoline	MC	Motorcycles	11.682	2.039	0.719	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.865	0.297	0.121	0.002	0.020	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.433	0.223	0.166	0.003	0.021	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.345	0.590	0.534	0.006	0.044	0.023	0.080
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.426	0.134	0.150	0.001	0.019	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.451	0.119	0.173	0.001	0.018	0.007	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.380	0.100	2.144	0.004	0.125	0.057	0.069
	Gasoline	MC	Motorcycles	11.549	2.136	0.789	0.003	0.029	0.021	0.057

Table 5-23. On-Road Vehicle Criteria Pollutant Emission Factors – 2029

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.768	0.286	0.093	0.003	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.341	0.221	0.133	0.003	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.872	0.657	0.469	0.007	0.047	0.022	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.601	0.101	0.143	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.757	0.100	0.159	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.452	0.085	1.918	0.004	0.144	0.062	0.068
Alaska	Gasoline	MC	Motorcycles	11.372	2.577	0.611	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	5.011	0.289	0.103	0.001	0.022	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	4.506	0.242	0.141	0.001	0.023	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	10.265	0.598	0.427	0.002	0.047	0.024	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.457	0.151	0.145	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.337	0.142	0.163	0.001	0.020	0.007	0.016
Arizona	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.403	0.120	2.049	0.004	0.135	0.059	0.069
	Gasoline	MC	Motorcycles	12.212	1.827	0.722	0.001	0.026	0.017	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.425	0.282	0.087	0.001	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.092	0.223	0.129	0.002	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.213	0.640	0.450	0.004	0.046	0.022	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.015	0.093	0.153	0.001	0.023	0.008	0.017
Arkansas	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.947	0.096	0.174	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.468	0.081	2.074	0.004	0.142	0.061	0.068
	Gasoline	MC	Motorcycles	11.401	2.922	0.722	0.002	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.688	0.279	0.093	0.002	0.020	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.301	0.214	0.134	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.754	0.618	0.450	0.006	0.043	0.021	0.081
Colorado	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.383	0.105	0.144	0.001	0.021	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.697	0.101	0.160	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.401	0.083	1.867	0.004	0.133	0.058	0.068
	Gasoline	MC	Motorcycles	11.321	2.434	0.638	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.280	0.263	0.096	0.002	0.021	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.988	0.212	0.137	0.003	0.023	0.009	0.038
Connecticut	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.386	0.581	0.468	0.006	0.048	0.024	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.820	0.119	0.145	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.496	0.118	0.165	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.425	0.100	2.034	0.004	0.138	0.060	0.068
	Gasoline	MC	Motorcycles	11.575	2.370	0.743	0.003	0.031	0.022	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	2.930	0.237	0.083	0.002	0.021	0.007	0.046
Delaware	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.725	0.203	0.121	0.003	0.023	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	6.945	0.573	0.430	0.006	0.048	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.815	0.113	0.140	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.519	0.118	0.161	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.467	0.107	2.032	0.004	0.148	0.064	0.067
	Gasoline	MC	Motorcycles	11.273	2.178	0.680	0.003	0.031	0.021	0.055
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.056	0.249	0.086	0.002	0.022	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.777	0.204	0.125	0.003	0.023	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.081	0.597	0.444	0.006	0.049	0.023	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.142	0.111	0.141	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.596	0.112	0.160	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.477	0.100	2.021	0.004	0.151	0.065	0.068
District of Columbia	Gasoline	MC	Motorcycles	11.215	2.220	0.653	0.003	0.031	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.117	0.246	0.081	0.002	0.025	0.008	0.049
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.823	0.210	0.118	0.003	0.028	0.010	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.032	0.636	0.449	0.007	0.057	0.026	0.089
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.436	0.108	0.140	0.001	0.027	0.009	0.018
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.693	0.118	0.160	0.001	0.027	0.010	0.017
District of Columbia	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.663	0.121	2.293	0.004	0.190	0.081	0.067
	Gasoline	MC	Motorcycles	11.118	2.380	0.613	0.003	0.034	0.022	0.051

Table 5-23. On-Road Vehicle Criteria Pollutant Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.072	0.292	0.085	0.003	0.023	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.612	0.238	0.124	0.003	0.024	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.193	0.730	0.458	0.007	0.050	0.023	0.086
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.395	0.088	0.140	0.001	0.025	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.064	0.094	0.159	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.555	0.083	1.958	0.004	0.161	0.069	0.068
Georgia	Gasoline	MC	Motorcycles	11.319	2.868	0.534	0.003	0.033	0.022	0.053
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.463	0.269	0.089	0.003	0.022	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.149	0.218	0.131	0.003	0.023	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.741	0.655	0.471	0.007	0.048	0.023	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.507	0.101	0.141	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.740	0.104	0.160	0.001	0.022	0.008	0.016
Hawaii	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.484	0.091	1.975	0.004	0.150	0.065	0.068
	Gasoline	MC	Motorcycles	11.369	2.595	0.614	0.003	0.032	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.937	0.281	0.082	0.002	0.022	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.483	0.229	0.122	0.003	0.024	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.909	0.713	0.447	0.006	0.050	0.023	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.999	0.084	0.138	0.001	0.025	0.008	0.017
Idaho	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.907	0.089	0.156	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.550	0.080	1.952	0.004	0.165	0.071	0.067
	Gasoline	MC	Motorcycles	11.717	2.689	0.579	0.003	0.033	0.022	0.053
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.650	0.279	0.107	0.002	0.021	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.239	0.214	0.149	0.003	0.022	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.740	0.584	0.493	0.006	0.046	0.023	0.081
Illinois	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.817	0.126	0.147	0.001	0.022	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.464	0.117	0.164	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.393	0.097	1.993	0.004	0.133	0.058	0.069
	Gasoline	MC	Motorcycles	11.386	2.199	0.760	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.401	0.262	0.093	0.002	0.023	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.107	0.217	0.133	0.003	0.024	0.010	0.039
Indiana	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.458	0.614	0.457	0.006	0.051	0.026	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.024	0.116	0.142	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.561	0.117	0.161	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.460	0.103	2.023	0.004	0.145	0.063	0.068
	Gasoline	MC	Motorcycles	11.615	2.237	0.667	0.003	0.033	0.022	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.632	0.270	0.096	0.002	0.023	0.008	0.046
Iowa	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.236	0.217	0.137	0.003	0.024	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.691	0.619	0.467	0.006	0.050	0.025	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.042	0.118	0.142	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.543	0.115	0.160	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.455	0.101	2.013	0.004	0.146	0.063	0.068
	Gasoline	MC	Motorcycles	11.485	2.245	0.666	0.003	0.032	0.022	0.054
Kansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.716	0.282	0.102	0.002	0.021	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.290	0.216	0.142	0.003	0.021	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.759	0.584	0.464	0.006	0.045	0.023	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.866	0.125	0.145	0.001	0.021	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.484	0.115	0.160	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.379	0.094	1.912	0.004	0.130	0.056	0.069
Kansas	Gasoline	MC	Motorcycles	11.346	2.111	0.695	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.684	0.277	0.098	0.002	0.020	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.312	0.215	0.140	0.003	0.021	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.805	0.598	0.460	0.006	0.043	0.022	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.142	0.114	0.145	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.612	0.108	0.162	0.001	0.019	0.007	0.015
Kansas	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.388	0.088	1.900	0.004	0.129	0.056	0.069
	Gasoline	MC	Motorcycles	11.346	2.345	0.676	0.003	0.030	0.021	0.057

Table 5-23. On-Road Vehicle Criteria Pollutant Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Kentucky	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.645	0.274	0.097	0.002	0.020	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.285	0.212	0.137	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.768	0.599	0.451	0.006	0.044	0.022	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.101	0.112	0.145	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.602	0.106	0.161	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.382	0.085	1.882	0.004	0.126	0.055	0.069
Louisiana	Gasoline	MC	Motorcycles	11.575	2.281	0.672	0.003	0.031	0.022	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.767	0.286	0.088	0.003	0.020	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.381	0.222	0.127	0.003	0.021	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.896	0.659	0.447	0.007	0.044	0.021	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.907	0.095	0.143	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.907	0.095	0.160	0.001	0.020	0.008	0.016
Maine	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.435	0.079	1.848	0.004	0.136	0.059	0.069
	Gasoline	MC	Motorcycles	11.400	2.663	0.585	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.515	0.275	0.106	0.002	0.020	0.008	0.044
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.103	0.208	0.144	0.003	0.021	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.573	0.553	0.473	0.007	0.044	0.023	0.080
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.504	0.133	0.146	0.001	0.020	0.007	0.016
Maryland	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.353	0.118	0.160	0.001	0.018	0.007	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.348	0.096	1.899	0.004	0.126	0.055	0.068
	Gasoline	MC	Motorcycles	11.454	1.905	0.744	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.055	0.246	0.088	0.003	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.808	0.206	0.129	0.003	0.023	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.056	0.598	0.452	0.007	0.047	0.023	0.083
Massachusetts	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.060	0.108	0.141	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.603	0.112	0.161	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.456	0.098	1.989	0.004	0.145	0.063	0.068
	Gasoline	MC	Motorcycles	11.351	2.270	0.658	0.003	0.031	0.021	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.017	0.242	0.088	0.002	0.023	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.825	0.212	0.129	0.003	0.025	0.009	0.039
Michigan	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.120	0.601	0.456	0.006	0.052	0.025	0.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.872	0.116	0.140	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.519	0.124	0.161	0.001	0.024	0.009	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.534	0.118	2.147	0.004	0.163	0.070	0.067
	Gasoline	MC	Motorcycles	11.220	2.203	0.669	0.003	0.032	0.021	0.053
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.662	0.269	0.100	0.002	0.023	0.009	0.046
Minnesota	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.297	0.221	0.142	0.002	0.024	0.010	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.694	0.607	0.472	0.005	0.051	0.026	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.833	0.122	0.142	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.482	0.121	0.161	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.441	0.106	2.015	0.004	0.143	0.062	0.068
	Gasoline	MC	Motorcycles	11.658	2.141	0.693	0.002	0.032	0.022	0.055
Mississippi	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.733	0.281	0.105	0.002	0.022	0.009	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.347	0.227	0.147	0.003	0.023	0.010	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.785	0.600	0.489	0.007	0.049	0.026	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.676	0.128	0.144	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.404	0.121	0.161	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.396	0.105	1.969	0.004	0.136	0.059	0.068
	Gasoline	MC	Motorcycles	11.504	2.073	0.709	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.736	0.289	0.093	0.002	0.019	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.322	0.214	0.132	0.003	0.020	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.796	0.630	0.454	0.007	0.043	0.021	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.534	0.101	0.144	0.001	0.021	0.008	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.747	0.095	0.159	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.388	0.078	1.813	0.004	0.131	0.057	0.068
	Gasoline	MC	Motorcycles	11.421	2.500	0.622	0.003	0.030	0.021	0.056

Table 5-23. On-Road Vehicle Criteria Pollutant Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Missouri	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.460	0.267	0.093	0.002	0.020	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.161	0.210	0.134	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.596	0.593	0.445	0.006	0.044	0.022	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.098	0.112	0.144	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.610	0.107	0.161	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.388	0.088	1.888	0.004	0.128	0.056	0.069
Montana	Gasoline	MC	Motorcycles	11.479	2.276	0.668	0.003	0.030	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.694	0.285	0.110	0.002	0.020	0.008	0.044
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.258	0.214	0.151	0.003	0.021	0.009	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.762	0.560	0.485	0.006	0.044	0.023	0.080
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.658	0.134	0.149	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.409	0.119	0.163	0.001	0.018	0.007	0.015
Nebraska	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.356	0.095	1.949	0.004	0.124	0.054	0.069
	Gasoline	MC	Motorcycles	11.426	2.069	0.776	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.714	0.281	0.102	0.002	0.020	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.319	0.216	0.143	0.003	0.021	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.826	0.584	0.466	0.006	0.044	0.023	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.951	0.122	0.146	0.001	0.021	0.007	0.016
Nevada	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.531	0.114	0.162	0.001	0.019	0.007	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.378	0.092	1.920	0.004	0.127	0.055	0.069
	Gasoline	MC	Motorcycles	11.356	2.221	0.701	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.295	0.263	0.093	0.002	0.022	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.972	0.204	0.137	0.002	0.024	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.274	0.511	0.481	0.005	0.049	0.024	0.084
New Hampshire	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.589	0.102	0.151	0.001	0.024	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.781	0.106	0.172	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.493	0.092	2.148	0.004	0.149	0.065	0.068
	Gasoline	MC	Motorcycles	11.778	2.600	0.749	0.002	0.033	0.022	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.037	0.252	0.092	0.002	0.021	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.818	0.205	0.131	0.003	0.022	0.009	0.038
New Jersey	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.205	0.559	0.447	0.006	0.046	0.023	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.656	0.124	0.143	0.001	0.021	0.007	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.436	0.120	0.161	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.394	0.101	1.956	0.004	0.133	0.058	0.068
	Gasoline	MC	Motorcycles	11.353	2.041	0.721	0.003	0.030	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.012	0.258	0.091	0.002	0.017	0.006	0.044
New Mexico	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.715	0.188	0.124	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.057	0.523	0.411	0.006	0.038	0.019	0.079
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.865	0.119	0.148	0.001	0.018	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.526	0.104	0.162	0.001	0.016	0.006	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.328	0.080	1.833	0.004	0.114	0.050	0.070
	Gasoline	MC	Motorcycles	11.338	2.004	0.722	0.003	0.028	0.020	0.059
New York	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.457	0.291	0.100	0.002	0.019	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.088	0.216	0.142	0.003	0.020	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.518	0.593	0.473	0.006	0.042	0.021	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.063	0.112	0.150	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.572	0.104	0.167	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.375	0.083	1.956	0.004	0.127	0.055	0.069
New York	Gasoline	MC	Motorcycles	11.340	2.577	0.755	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.066	0.246	0.092	0.002	0.022	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.863	0.207	0.135	0.003	0.023	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.341	0.590	0.470	0.007	0.049	0.024	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.829	0.117	0.141	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.501	0.119	0.161	0.001	0.022	0.008	0.016
New York	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.461	0.107	2.032	0.004	0.147	0.064	0.068
	Gasoline	MC	Motorcycles	11.320	2.135	0.684	0.003	0.031	0.021	0.055

Table 5-23. On-Road Vehicle Criteria Pollutant Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.353	0.266	0.091	0.003	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.049	0.212	0.133	0.003	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.639	0.629	0.472	0.007	0.047	0.023	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.278	0.105	0.142	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.654	0.104	0.160	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.445	0.090	1.943	0.004	0.143	0.062	0.068
	Gasoline	MC	Motorcycles	11.395	2.470	0.639	0.003	0.031	0.021	0.055
North Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.890	0.300	0.110	0.002	0.022	0.009	0.044
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.411	0.230	0.150	0.003	0.023	0.010	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.860	0.583	0.487	0.007	0.048	0.026	0.080
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.633	0.139	0.147	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.370	0.123	0.162	0.001	0.019	0.007	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.358	0.100	1.940	0.004	0.127	0.055	0.069
	Gasoline	MC	Motorcycles	11.525	1.997	0.739	0.003	0.030	0.021	0.057
Ohio	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.493	0.263	0.094	0.002	0.022	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.155	0.215	0.135	0.003	0.023	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.552	0.605	0.458	0.006	0.049	0.024	0.083
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.904	0.116	0.142	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.514	0.116	0.160	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.438	0.101	1.986	0.004	0.142	0.062	0.068
	Gasoline	MC	Motorcycles	11.503	2.241	0.677	0.003	0.032	0.022	0.055
Oklahoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.694	0.282	0.095	0.002	0.019	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.311	0.215	0.136	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.755	0.614	0.455	0.006	0.043	0.021	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.358	0.106	0.145	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.691	0.101	0.161	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.392	0.083	1.869	0.004	0.131	0.057	0.068
	Gasoline	MC	Motorcycles	11.332	2.464	0.655	0.003	0.029	0.021	0.056
Oregon	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.185	0.248	0.095	0.002	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.879	0.193	0.134	0.003	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.316	0.531	0.456	0.006	0.046	0.023	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.719	0.116	0.143	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.443	0.113	0.160	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.416	0.096	1.985	0.004	0.137	0.060	0.068
	Gasoline	MC	Motorcycles	11.439	2.115	0.727	0.003	0.031	0.021	0.055
Pacific Islands	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.326	0.258	0.090	0.002	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.014	0.205	0.130	0.003	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.407	0.589	0.451	0.006	0.046	0.022	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.132	0.106	0.142	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.606	0.106	0.161	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.433	0.090	1.952	0.004	0.139	0.060	0.068
	Gasoline	MC	Motorcycles	11.395	2.350	0.664	0.003	0.031	0.021	0.055
Pennsylvania	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.211	0.250	0.092	0.002	0.021	0.008	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.922	0.204	0.131	0.003	0.022	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.375	0.586	0.453	0.006	0.047	0.023	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.906	0.117	0.143	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.528	0.115	0.161	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.423	0.097	1.971	0.004	0.137	0.060	0.068
	Gasoline	MC	Motorcycles	11.415	2.207	0.684	0.003	0.031	0.021	0.056
Puerto Rico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.260	0.295	0.079	0.003	0.021	0.007	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.834	0.245	0.118	0.003	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.366	0.743	0.431	0.007	0.047	0.022	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.808	0.081	0.140	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.268	0.088	0.159	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.528	0.076	1.835	0.004	0.152	0.066	0.068
	Gasoline	MC	Motorcycles	11.369	2.970	0.510	0.003	0.032	0.021	0.054

Table 5-23. On-Road Vehicle Criteria Pollutant Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Rhode Island	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	2.987	0.243	0.084	0.002	0.022	0.008	0.047
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.758	0.205	0.122	0.003	0.024	0.009	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.079	0.584	0.440	0.006	0.049	0.024	0.084
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.844	0.115	0.140	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.516	0.120	0.161	0.001	0.022	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.488	0.110	2.071	0.004	0.152	0.066	0.068
South Carolina	Gasoline	MC	Motorcycles	11.246	2.186	0.674	0.003	0.031	0.021	0.054
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.725	0.284	0.094	0.002	0.020	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.327	0.217	0.135	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.884	0.637	0.465	0.007	0.044	0.021	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.496	0.102	0.144	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.738	0.099	0.160	0.001	0.020	0.007	0.016
South Dakota	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.415	0.081	1.879	0.004	0.134	0.058	0.069
	Gasoline	MC	Motorcycles	11.405	2.514	0.628	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.750	0.289	0.108	0.002	0.020	0.008	0.044
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.345	0.218	0.149	0.003	0.020	0.009	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.888	0.568	0.475	0.007	0.043	0.023	0.079
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.747	0.130	0.148	0.001	0.019	0.007	0.016
Tennessee	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.450	0.115	0.163	0.001	0.017	0.006	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.338	0.089	1.897	0.004	0.117	0.051	0.070
	Gasoline	MC	Motorcycles	11.550	2.101	0.735	0.003	0.029	0.021	0.058
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.693	0.274	0.094	0.002	0.022	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.319	0.220	0.136	0.003	0.023	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.852	0.640	0.469	0.006	0.048	0.023	0.083
Texas	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.324	0.106	0.142	0.001	0.023	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.675	0.107	0.160	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.454	0.091	1.964	0.004	0.143	0.062	0.068
	Gasoline	MC	Motorcycles	11.438	2.479	0.637	0.003	0.032	0.022	0.055
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.451	0.265	0.084	0.002	0.020	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.123	0.210	0.122	0.003	0.021	0.008	0.038
Utah	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.397	0.633	0.436	0.007	0.045	0.021	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.803	0.095	0.144	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.874	0.096	0.162	0.001	0.020	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.439	0.081	1.880	0.004	0.138	0.060	0.068
	Gasoline	MC	Motorcycles	11.426	2.613	0.608	0.003	0.031	0.022	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.304	0.263	0.096	0.002	0.022	0.008	0.046
Vermont	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.022	0.214	0.139	0.003	0.023	0.009	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.393	0.590	0.472	0.006	0.048	0.024	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.981	0.118	0.147	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.556	0.117	0.167	0.001	0.021	0.008	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.438	0.101	2.067	0.004	0.140	0.061	0.068
	Gasoline	MC	Motorcycles	11.428	2.397	0.751	0.003	0.031	0.021	0.055
Virgin Islands	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.184	0.267	0.098	0.002	0.020	0.008	0.044
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.863	0.202	0.134	0.003	0.020	0.009	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.273	0.539	0.448	0.007	0.044	0.023	0.080
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.553	0.134	0.146	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.374	0.118	0.160	0.001	0.018	0.007	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.346	0.095	1.894	0.004	0.124	0.054	0.069
Virgin Islands	Gasoline	MC	Motorcycles	11.459	1.909	0.743	0.003	0.029	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	4.329	0.317	0.081	0.003	0.019	0.006	0.044
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.793	0.222	0.114	0.003	0.019	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	8.024	0.693	0.403	0.007	0.041	0.020	0.080
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	7.901	0.084	0.146	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	3.231	0.079	0.156	0.001	0.019	0.007	0.015
Virgin Islands	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.388	0.065	1.614	0.004	0.134	0.058	0.067
	Gasoline	MC	Motorcycles	11.399	2.508	0.525	0.003	0.030	0.021	0.056

Table 5-23. On-Road Vehicle Criteria Pollutant Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.434	0.264	0.094	0.002	0.020	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.109	0.210	0.135	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.570	0.606	0.466	0.007	0.045	0.022	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	6.093	0.109	0.143	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.605	0.108	0.160	0.001	0.020	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.418	0.090	1.927	0.004	0.135	0.059	0.068
Washington	Gasoline	MC	Motorcycles	11.386	2.303	0.658	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.418	0.254	0.101	0.002	0.021	0.007	0.046
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.112	0.208	0.145	0.003	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.667	0.594	0.484	0.006	0.046	0.023	0.082
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.642	0.117	0.141	0.001	0.022	0.008	0.017
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.435	0.116	0.161	0.001	0.021	0.008	0.016
West Virginia	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.426	0.100	2.000	0.004	0.138	0.060	0.068
	Gasoline	MC	Motorcycles	11.385	2.164	0.720	0.003	0.031	0.021	0.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.559	0.274	0.099	0.002	0.020	0.007	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.190	0.210	0.139	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.671	0.589	0.461	0.006	0.044	0.022	0.081
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.840	0.116	0.144	0.001	0.021	0.007	0.016
Wisconsin	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.494	0.109	0.160	0.001	0.019	0.007	0.016
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.374	0.089	1.881	0.004	0.128	0.056	0.068
	Gasoline	MC	Motorcycles	11.511	2.219	0.690	0.003	0.030	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.549	0.276	0.103	0.002	0.021	0.008	0.045
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.180	0.216	0.142	0.003	0.022	0.009	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.595	0.577	0.468	0.006	0.046	0.024	0.081
Wyoming	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.655	0.128	0.145	0.001	0.021	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.403	0.117	0.161	0.001	0.019	0.007	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.366	0.097	1.920	0.004	0.128	0.055	0.068
	Gasoline	MC	Motorcycles	11.579	2.028	0.717	0.003	0.030	0.021	0.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	3.731	0.292	0.111	0.002	0.020	0.008	0.044
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	3.301	0.217	0.152	0.003	0.020	0.009	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	7.836	0.557	0.484	0.006	0.043	0.023	0.079
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	5.683	0.134	0.150	0.001	0.020	0.007	0.016
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	2.433	0.118	0.165	0.001	0.018	0.007	0.015
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	1.345	0.091	1.944	0.004	0.120	0.053	0.069
	Gasoline	MC	Motorcycles	11.446	2.125	0.787	0.003	0.029	0.021	0.058

Table 5-24. On-Road Vehicle Speciated GHG Emission Factors – 2025

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0169	0.0053	333.102	334.973
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0182	0.0073	416.396	418.845
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0525	0.0256	889.230	897.481
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0492	0.0007	375.900	377.461
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0284	0.0010	395.626	396.687
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0249	0.1618	1297.452	1341.019
	Gasoline	MC	Motorcycles	0.1030	0.0029	391.729	395.386
Alaska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0236	0.0052	319.602	321.645
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0238	0.0072	399.992	402.560
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0579	0.0249	858.711	866.927
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0761	0.0007	360.163	362.469
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0539	0.0009	379.999	381.760
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0462	0.1630	1308.225	1352.718
	Gasoline	MC	Motorcycles	0.0823	0.0028	390.156	393.207
Arizona	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0133	0.0051	334.821	336.551
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0147	0.0075	421.542	423.932
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0459	0.0259	891.942	900.099
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0449	0.0007	378.668	380.107
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0259	0.0010	401.145	402.136
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0226	0.1624	1309.291	1352.968
	Gasoline	MC	Motorcycles	0.1071	0.0030	393.760	397.550
Arkansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0166	0.0052	325.484	327.329
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0176	0.0071	408.914	411.301
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0487	0.0247	869.672	877.577
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0513	0.0007	367.074	368.685
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0303	0.0009	388.251	389.350
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0256	0.1622	1300.015	1343.704
	Gasoline	MC	Motorcycles	0.0985	0.0027	393.734	397.214
Colorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0175	0.0051	322.445	324.286
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0182	0.0073	406.111	408.556
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0509	0.0253	869.244	877.382
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0589	0.0007	362.230	364.054
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0396	0.0010	384.099	385.462
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0341	0.1618	1299.603	1343.431
	Gasoline	MC	Motorcycles	0.1062	0.0029	394.566	398.299
Connecticut	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0159	0.0050	326.822	328.600
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0178	0.0076	413.558	416.066
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0497	0.0264	879.034	887.425
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0557	0.0007	367.343	369.086
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0389	0.0010	391.276	392.638
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0363	0.1596	1284.136	1327.459
	Gasoline	MC	Motorcycles	0.1101	0.0030	394.700	398.580
Delaware	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0156	0.0052	332.527	334.348
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0173	0.0075	416.691	419.162
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0509	0.0263	891.982	900.376
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0543	0.0007	374.202	375.912
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0348	0.0010	394.881	396.131
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0321	0.1609	1291.504	1335.042
	Gasoline	MC	Motorcycles	0.1106	0.0030	391.969	395.868

Table 5-24. On-Road Vehicle Speciated GHG Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0153	0.0053	346.964	348.788
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0165	0.0080	435.071	437.661
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0545	0.0289	938.357	947.532
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0529	0.0008	390.437	392.125
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0354	0.0012	412.197	413.502
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0381	0.1596	1287.884	1331.247
	Gasoline	MC	Motorcycles	0.1199	0.0035	388.939	393.228
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0160	0.0052	346.750	348.584
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0180	0.0077	434.233	436.776
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0559	0.0272	921.824	930.590
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0422	0.0007	392.137	393.515
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0229	0.0011	413.355	414.285
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0211	0.1613	1300.461	1343.791
	Gasoline	MC	Motorcycles	0.1083	0.0032	390.801	394.687
Georgia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0158	0.0052	334.217	336.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0177	0.0075	419.325	421.808
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0526	0.0263	894.615	903.053
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0490	0.0007	376.996	378.557
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0298	0.0010	398.191	399.299
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0270	0.1612	1295.334	1338.797
	Gasoline	MC	Motorcycles	0.1051	0.0030	392.190	395.940
Hawaii	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0147	0.0052	339.884	341.669
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0167	0.0076	425.811	428.292
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0532	0.0270	910.865	919.510
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0397	0.0007	384.676	385.979
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0205	0.0011	405.663	406.520
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0189	0.1591	1278.462	1321.165
	Gasoline	MC	Motorcycles	0.1061	0.0032	390.249	394.062
Idaho	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0198	0.0053	321.145	323.091
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0201	0.0071	402.050	404.485
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0521	0.0245	864.692	872.641
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0625	0.0007	360.453	362.376
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0399	0.0009	380.176	381.539
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0334	0.1629	1305.268	1349.374
	Gasoline	MC	Motorcycles	0.0992	0.0027	393.583	397.087
Illinois	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0183	0.0052	329.908	331.793
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0199	0.0075	414.479	417.019
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0547	0.0261	885.860	894.298
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0576	0.0007	370.723	372.520
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0385	0.0010	392.156	393.504
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0346	0.1621	1303.405	1347.319
	Gasoline	MC	Motorcycles	0.1114	0.0030	393.423	397.339
Indiana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0189	0.0053	330.731	332.655
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0199	0.0074	413.520	416.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0550	0.0259	887.735	896.130
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0581	0.0007	371.648	373.462
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0376	0.0010	391.367	392.690
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0338	0.1621	1301.487	1345.400
	Gasoline	MC	Motorcycles	0.1064	0.0030	392.172	395.943

Table 5-24. On-Road Vehicle Speciated GHG Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Iowa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0202	0.0053	321.763	323.731
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0203	0.0070	402.951	405.381
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0515	0.0242	862.647	870.514
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0624	0.0007	361.003	362.924
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0391	0.0009	380.984	382.325
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0325	0.1628	1303.771	1347.832
Kansas	Gasoline	MC	Motorcycles	0.0979	0.0027	393.716	397.162
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0179	0.0052	320.838	322.709
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0188	0.0071	403.778	406.182
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0496	0.0244	861.451	869.297
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0561	0.0006	361.161	362.901
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0349	0.0009	382.653	383.872
Kentucky	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0288	0.1632	1310.340	1354.399
	Gasoline	MC	Motorcycles	0.0981	0.0027	395.022	398.483
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0178	0.0052	321.478	323.358
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0187	0.0071	404.680	407.089
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0499	0.0243	861.414	869.257
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0550	0.0006	361.979	363.692
Louisiana	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0337	0.0009	383.626	384.815
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0275	0.1640	1317.164	1361.383
	Gasoline	MC	Motorcycles	0.1011	0.0027	395.498	399.037
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0157	0.0052	332.407	334.224
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0171	0.0073	417.554	419.968
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0495	0.0252	883.451	891.524
Maine	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0461	0.0007	375.666	377.138
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0259	0.0010	397.144	398.129
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0221	0.1628	1309.307	1353.073
	Gasoline	MC	Motorcycles	0.1014	0.0028	393.745	397.336
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0209	0.0053	316.091	318.080
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0204	0.0069	396.596	398.991
Maryland	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0503	0.0237	850.179	857.862
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0663	0.0006	354.004	356.030
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0415	0.0009	374.554	375.956
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0339	0.1623	1296.171	1340.125
	Gasoline	MC	Motorcycles	0.0957	0.0025	394.085	397.432
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0160	0.0051	327.898	329.691
Massachusetts	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0178	0.0075	413.911	416.398
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0511	0.0261	879.450	887.789
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0531	0.0007	369.119	370.786
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0351	0.0010	392.245	393.495
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0319	0.1604	1289.181	1332.573
	Gasoline	MC	Motorcycles	0.1112	0.0030	394.260	398.156
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0169	0.0051	333.645	335.474
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0192	0.0078	420.785	423.383
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0545	0.0274	900.306	909.098
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0574	0.0007	374.691	376.491
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0407	0.0011	397.800	399.229
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0403	0.1596	1285.528	1328.959
	Gasoline	MC	Motorcycles	0.1145	0.0032	392.573	396.633

Table 5-24. On-Road Vehicle Speciated GHG Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Michigan	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0202	0.0052	327.296	329.235
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0214	0.0074	410.782	413.337
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0568	0.0257	879.401	887.809
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0607	0.0007	367.262	369.145
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0410	0.0010	388.210	389.624
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0368	0.1616	1297.014	1340.862
	Gasoline	MC	Motorcycles	0.1077	0.0029	393.355	397.148
Minnesota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0222	0.0052	322.790	324.784
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0227	0.0072	405.077	407.612
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0563	0.0249	866.248	874.429
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0644	0.0007	361.533	363.513
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0433	0.0010	382.312	383.776
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0381	0.1608	1287.044	1330.729
	Gasoline	MC	Motorcycles	0.1017	0.0028	393.618	397.195
Mississippi	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0166	0.0053	324.728	326.588
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0174	0.0070	407.491	409.838
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0484	0.0243	867.135	874.918
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0492	0.0007	366.688	368.237
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0272	0.0009	387.364	388.372
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0228	0.1620	1296.434	1340.006
	Gasoline	MC	Motorcycles	0.0979	0.0026	393.034	396.477
Missouri	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0171	0.0052	321.642	323.487
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0183	0.0072	405.527	407.936
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0490	0.0245	861.471	869.341
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0551	0.0006	362.074	363.788
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0346	0.0009	384.327	385.540
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0286	0.1630	1309.282	1353.281
	Gasoline	MC	Motorcycles	0.1012	0.0027	395.591	399.136
Montana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0212	0.0053	316.105	318.101
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0208	0.0069	396.363	398.766
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0509	0.0236	851.637	859.315
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0671	0.0006	354.112	356.156
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0423	0.0009	374.291	375.708
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0335	0.1638	1311.993	1356.345
	Gasoline	MC	Motorcycles	0.0962	0.0026	394.787	398.159
Nebraska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0196	0.0052	319.811	321.741
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0200	0.0070	401.774	404.196
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0507	0.0242	859.288	867.109
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0608	0.0006	359.193	361.065
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0385	0.0009	380.063	381.381
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0312	0.1637	1313.961	1358.224
	Gasoline	MC	Motorcycles	0.0978	0.0027	395.028	398.473
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0139	0.0052	334.558	336.317
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0157	0.0075	420.273	422.714
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0480	0.0264	896.833	905.176
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0496	0.0007	377.504	379.078
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0307	0.0010	399.130	400.262
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0276	0.1622	1306.600	1350.355
	Gasoline	MC	Motorcycles	0.1055	0.0031	392.680	396.454

Table 5-24. On-Road Vehicle Speciated GHG Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
New Hampshire	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0178	0.0052	321.271	323.135
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0189	0.0072	404.474	406.914
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0498	0.0249	862.156	870.139
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0617	0.0007	360.330	362.232
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0412	0.0010	382.160	383.566
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0352	0.1615	1294.522	1338.308
	Gasoline	MC	Motorcycles	0.1037	0.0027	394.842	398.470
New Jersey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0158	0.0053	312.078	313.928
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0160	0.0068	394.701	396.946
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0415	0.0228	839.727	846.936
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0589	0.0006	351.044	352.853
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0345	0.0008	373.943	375.132
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0263	0.1653	1325.649	1370.176
	Gasoline	MC	Motorcycles	0.0975	0.0024	397.187	400.540
New Mexico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0167	0.0053	320.784	322.650
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0174	0.0070	402.971	405.319
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0466	0.0241	860.280	867.977
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0550	0.0006	361.252	362.963
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0327	0.0009	382.150	383.307
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0264	0.1633	1309.207	1353.233
	Gasoline	MC	Motorcycles	0.0969	0.0026	394.367	397.777
New York	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0168	0.0051	328.242	330.074
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0187	0.0075	413.234	415.745
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0518	0.0262	882.251	890.639
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0578	0.0007	368.697	370.500
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0394	0.0010	390.842	392.217
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0363	0.1607	1290.663	1334.254
	Gasoline	MC	Motorcycles	0.1070	0.0030	393.578	397.367
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0159	0.0052	329.146	330.968
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0175	0.0073	413.015	415.452
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0507	0.0256	881.866	890.074
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0511	0.0007	371.034	372.646
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0312	0.0010	391.987	393.123
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0275	0.1614	1294.776	1338.308
	Gasoline	MC	Motorcycles	0.1028	0.0029	392.779	396.427
North Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0245	0.0053	318.454	320.542
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0236	0.0069	398.347	400.831
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0554	0.0238	855.879	863.739
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0701	0.0006	355.967	358.099
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0451	0.0009	375.529	377.027
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0369	0.1628	1301.708	1345.875
	Gasoline	MC	Motorcycles	0.0989	0.0026	393.837	397.294
Ohio	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0182	0.0052	326.346	328.221
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0196	0.0074	410.216	412.716
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0528	0.0257	876.988	885.270
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0576	0.0007	366.737	368.530
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0382	0.0010	388.184	389.517
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0343	0.1611	1293.233	1336.895
	Gasoline	MC	Motorcycles	0.1042	0.0029	393.518	397.207

Table 5-24. On-Road Vehicle Speciated GHG Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Oklahoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0167	0.0052	324.196	326.044
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0178	0.0071	407.680	410.060
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0484	0.0245	866.221	874.070
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0520	0.0007	365.538	367.166
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0308	0.0009	386.994	388.104
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0259	0.1621	1299.681	1343.375
Oregon	Gasoline	MC	Motorcycles	0.0978	0.0027	394.061	397.510
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0163	0.0052	322.074	323.907
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0175	0.0073	404.406	406.818
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0486	0.0252	869.133	877.166
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0575	0.0007	362.189	363.977
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0370	0.0010	382.965	384.258
Pacific Islands	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0320	0.1624	1302.955	1346.888
	Gasoline	MC	Motorcycles	0.1015	0.0028	393.840	397.437
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0160	0.0052	326.438	328.256
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0175	0.0073	410.480	412.915
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0499	0.0255	876.319	884.470
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0521	0.0007	367.851	369.491
Pennsylvania	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0325	0.0010	389.405	390.576
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0283	0.1619	1300.369	1344.069
	Gasoline	MC	Motorcycles	0.1049	0.0029	393.726	397.428
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0171	0.0052	326.092	327.945
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0184	0.0073	410.032	412.494
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0502	0.0254	874.157	882.294
Puerto Rico	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0577	0.0007	366.437	368.233
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0379	0.0010	388.013	389.335
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0327	0.1624	1305.034	1348.996
	Gasoline	MC	Motorcycles	0.1036	0.0029	394.379	398.038
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0153	0.0051	345.526	347.301
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0176	0.0076	435.666	438.185
Rhode Island	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0535	0.0267	911.925	920.508
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0385	0.0007	391.286	392.551
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0199	0.0010	415.191	416.026
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0179	0.1605	1296.624	1339.666
	Gasoline	MC	Motorcycles	0.1059	0.0031	393.229	397.017
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0160	0.0051	329.931	331.731
South Carolina	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0170	0.0076	416.317	418.820
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0511	0.0267	888.253	896.766
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0568	0.0007	370.694	372.471
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0395	0.0011	393.774	395.160
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0371	0.1604	1291.188	1334.741
	Gasoline	MC	Motorcycles	0.1118	0.0031	393.718	397.668
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0168	0.0053	328.172	330.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0180	0.0072	411.535	413.947
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0504	0.0249	876.213	884.221
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0497	0.0007	370.341	371.911
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0286	0.0010	390.943	392.000
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0242	0.1631	1309.809	1353.718
	Gasoline	MC	Motorcycles	0.1005	0.0028	393.515	397.068

Table 5-24. On-Road Vehicle Speciated GHG Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
South Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0217	0.0052	313.985	315.980
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0213	0.0068	395.669	398.079
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0505	0.0232	844.776	852.345
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0656	0.0006	351.938	353.936
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0413	0.0009	373.711	375.094
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0316	0.1649	1323.876	1368.467
Tennessee	Gasoline	MC	Motorcycles	0.0961	0.0025	396.869	400.215
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0173	0.0052	331.021	332.884
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0189	0.0074	415.594	418.091
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0534	0.0258	886.169	894.511
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0520	0.0007	372.984	374.624
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0324	0.0010	394.228	395.402
Texas	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0285	0.1623	1305.254	1349.068
	Gasoline	MC	Motorcycles	0.1044	0.0030	393.251	396.958
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0150	0.0051	331.153	332.937
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0166	0.0073	416.780	419.188
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0491	0.0254	881.546	889.650
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0460	0.0007	374.226	375.691
Utah	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0264	0.0010	396.392	397.391
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0228	0.1616	1298.307	1341.760
	Gasoline	MC	Motorcycles	0.1083	0.0029	393.763	397.553
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0170	0.0051	325.176	327.006
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0182	0.0074	409.300	411.761
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0497	0.0256	875.430	883.594
Vermont	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0582	0.0007	365.487	367.293
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0390	0.0010	387.265	388.617
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0341	0.1623	1305.140	1349.100
	Gasoline	MC	Motorcycles	0.1029	0.0029	394.355	398.012
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0194	0.0053	316.220	318.170
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0191	0.0069	396.870	399.225
Virgin Islands	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0474	0.0236	849.678	857.248
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0667	0.0006	354.059	356.096
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0417	0.0009	374.729	376.134
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0336	0.1627	1300.138	1344.193
	Gasoline	MC	Motorcycles	0.0954	0.0025	394.386	397.719
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0154	0.0054	334.375	336.232
Virginia	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0161	0.0067	418.309	420.546
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0461	0.0236	879.787	887.343
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0401	0.0007	379.275	380.571
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0176	0.0009	399.126	399.858
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0149	0.1588	1262.004	1304.504
	Gasoline	MC	Motorcycles	0.0958	0.0025	389.668	393.017
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0174	0.0052	325.728	327.587
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0186	0.0073	409.945	412.404
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0517	0.0252	872.251	880.384
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0535	0.0007	366.792	368.467
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0336	0.0010	388.661	389.860
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0287	0.1624	1304.844	1348.690
Virginia	Gasoline	MC	Motorcycles	0.1055	0.0028	394.513	398.215

Table 5-24. On-Road Vehicle Speciated GHG Emission Factors – 2025 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Washington	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0179	0.0051	321.650	323.503
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0193	0.0074	405.495	407.989
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0525	0.0255	868.646	876.873
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0577	0.0007	361.580	363.373
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0388	0.0010	383.757	385.102
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0339	0.1622	1303.655	1347.586
West Virginia	Gasoline	MC	Motorcycles	0.1018	0.0029	394.934	398.550
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0184	0.0052	319.697	321.596
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0190	0.0071	402.108	404.512
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0499	0.0243	857.952	865.782
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0574	0.0006	359.480	361.259
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0355	0.0009	380.849	382.090
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0294	0.1625	1301.130	1345.005
Wisconsin	Gasoline	MC	Motorcycles	0.0985	0.0026	394.580	398.036
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0210	0.0052	318.879	320.851
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0211	0.0070	400.458	402.908
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0525	0.0242	856.419	864.292
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0643	0.0006	357.378	359.349
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0415	0.0009	378.244	379.649
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0344	0.1623	1299.445	1343.429
Wyoming	Gasoline	MC	Motorcycles	0.1011	0.0026	394.501	398.027
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0214	0.0053	314.341	316.340
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0208	0.0068	395.200	397.594
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0500	0.0233	846.560	854.126
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0673	0.0006	352.118	354.164
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0422	0.0009	373.144	374.553
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0322	0.1648	1321.825	1366.400
Wyoming	Gasoline	MC	Motorcycles	0.0949	0.0025	396.151	399.469

Table 5-25. On-Road Vehicle Speciated GHG Emission Factors – 2026

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0157	0.0051	325.523	327.318
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0162	0.0071	408.779	411.101
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0485	0.0243	883.404	891.205
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0509	0.0007	378.934	380.545
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0281	0.0010	384.173	385.225
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0246	0.1636	1275.866	1319.920
	Gasoline	MC	Motorcycles	0.1012	0.0029	391.796	395.404
Alaska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0217	0.0051	312.284	314.232
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0214	0.0069	392.584	395.016
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0535	0.0237	853.017	860.783
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0787	0.0007	362.927	365.308
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0540	0.0009	368.795	370.559
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0463	0.1649	1286.599	1331.606
	Gasoline	MC	Motorcycles	0.0806	0.0028	390.222	393.224
Arizona	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0123	0.0050	327.214	328.876
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0131	0.0072	413.851	416.126
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0426	0.0246	886.178	893.902
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0465	0.0007	381.733	383.217
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0255	0.0010	389.585	390.565
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0222	0.1644	1287.443	1331.624
	Gasoline	MC	Motorcycles	0.1053	0.0030	393.829	397.568
Arkansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0153	0.0051	318.075	319.843
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0157	0.0069	401.426	403.692
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0450	0.0235	863.908	871.385
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0531	0.0007	369.995	371.658
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0300	0.0009	376.989	378.080
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0253	0.1641	1278.487	1322.670
	Gasoline	MC	Motorcycles	0.0968	0.0027	393.804	397.237
Colorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0162	0.0049	315.092	316.856
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0165	0.0070	398.643	400.971
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0473	0.0241	863.606	871.313
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0610	0.0007	365.076	366.959
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0395	0.0010	372.843	374.204
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0339	0.1637	1278.093	1322.423
	Gasoline	MC	Motorcycles	0.1044	0.0029	394.634	398.317
Connecticut	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0147	0.0049	319.376	321.080
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0159	0.0073	405.962	408.343
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0462	0.0251	873.470	881.418
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0577	0.0007	370.287	372.085
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0388	0.0010	379.826	381.184
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0362	0.1615	1262.822	1306.635
	Gasoline	MC	Motorcycles	0.1083	0.0030	394.767	398.596
Delaware	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0144	0.0051	324.954	326.700
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0154	0.0072	409.047	411.393
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0472	0.0250	886.238	894.181
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0562	0.0007	377.223	378.987
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0346	0.0010	383.381	384.625
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0319	0.1628	1270.005	1314.031
	Gasoline	MC	Motorcycles	0.1087	0.0030	392.035	395.883

Table 5-25. On-Road Vehicle Speciated GHG Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0142	0.0051	339.069	340.820
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0150	0.0077	427.097	429.566
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0506	0.0274	932.607	941.296
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0547	0.0008	393.664	395.406
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0352	0.0012	400.224	401.522
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0379	0.1614	1266.079	1309.922
	Gasoline	MC	Motorcycles	0.1179	0.0035	388.999	393.232
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0149	0.0051	338.875	340.636
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0160	0.0074	426.319	428.731
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0516	0.0258	915.957	924.245
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0437	0.0007	395.370	396.790
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0225	0.0011	401.494	402.412
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0206	0.1632	1278.587	1322.403
	Gasoline	MC	Motorcycles	0.1064	0.0032	390.866	394.700
Georgia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0146	0.0050	326.614	328.358
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0157	0.0072	411.653	414.008
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0487	0.0250	888.864	896.846
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0508	0.0007	380.051	381.661
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0295	0.0010	386.646	387.746
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0267	0.1630	1273.739	1317.691
	Gasoline	MC	Motorcycles	0.1033	0.0030	392.257	395.955
Hawaii	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0137	0.0050	332.167	333.880
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0148	0.0073	418.050	420.404
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0491	0.0257	905.119	913.296
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0411	0.0007	387.832	389.176
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0201	0.0011	393.956	394.801
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0184	0.1609	1257.012	1300.178
	Gasoline	MC	Motorcycles	0.1043	0.0032	390.314	394.076
Idaho	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0183	0.0051	313.814	315.677
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0181	0.0068	394.649	396.960
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0482	0.0233	858.939	866.456
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0647	0.0007	363.261	365.246
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0398	0.0009	369.044	370.404
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0332	0.1648	1283.695	1328.303
	Gasoline	MC	Motorcycles	0.0975	0.0027	393.652	397.107
Illinois	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0169	0.0050	322.389	324.193
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0178	0.0072	406.864	409.273
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0506	0.0248	880.140	888.121
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0596	0.0007	373.684	375.539
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0384	0.0010	380.710	382.054
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0345	0.1640	1281.732	1326.150
	Gasoline	MC	Motorcycles	0.1095	0.0030	393.489	397.352
Indiana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0175	0.0051	323.192	325.034
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0179	0.0071	405.921	408.309
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0508	0.0246	881.952	889.890
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0602	0.0007	374.618	376.490
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0375	0.0010	379.948	381.266
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0337	0.1640	1279.852	1324.263
	Gasoline	MC	Motorcycles	0.1046	0.0030	392.238	395.958

Table 5-25. On-Road Vehicle Speciated GHG Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Iowa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0188	0.0051	314.417	316.301
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0183	0.0068	395.534	397.840
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0476	0.0230	856.859	864.298
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0646	0.0007	363.821	365.804
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0390	0.0009	369.853	371.191
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0323	0.1647	1282.235	1326.796
Kansas	Gasoline	MC	Motorcycles	0.0962	0.0027	393.786	397.184
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0166	0.0050	313.526	315.318
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0168	0.0068	396.367	398.649
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0458	0.0232	855.731	863.153
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0581	0.0006	363.987	365.782
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0347	0.0009	371.501	372.715
Kentucky	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0285	0.1652	1288.662	1333.229
	Gasoline	MC	Motorcycles	0.0964	0.0027	395.092	398.506
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0165	0.0051	314.153	315.954
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0167	0.0069	397.254	399.541
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0461	0.0231	855.661	863.080
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0570	0.0006	364.830	366.597
Louisiana	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0335	0.0009	372.468	373.651
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0272	0.1659	1295.348	1340.082
	Gasoline	MC	Motorcycles	0.0994	0.0027	395.569	399.059
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0145	0.0050	324.850	326.594
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0153	0.0070	409.928	412.220
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0458	0.0240	877.633	885.269
Maine	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0478	0.0007	378.694	380.212
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0256	0.0010	385.697	386.672
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0217	0.1648	1287.518	1331.787
	Gasoline	MC	Motorcycles	0.0996	0.0028	393.815	397.357
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0193	0.0051	308.866	310.769
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0184	0.0066	389.283	391.556
Maryland	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0466	0.0225	844.430	851.696
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0687	0.0006	356.738	358.830
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0415	0.0009	363.572	364.972
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0337	0.1642	1274.848	1319.294
	Gasoline	MC	Motorcycles	0.0941	0.0025	394.156	397.457
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0148	0.0049	320.432	322.152
Massachusetts	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0159	0.0072	406.321	408.683
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0474	0.0248	873.822	881.716
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0550	0.0007	372.082	373.803
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0349	0.0010	380.809	382.055
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0317	0.1623	1267.779	1311.662
	Gasoline	MC	Motorcycles	0.1093	0.0030	394.328	398.172
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0155	0.0050	326.043	327.793
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0171	0.0075	413.051	415.515
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0505	0.0261	894.682	903.001
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0595	0.0007	377.721	379.579
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0406	0.0011	386.163	387.589
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0402	0.1615	1264.056	1307.977
	Gasoline	MC	Motorcycles	0.1126	0.0032	392.637	396.643

Table 5-25. On-Road Vehicle Speciated GHG Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Michigan	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0187	0.0050	319.830	321.686
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0192	0.0071	403.223	405.646
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0526	0.0244	873.690	881.640
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0629	0.0007	370.174	372.117
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0409	0.0010	376.848	378.259
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0367	0.1635	1275.505	1319.850
Minnesota	Gasoline	MC	Motorcycles	0.1059	0.0029	393.422	397.163
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0206	0.0050	315.417	317.326
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0205	0.0069	397.611	400.016
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0522	0.0237	860.546	868.283
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0667	0.0007	364.360	366.403
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0432	0.0010	371.094	372.558
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0380	0.1627	1265.799	1309.972
Mississippi	Gasoline	MC	Motorcycles	0.0999	0.0028	393.686	397.214
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0153	0.0051	317.339	319.122
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0156	0.0068	400.037	402.264
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0447	0.0230	861.335	868.695
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0509	0.0007	369.603	371.203
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0269	0.0009	376.151	377.151
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0224	0.1639	1274.989	1319.047
Missouri	Gasoline	MC	Motorcycles	0.0963	0.0026	393.105	396.501
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0158	0.0050	314.313	316.080
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0164	0.0069	398.085	400.372
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0453	0.0233	855.762	863.209
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0570	0.0006	364.927	366.696
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0344	0.0009	373.138	374.346
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0284	0.1650	1287.617	1332.125
Montana	Gasoline	MC	Motorcycles	0.0995	0.0027	395.662	399.159
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0197	0.0051	308.879	310.789
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0187	0.0066	389.055	391.335
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0471	0.0224	845.870	853.132
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0694	0.0006	356.824	358.934
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0422	0.0009	363.320	364.736
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0334	0.1658	1290.355	1335.216
Nebraska	Gasoline	MC	Motorcycles	0.0946	0.0026	394.857	398.182
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0181	0.0051	312.513	314.361
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0179	0.0068	394.384	396.683
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0469	0.0230	853.539	860.937
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0630	0.0006	361.982	363.914
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0384	0.0009	368.961	370.276
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0310	0.1657	1292.233	1337.009
Nevada	Gasoline	MC	Motorcycles	0.0961	0.0027	395.099	398.495
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0128	0.0050	326.949	328.636
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0140	0.0073	412.585	414.903
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0444	0.0251	891.085	898.982
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0514	0.0007	380.558	382.182
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0304	0.0010	387.562	388.687
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0273	0.1641	1284.786	1329.043
Nevada	Gasoline	MC	Motorcycles	0.1037	0.0031	392.747	396.470

Table 5-25. On-Road Vehicle Speciated GHG Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
New Hampshire	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0164	0.0050	313.939	315.723
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0169	0.0069	397.027	399.343
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0462	0.0236	856.482	864.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0639	0.0007	363.162	365.125
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0411	0.0010	370.963	372.368
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0351	0.1634	1273.151	1317.434
	Gasoline	MC	Motorcycles	0.1020	0.0027	394.911	398.490
New Jersey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0146	0.0051	304.958	306.732
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0143	0.0065	387.448	389.583
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0386	0.0217	833.957	840.784
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0610	0.0006	353.751	355.617
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0343	0.0008	363.067	364.251
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0260	0.1672	1303.752	1348.801
	Gasoline	MC	Motorcycles	0.0959	0.0023	397.262	400.569
New Mexico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0155	0.0051	313.474	315.261
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0155	0.0068	395.577	397.807
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0431	0.0229	854.508	861.789
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0569	0.0006	364.097	365.863
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0324	0.0009	371.032	372.184
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0262	0.1653	1287.561	1332.091
	Gasoline	MC	Motorcycles	0.0953	0.0026	394.438	397.801
New York	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0155	0.0050	320.760	322.514
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0166	0.0072	405.638	408.021
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0481	0.0249	876.593	884.535
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0598	0.0007	371.648	373.508
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0393	0.0010	379.410	380.782
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0361	0.1625	1269.235	1313.319
	Gasoline	MC	Motorcycles	0.1052	0.0030	393.644	397.382
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0147	0.0050	321.654	323.400
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0155	0.0071	405.450	407.762
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0469	0.0243	876.129	883.894
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0529	0.0007	374.014	375.678
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0309	0.0010	380.593	381.723
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0272	0.1632	1273.275	1317.297
	Gasoline	MC	Motorcycles	0.1010	0.0029	392.846	396.445
North Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0228	0.0051	311.169	313.166
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0214	0.0066	390.990	393.349
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0514	0.0226	850.100	857.534
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0726	0.0006	358.687	360.888
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0451	0.0009	364.501	366.000
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0368	0.1647	1280.262	1324.928
	Gasoline	MC	Motorcycles	0.0972	0.0026	393.906	397.315
Ohio	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0169	0.0050	318.907	320.702
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0175	0.0071	402.678	405.050
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0489	0.0244	871.306	879.140
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0596	0.0007	369.653	371.503
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0380	0.0010	376.836	378.164
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0341	0.1630	1271.796	1315.951
	Gasoline	MC	Motorcycles	0.1024	0.0029	393.585	397.223

Table 5-25. On-Road Vehicle Speciated GHG Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Oklahoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0155	0.0050	316.815	318.585
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0159	0.0069	400.212	402.472
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0448	0.0233	860.466	867.891
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0538	0.0007	368.438	370.118
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0306	0.0009	375.764	376.868
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0256	0.1640	1278.178	1322.365
Oregon	Gasoline	MC	Motorcycles	0.0961	0.0027	394.132	397.533
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0151	0.0050	314.732	316.488
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0156	0.0070	396.974	399.264
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0449	0.0239	863.448	871.048
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0595	0.0007	365.054	366.899
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0369	0.0010	371.753	373.042
Pacific Islands	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0318	0.1643	1281.386	1325.821
	Gasoline	MC	Motorcycles	0.0998	0.0028	393.908	397.456
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0148	0.0050	319.007	320.749
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0156	0.0071	402.956	405.268
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0462	0.0242	870.618	878.330
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0540	0.0007	370.792	372.484
Pennsylvania	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0323	0.0010	378.066	379.231
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0281	0.1638	1278.795	1322.993
	Gasoline	MC	Motorcycles	0.1032	0.0029	393.794	397.447
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0157	0.0050	318.658	320.431
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0163	0.0071	402.497	404.831
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0464	0.0241	868.437	876.133
Puerto Rico	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0598	0.0007	369.352	371.207
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0377	0.0010	376.689	378.007
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0326	0.1644	1283.395	1327.863
	Gasoline	MC	Motorcycles	0.1019	0.0029	394.447	398.056
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0143	0.0049	337.685	339.389
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0156	0.0074	427.743	430.135
Rhode Island	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0495	0.0254	906.118	914.238
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0400	0.0007	394.499	395.804
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0194	0.0010	403.330	404.151
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0173	0.1624	1274.856	1318.386
	Gasoline	MC	Motorcycles	0.1041	0.0031	393.296	397.033
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0148	0.0049	322.414	324.140
South Carolina	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0155	0.0074	408.668	411.055
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0477	0.0254	882.629	890.696
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0588	0.0007	373.675	375.509
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0394	0.0011	382.258	383.640
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0370	0.1623	1269.702	1313.751
	Gasoline	MC	Motorcycles	0.1100	0.0031	393.783	397.681
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0156	0.0051	320.704	322.492
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0160	0.0069	404.003	406.292
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0465	0.0237	870.401	877.974
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0515	0.0007	373.305	374.925
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0283	0.0010	379.624	380.673
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0238	0.1651	1288.063	1332.475
	Gasoline	MC	Motorcycles	0.0988	0.0028	393.585	397.089

Table 5-25. On-Road Vehicle Speciated GHG Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
South Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0201	0.0051	306.810	308.719
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0192	0.0066	388.376	390.664
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0468	0.0221	839.024	846.183
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0679	0.0006	354.620	356.682
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0412	0.0009	362.783	364.164
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0314	0.1669	1302.011	1347.125
Tennessee	Gasoline	MC	Motorcycles	0.0945	0.0025	396.942	400.240
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0161	0.0050	323.486	325.271
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0168	0.0072	407.979	410.348
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0493	0.0246	880.413	888.301
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0539	0.0007	375.984	377.676
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0321	0.0010	382.778	383.946
Texas	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0282	0.1642	1283.537	1327.853
	Gasoline	MC	Motorcycles	0.1026	0.0030	393.319	396.975
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0139	0.0050	323.625	325.337
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0148	0.0071	409.169	411.455
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0454	0.0241	875.794	883.464
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0476	0.0007	377.243	378.754
Utah	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0260	0.0010	384.947	385.935
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0225	0.1635	1276.726	1320.671
	Gasoline	MC	Motorcycles	0.1066	0.0028	393.832	397.571
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0157	0.0050	317.763	319.517
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0164	0.0071	401.779	404.117
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0460	0.0243	869.760	877.487
Vermont	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0602	0.0007	368.371	370.235
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0389	0.0010	375.941	377.289
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0339	0.1642	1283.490	1327.957
	Gasoline	MC	Motorcycles	0.1011	0.0029	394.423	398.030
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0179	0.0051	308.991	310.857
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0172	0.0066	389.551	391.787
Virgin Islands	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0439	0.0224	843.913	851.076
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0691	0.0006	356.788	358.891
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0417	0.0009	363.750	365.154
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0335	0.1646	1278.741	1323.293
	Gasoline	MC	Motorcycles	0.0937	0.0025	394.457	397.743
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0143	0.0052	326.779	328.562
Virginia	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0144	0.0065	410.697	412.820
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0426	0.0225	873.805	880.950
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0415	0.0007	382.316	383.652
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0171	0.0009	387.736	388.455
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0144	0.1605	1241.081	1284.016
	Gasoline	MC	Motorcycles	0.0941	0.0025	389.740	393.043
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0161	0.0050	318.310	320.091
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0167	0.0070	402.427	404.762
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0479	0.0240	866.533	874.228
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0554	0.0007	369.719	371.448
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0333	0.0010	377.351	378.543
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0284	0.1644	1283.210	1327.559
Virginia	Gasoline	MC	Motorcycles	0.1038	0.0028	394.582	398.234

Table 5-25. On-Road Vehicle Speciated GHG Emission Factors – 2026 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Washington	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0165	0.0050	314.318	316.093
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0173	0.0071	398.041	400.407
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0485	0.0242	863.026	870.808
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0598	0.0007	364.441	366.291
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0387	0.0010	372.508	373.849
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0337	0.1641	1282.066	1326.504
	Gasoline	MC	Motorcycles	0.1000	0.0029	395.002	398.568
West Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0170	0.0051	312.407	314.226
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0171	0.0068	394.720	397.002
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0462	0.0231	852.228	859.632
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0594	0.0006	362.307	364.143
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0354	0.0009	369.736	370.972
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0292	0.1644	1279.653	1324.026
	Gasoline	MC	Motorcycles	0.0969	0.0026	394.651	398.059
Wisconsin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0194	0.0051	311.595	313.482
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0190	0.0068	393.079	395.404
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0486	0.0230	850.691	858.138
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0665	0.0006	360.152	362.186
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0414	0.0009	367.162	368.565
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0343	0.1642	1278.022	1322.504
	Gasoline	MC	Motorcycles	0.0994	0.0026	394.571	398.048
Wyoming	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0199	0.0051	307.155	309.068
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0188	0.0066	387.911	390.185
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0463	0.0221	840.792	847.948
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0696	0.0006	354.801	356.913
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0421	0.0009	362.220	363.628
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0320	0.1668	1300.003	1345.098
	Gasoline	MC	Motorcycles	0.0933	0.0025	396.223	399.494

Table 5-26. On-Road Vehicle Speciated GHG Emission Factors – 2027

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0149	0.0050	318.168	319.901
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0153	0.0068	402.370	404.613
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0449	0.0232	872.022	879.439
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0511	0.0007	377.222	378.837
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0279	0.0010	376.788	377.836
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0243	0.1651	1250.293	1294.735
	Gasoline	MC	Motorcycles	0.0999	0.0029	391.842	395.413
Alaska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0206	0.0049	305.157	307.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0203	0.0067	386.328	388.678
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0499	0.0226	841.892	849.283
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0789	0.0007	361.349	363.733
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0545	0.0009	361.475	363.252
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0463	0.1665	1260.926	1306.344
	Gasoline	MC	Motorcycles	0.0794	0.0028	390.263	393.230
Arizona	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0117	0.0048	319.834	321.441
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0124	0.0070	407.384	409.584
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0396	0.0236	874.862	882.217
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0467	0.0007	379.981	381.469
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0253	0.0010	382.164	383.139
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0218	0.1659	1261.574	1306.157
	Gasoline	MC	Motorcycles	0.1040	0.0030	393.876	397.578
Arkansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0146	0.0049	310.881	312.589
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0149	0.0067	395.134	397.324
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0418	0.0224	852.683	859.796
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0533	0.0007	368.327	369.993
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0299	0.0009	369.694	370.783
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0250	0.1656	1252.950	1297.525
	Gasoline	MC	Motorcycles	0.0956	0.0027	393.851	397.249
Colorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0155	0.0048	307.947	309.652
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0157	0.0068	392.354	394.605
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0441	0.0230	852.481	859.822
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0612	0.0007	363.463	365.350
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0396	0.0010	365.535	366.900
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0337	0.1652	1252.560	1297.291
	Gasoline	MC	Motorcycles	0.1031	0.0029	394.678	398.323
Connecticut	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0137	0.0047	312.144	313.785
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0146	0.0071	399.562	401.853
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0427	0.0240	862.417	869.977
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0579	0.0007	368.658	370.460
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0389	0.0010	372.443	373.805
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0360	0.1630	1237.533	1281.739
	Gasoline	MC	Motorcycles	0.1069	0.0030	394.810	398.601
Delaware	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0137	0.0049	317.600	319.288
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0146	0.0070	402.607	404.873
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0439	0.0239	874.920	882.478
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0564	0.0007	375.551	377.319
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0346	0.0010	375.966	377.212
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0317	0.1643	1244.531	1288.946
	Gasoline	MC	Motorcycles	0.1074	0.0030	392.079	395.888

Table 5-26. On-Road Vehicle Speciated GHG Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0050	331.404	333.098
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0143	0.0075	420.354	422.742
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0472	0.0262	921.036	929.308
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0549	0.0008	391.921	393.667
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0352	0.0012	392.589	393.889
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0377	0.1629	1240.350	1284.582
	Gasoline	MC	Motorcycles	0.1165	0.0035	389.038	393.229
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0141	0.0049	331.237	332.938
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0151	0.0072	419.651	421.981
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0477	0.0247	904.411	912.288
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0439	0.0007	393.546	394.970
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0222	0.0011	393.935	394.845
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0202	0.1647	1252.750	1296.956
	Gasoline	MC	Motorcycles	0.1051	0.0032	390.911	394.705
Georgia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0139	0.0049	319.236	320.920
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0149	0.0070	405.193	407.468
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0451	0.0239	877.533	885.127
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0509	0.0007	378.342	379.956
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0294	0.0010	379.221	380.318
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0264	0.1645	1248.162	1292.506
	Gasoline	MC	Motorcycles	0.1020	0.0030	392.302	395.962
Hawaii	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0130	0.0049	324.683	326.338
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0140	0.0071	411.516	413.790
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0454	0.0245	893.722	901.497
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0413	0.0007	386.058	387.406
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0198	0.0011	386.473	387.309
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0179	0.1624	1231.648	1275.184
	Gasoline	MC	Motorcycles	0.1029	0.0032	390.358	394.082
Idaho	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0174	0.0049	306.688	308.486
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0172	0.0066	388.420	390.653
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0448	0.0223	847.697	854.849
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0648	0.0007	361.656	363.644
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0399	0.0009	361.784	363.149
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0331	0.1664	1258.086	1303.095
	Gasoline	MC	Motorcycles	0.0963	0.0027	393.697	397.116
Illinois	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0161	0.0049	315.084	316.826
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0169	0.0070	400.445	402.772
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0470	0.0237	868.864	876.459
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0598	0.0007	372.033	373.891
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0385	0.0010	373.313	374.660
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0343	0.1655	1256.042	1300.862
	Gasoline	MC	Motorcycles	0.1082	0.0030	393.532	397.357
Indiana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0166	0.0050	315.867	317.646
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0169	0.0069	399.517	401.824
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0472	0.0235	870.594	878.144
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0603	0.0007	372.963	374.838
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0375	0.0010	372.558	373.879
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0335	0.1656	1254.209	1299.019
	Gasoline	MC	Motorcycles	0.1033	0.0030	392.281	395.963

Table 5-26. On-Road Vehicle Speciated GHG Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Iowa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0179	0.0050	307.275	309.094
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0174	0.0066	389.294	391.522
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0443	0.0220	845.614	852.692
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0647	0.0007	362.211	364.198
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0392	0.0009	362.595	363.938
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0321	0.1663	1256.672	1301.631
Kansas	Gasoline	MC	Motorcycles	0.0950	0.0027	393.832	397.195
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0158	0.0049	306.422	308.153
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0160	0.0066	390.137	392.343
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0426	0.0222	844.556	851.620
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0582	0.0006	362.356	364.155
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0347	0.0009	364.246	365.461
Kentucky	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0283	0.1667	1262.934	1307.906
	Gasoline	MC	Motorcycles	0.0952	0.0027	395.139	398.517
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0157	0.0049	307.038	308.777
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0159	0.0067	391.016	393.226
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0428	0.0221	844.455	851.513
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0571	0.0006	363.202	364.973
Louisiana	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0335	0.0009	365.210	366.393
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0270	0.1675	1269.465	1314.608
	Gasoline	MC	Motorcycles	0.0982	0.0027	395.616	399.071
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0138	0.0049	317.518	319.202
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0144	0.0068	403.520	405.735
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0424	0.0229	866.304	873.567
Maine	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0479	0.0007	376.961	378.483
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0254	0.0010	378.322	379.292
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0214	0.1663	1261.706	1306.374
	Gasoline	MC	Motorcycles	0.0984	0.0028	393.862	397.368
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0184	0.0050	301.839	303.677
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0175	0.0064	383.134	385.331
Maryland	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0434	0.0215	833.282	840.198
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0688	0.0006	355.175	357.270
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0417	0.0009	356.386	357.791
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0336	0.1657	1249.508	1294.347
	Gasoline	MC	Motorcycles	0.0929	0.0025	394.202	397.468
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0141	0.0048	313.183	314.845
Massachusetts	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0151	0.0070	399.931	402.214
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0441	0.0237	862.701	870.217
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0551	0.0007	370.430	372.155
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0349	0.0010	373.436	374.682
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0315	0.1638	1242.394	1286.670
	Gasoline	MC	Motorcycles	0.1080	0.0030	394.372	398.178
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0148	0.0048	318.658	320.349
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0162	0.0073	406.522	408.903
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0470	0.0249	883.446	891.364
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0596	0.0007	376.068	377.929
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0407	0.0011	378.683	380.113
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0401	0.1630	1238.623	1282.938
	Gasoline	MC	Motorcycles	0.1112	0.0032	392.677	396.644

Table 5-26. On-Road Vehicle Speciated GHG Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Michigan	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0178	0.0049	312.574	314.366
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0183	0.0069	396.851	399.192
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0489	0.0234	862.454	870.017
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0630	0.0007	368.546	370.493
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0411	0.0010	369.485	370.901
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0366	0.1650	1249.990	1294.734
Minnesota	Gasoline	MC	Motorcycles	0.1045	0.0029	393.465	397.168
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0197	0.0049	308.248	310.090
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0195	0.0067	391.320	393.644
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0486	0.0226	849.397	856.759
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0668	0.0007	362.757	364.804
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0434	0.0010	363.798	365.267
Mississippi	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0379	0.1641	1240.569	1285.131
	Gasoline	MC	Motorcycles	0.0986	0.0028	393.730	397.222
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0146	0.0050	310.166	311.888
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0147	0.0066	393.779	395.931
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0414	0.0220	850.085	857.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0511	0.0007	367.925	369.528
Missouri	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0268	0.0009	368.883	369.879
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0221	0.1654	1249.545	1293.989
	Gasoline	MC	Motorcycles	0.0950	0.0026	393.154	396.514
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0151	0.0048	307.195	308.901
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0155	0.0067	391.833	394.043
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0421	0.0223	844.619	851.706
Montana	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0572	0.0006	363.297	365.069
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0344	0.0009	365.869	367.079
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0281	0.1665	1261.907	1306.819
	Gasoline	MC	Motorcycles	0.0982	0.0027	395.709	399.170
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0187	0.0050	301.850	303.694
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0178	0.0064	382.907	385.111
Nebraska	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0439	0.0214	834.667	841.578
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0695	0.0006	355.251	357.364
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0424	0.0009	356.130	357.551
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0332	0.1673	1264.657	1309.923
	Gasoline	MC	Motorcycles	0.0934	0.0026	394.903	398.194
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0173	0.0049	305.419	307.203
Nevada	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0170	0.0066	388.168	390.390
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0437	0.0220	842.334	849.374
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0631	0.0006	360.372	362.308
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0385	0.0009	361.718	363.036
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0308	0.1672	1266.445	1311.628
	Gasoline	MC	Motorcycles	0.0949	0.0027	395.145	398.506
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0122	0.0049	319.564	321.195
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0132	0.0071	406.111	408.352
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0412	0.0240	879.733	887.249
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0515	0.0007	378.842	380.471
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0303	0.0010	380.125	381.247
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0270	0.1657	1258.959	1303.617
Nevada	Gasoline	MC	Motorcycles	0.1024	0.0031	392.791	396.477

Table 5-26. On-Road Vehicle Speciated GHG Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
New Hampshire	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0156	0.0048	306.812	308.535
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0161	0.0067	390.759	392.998
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0431	0.0226	845.380	852.575
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0640	0.0007	361.568	363.534
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0413	0.0010	363.683	365.092
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0350	0.1649	1247.770	1292.449
	Gasoline	MC	Motorcycles	0.1007	0.0027	394.956	398.498
New Jersey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0140	0.0050	298.038	299.752
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0136	0.0064	381.368	383.432
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0360	0.0207	822.808	829.313
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0611	0.0006	352.178	354.048
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0343	0.0008	355.939	357.125
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0257	0.1688	1277.755	1323.217
	Gasoline	MC	Motorcycles	0.0947	0.0023	397.311	400.585
New Mexico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0147	0.0050	306.373	308.100
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0147	0.0066	389.366	391.522
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0400	0.0219	843.288	850.216
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0571	0.0006	362.473	364.242
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0324	0.0009	363.795	364.947
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0259	0.1668	1261.872	1306.802
	Gasoline	MC	Motorcycles	0.0941	0.0026	394.486	397.814
New York	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0148	0.0048	313.492	315.187
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0158	0.0070	399.237	401.540
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0449	0.0238	865.412	872.977
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0600	0.0007	370.016	371.879
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0394	0.0010	372.025	373.400
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0360	0.1640	1243.820	1288.299
	Gasoline	MC	Motorcycles	0.1039	0.0030	393.687	397.387
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0139	0.0049	314.381	316.068
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0147	0.0069	399.085	401.318
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0435	0.0233	864.868	872.255
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0530	0.0007	372.341	374.009
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0308	0.0010	373.236	374.364
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0269	0.1648	1247.783	1292.195
	Gasoline	MC	Motorcycles	0.0997	0.0029	392.892	396.454
North Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0218	0.0050	304.077	306.005
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0204	0.0064	384.795	387.075
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0479	0.0216	838.885	845.960
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0727	0.0006	357.106	359.310
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0453	0.0009	357.280	358.786
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0367	0.1662	1254.786	1299.850
	Gasoline	MC	Motorcycles	0.0960	0.0026	393.951	397.325
Ohio	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0160	0.0049	311.680	313.412
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0165	0.0069	396.328	398.618
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0453	0.0233	860.118	867.569
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0598	0.0007	368.020	369.874
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0381	0.0010	369.488	370.820
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0339	0.1645	1246.363	1290.912
	Gasoline	MC	Motorcycles	0.1011	0.0029	393.629	397.230

Table 5-26. On-Road Vehicle Speciated GHG Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Oklahoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0147	0.0049	309.648	311.358
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0150	0.0067	393.940	396.123
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0415	0.0223	849.269	856.333
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0539	0.0007	366.776	368.459
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0305	0.0009	368.484	369.587
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0253	0.1656	1252.663	1297.243
Oregon	Gasoline	MC	Motorcycles	0.0949	0.0027	394.179	397.546
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0143	0.0049	307.600	309.297
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0148	0.0068	390.720	392.933
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0418	0.0229	852.255	859.489
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0597	0.0007	363.451	365.300
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0370	0.0010	364.466	365.758
Pacific Islands	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0316	0.1659	1255.789	1300.624
	Gasoline	MC	Motorcycles	0.0985	0.0028	393.952	397.464
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0141	0.0049	311.791	313.474
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0147	0.0069	396.627	398.861
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0429	0.0232	859.409	866.748
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0541	0.0007	369.141	370.836
Pennsylvania	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0322	0.0010	370.732	371.896
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0278	0.1653	1253.208	1297.803
	Gasoline	MC	Motorcycles	0.1019	0.0029	393.840	397.455
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0150	0.0049	311.436	313.149
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0154	0.0069	396.154	398.410
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0432	0.0231	857.222	864.548
Puerto Rico	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0599	0.0007	367.723	369.581
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0378	0.0010	369.351	370.672
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0324	0.1659	1257.728	1302.599
	Gasoline	MC	Motorcycles	0.1006	0.0029	394.492	398.064
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0136	0.0048	330.082	331.728
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0148	0.0072	421.079	423.389
Rhode Island	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0457	0.0243	894.739	902.461
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0401	0.0007	392.644	393.952
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0191	0.0010	395.791	396.603
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0168	0.1640	1249.131	1293.051
	Gasoline	MC	Motorcycles	0.1028	0.0031	393.342	397.041
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0142	0.0048	315.112	316.781
South Carolina	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0148	0.0072	402.218	404.527
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0446	0.0243	871.456	879.141
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0590	0.0007	372.036	373.874
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0395	0.0011	374.836	376.222
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0368	0.1638	1244.230	1288.676
	Gasoline	MC	Motorcycles	0.1086	0.0031	393.826	397.685
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0148	0.0050	313.455	315.182
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0152	0.0067	397.673	399.885
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0431	0.0226	859.084	866.286
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0516	0.0007	371.621	373.244
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0282	0.0010	372.300	373.345
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0235	0.1666	1262.285	1307.096
	Gasoline	MC	Motorcycles	0.0975	0.0028	393.632	397.100

Table 5-26. On-Road Vehicle Speciated GHG Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
South Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0192	0.0049	299.830	301.673
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0183	0.0064	382.249	384.460
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0437	0.0211	827.866	834.682
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0680	0.0006	353.048	355.113
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0414	0.0009	355.615	357.002
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0312	0.1685	1276.049	1321.578
	Gasoline	MC	Motorcycles	0.0933	0.0025	396.989	400.253
Tennessee	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0153	0.0049	316.170	317.895
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0160	0.0070	401.569	403.858
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0457	0.0235	869.108	876.610
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0540	0.0007	374.303	375.999
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0321	0.0010	375.390	376.557
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0280	0.1658	1257.803	1302.518
	Gasoline	MC	Motorcycles	0.1013	0.0030	393.364	396.983
Texas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0132	0.0048	316.321	317.972
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0138	0.0069	402.773	404.978
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0421	0.0231	864.552	871.847
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0477	0.0007	375.519	377.034
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0259	0.0010	377.579	378.563
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0221	0.1650	1251.150	1295.488
	Gasoline	MC	Motorcycles	0.1053	0.0028	393.880	397.581
Utah	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0149	0.0048	310.561	312.255
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0156	0.0069	395.442	397.703
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0428	0.0232	858.572	865.929
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0604	0.0007	366.738	368.606
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0390	0.0010	368.600	369.952
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0337	0.1658	1257.809	1302.681
	Gasoline	MC	Motorcycles	0.0999	0.0029	394.467	398.037
Vermont	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0170	0.0050	301.959	303.760
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0163	0.0064	383.398	385.558
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0410	0.0214	832.753	839.573
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0692	0.0006	355.222	357.328
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0419	0.0009	356.563	357.973
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0334	0.1661	1253.317	1298.264
	Gasoline	MC	Motorcycles	0.0926	0.0025	394.503	397.755
Virgin Islands	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0136	0.0051	319.412	321.134
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0136	0.0063	404.312	406.362
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0394	0.0215	862.412	869.204
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0417	0.0007	380.484	381.824
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0168	0.0009	380.405	381.115
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0140	0.1618	1216.286	1259.563
	Gasoline	MC	Motorcycles	0.0929	0.0025	389.790	393.059
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0154	0.0049	311.106	312.828
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0158	0.0068	396.105	398.361
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0445	0.0229	855.334	862.657
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0555	0.0007	368.075	369.808
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0333	0.0010	370.028	371.221
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0281	0.1659	1257.549	1302.299
	Gasoline	MC	Motorcycles	0.1025	0.0028	394.628	398.243

Table 5-26. On-Road Vehicle Speciated GHG Emission Factors – 2027 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Washington	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0157	0.0048	307.196	308.910
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0164	0.0069	391.767	394.053
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0451	0.0232	851.910	859.315
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0599	0.0007	362.846	364.700
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0388	0.0010	365.205	366.550
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0335	0.1657	1256.441	1301.284
West Virginia	Gasoline	MC	Motorcycles	0.0988	0.0029	395.046	398.575
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0162	0.0049	305.325	307.081
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0162	0.0066	388.512	390.717
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0429	0.0221	841.079	848.124
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0595	0.0006	360.704	362.543
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0354	0.0009	362.500	363.737
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0290	0.1659	1254.150	1298.919
Wisconsin	Gasoline	MC	Motorcycles	0.0956	0.0026	394.698	398.070
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0185	0.0049	304.512	306.334
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0181	0.0066	386.870	389.117
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0453	0.0220	839.542	846.630
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0667	0.0006	358.566	360.604
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0416	0.0009	359.928	361.336
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0342	0.1657	1252.575	1297.454
Wyoming	Gasoline	MC	Motorcycles	0.0981	0.0026	394.616	398.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0189	0.0050	300.164	302.010
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0179	0.0064	381.786	383.983
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0432	0.0211	829.603	836.415
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0697	0.0006	353.234	355.349
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0423	0.0009	355.051	356.465
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0318	0.1684	1274.091	1319.599
Wyoming	Gasoline	MC	Motorcycles	0.0921	0.0025	396.269	399.506

Table 5-27. On-Road Vehicle Speciated GHG Emission Factors – 2028

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0142	0.0048	310.312	311.995
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0144	0.0066	395.917	398.078
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0438	0.0226	860.341	867.550
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0521	0.0007	374.571	376.216
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0274	0.0010	371.875	372.909
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0240	0.1664	1227.870	1272.632
	Gasoline	MC	Motorcycles	0.0988	0.0029	391.875	395.413
Alaska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0197	0.0048	297.537	299.357
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0193	0.0065	380.001	382.265
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0489	0.0220	830.539	837.730
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0804	0.0007	358.790	361.217
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0542	0.0009	356.645	358.416
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0464	0.1678	1238.541	1284.299
	Gasoline	MC	Motorcycles	0.0783	0.0028	390.291	393.227
Arizona	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0112	0.0047	311.955	313.515
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0117	0.0068	400.873	402.995
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0385	0.0229	863.207	870.353
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0477	0.0007	377.308	378.823
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0248	0.0010	377.209	378.169
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0214	0.1672	1239.017	1283.932
	Gasoline	MC	Motorcycles	0.1028	0.0030	393.910	397.579
Arkansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0139	0.0048	303.197	304.855
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0140	0.0065	388.776	390.886
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0407	0.0218	841.192	848.106
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0544	0.0007	365.730	367.427
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0295	0.0009	364.845	365.921
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0247	0.1668	1230.627	1275.527
	Gasoline	MC	Motorcycles	0.0945	0.0027	393.886	397.252
Colorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0148	0.0047	300.311	301.966
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0149	0.0066	385.999	388.172
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0427	0.0224	841.052	848.181
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0624	0.0007	360.891	362.812
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0392	0.0010	360.711	362.065
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0336	0.1665	1230.249	1275.312
	Gasoline	MC	Motorcycles	0.1019	0.0029	394.709	398.321
Connecticut	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0131	0.0046	304.417	306.011
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0139	0.0069	393.109	395.320
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0414	0.0233	850.985	858.329
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0590	0.0007	366.063	367.897
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0385	0.0010	367.569	368.920
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0359	0.1642	1215.324	1259.854
	Gasoline	MC	Motorcycles	0.1058	0.0030	394.841	398.598
Delaware	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0131	0.0048	309.744	311.383
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0137	0.0068	396.126	398.310
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0428	0.0232	863.270	870.618
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0575	0.0007	372.913	374.713
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0342	0.0010	371.056	372.289
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0315	0.1655	1222.149	1266.884
	Gasoline	MC	Motorcycles	0.1062	0.0030	392.110	395.885

Table 5-27. On-Road Vehicle Speciated GHG Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0129	0.0048	323.216	324.863
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0135	0.0073	413.620	415.924
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0455	0.0255	909.008	917.032
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0560	0.0008	389.183	390.960
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0347	0.0012	387.526	388.812
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0376	0.1641	1217.585	1262.134
	Gasoline	MC	Motorcycles	0.1152	0.0035	389.067	393.221
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0048	323.083	324.734
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0142	0.0070	412.971	415.215
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0465	0.0240	892.467	900.123
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0449	0.0007	390.793	392.244
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0216	0.0011	388.870	389.765
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0198	0.1659	1230.067	1274.594
	Gasoline	MC	Motorcycles	0.1039	0.0032	390.944	394.704
Georgia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0132	0.0048	311.355	312.990
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0140	0.0068	398.695	400.887
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0442	0.0232	865.858	873.243
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0520	0.0007	375.684	377.328
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0289	0.0010	374.288	375.372
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0261	0.1658	1225.724	1270.389
	Gasoline	MC	Motorcycles	0.1008	0.0030	392.334	395.961
Hawaii	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0123	0.0048	316.692	318.300
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0131	0.0069	404.963	407.153
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0443	0.0238	881.903	889.460
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0422	0.0007	383.349	384.722
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0192	0.0011	381.489	382.309
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0175	0.1636	1209.215	1253.053
	Gasoline	MC	Motorcycles	0.1018	0.0032	390.391	394.081
Idaho	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0167	0.0048	299.072	300.817
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0163	0.0064	382.119	384.272
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0437	0.0216	836.226	843.178
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0661	0.0007	359.095	361.120
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0395	0.0009	356.987	358.341
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0329	0.1676	1235.735	1281.075
	Gasoline	MC	Motorcycles	0.0952	0.0027	393.729	397.117
Illinois	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0154	0.0048	307.279	308.969
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0160	0.0068	393.977	396.220
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0460	0.0230	857.278	864.665
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0610	0.0007	369.413	371.305
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0381	0.0010	368.417	369.753
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0341	0.1668	1233.589	1278.742
	Gasoline	MC	Motorcycles	0.1070	0.0030	393.563	397.353
Indiana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0159	0.0048	308.041	309.767
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0160	0.0067	393.066	395.290
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0460	0.0228	858.947	866.284
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0615	0.0007	370.337	372.247
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0371	0.0010	367.667	368.977
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0333	0.1668	1231.759	1276.897
	Gasoline	MC	Motorcycles	0.1021	0.0030	392.313	395.961

Table 5-27. On-Road Vehicle Speciated GHG Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Iowa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0171	0.0049	299.643	301.408
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0164	0.0064	382.978	385.126
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0432	0.0214	834.155	841.035
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0660	0.0007	359.652	361.674
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0388	0.0009	357.790	359.122
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0320	0.1675	1234.352	1279.640
Kansas	Gasoline	MC	Motorcycles	0.0939	0.0027	393.865	397.197
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0151	0.0047	298.832	300.511
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0151	0.0064	383.831	385.957
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0415	0.0215	833.139	840.005
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0594	0.0006	359.789	361.621
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0343	0.0009	359.436	360.639
Kentucky	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0281	0.1680	1240.543	1285.850
	Gasoline	MC	Motorcycles	0.0941	0.0027	395.173	398.520
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0150	0.0048	299.436	301.124
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0150	0.0065	384.700	386.830
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0418	0.0215	833.032	839.894
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0583	0.0006	360.636	362.439
Louisiana	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0331	0.0009	360.394	361.565
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0267	0.1688	1246.993	1292.475
	Gasoline	MC	Motorcycles	0.0971	0.0027	395.650	399.073
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0132	0.0048	309.688	311.323
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0136	0.0066	397.058	399.192
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0413	0.0223	854.688	861.748
Maine	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0490	0.0007	374.311	375.861
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0249	0.0010	373.397	374.353
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0210	0.1676	1239.203	1284.201
	Gasoline	MC	Motorcycles	0.0972	0.0028	393.897	397.371
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0176	0.0049	294.327	296.110
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0166	0.0062	376.898	379.016
Maryland	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0424	0.0209	821.939	828.662
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0701	0.0006	352.663	354.796
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0413	0.0009	351.639	353.035
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0335	0.1669	1227.342	1272.504
	Gasoline	MC	Motorcycles	0.0918	0.0025	394.234	397.470
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0047	305.439	307.052
Massachusetts	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0143	0.0068	393.488	395.689
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0431	0.0230	851.226	858.535
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0562	0.0007	367.824	369.579
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0345	0.0010	368.556	369.790
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0313	0.1650	1220.130	1264.730
	Gasoline	MC	Motorcycles	0.1068	0.0029	394.404	398.176
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0141	0.0047	310.767	312.409
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0153	0.0070	399.963	402.257
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0461	0.0242	871.809	879.515
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0608	0.0007	373.428	375.323
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0404	0.0011	373.744	375.163
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0401	0.1642	1216.233	1260.872
	Gasoline	MC	Motorcycles	0.1099	0.0032	392.706	396.637

Table 5-27. On-Road Vehicle Speciated GHG Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Michigan	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0170	0.0048	304.819	306.558
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0173	0.0067	390.424	392.681
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0477	0.0227	850.918	858.272
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0643	0.0007	365.948	367.930
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0407	0.0010	364.620	366.025
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0365	0.1662	1227.647	1272.718
Minnesota	Gasoline	MC	Motorcycles	0.1034	0.0029	393.496	397.165
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0188	0.0048	300.585	302.373
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0185	0.0065	384.959	387.200
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0474	0.0220	837.968	845.125
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0682	0.0007	360.195	362.279
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0431	0.0010	358.978	360.439
Mississippi	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0379	0.1654	1218.416	1263.299
	Gasoline	MC	Motorcycles	0.0975	0.0028	393.761	397.220
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0139	0.0048	302.505	304.176
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0139	0.0064	387.452	389.526
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0404	0.0214	838.586	845.389
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0521	0.0007	365.330	366.963
Missouri	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0263	0.0009	364.045	365.027
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0218	0.1666	1227.270	1272.033
	Gasoline	MC	Motorcycles	0.0940	0.0026	393.189	396.518
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0144	0.0047	299.589	301.245
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0146	0.0065	385.503	387.633
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0411	0.0217	833.225	840.117
Montana	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0583	0.0006	360.730	362.534
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0339	0.0009	361.050	362.247
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0279	0.1678	1239.532	1284.779
	Gasoline	MC	Motorcycles	0.0971	0.0027	395.743	399.172
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0179	0.0049	294.337	296.125
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0169	0.0062	376.671	378.796
Nebraska	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0428	0.0208	823.288	830.005
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0709	0.0006	352.730	354.881
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0421	0.0009	351.377	352.789
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0331	0.1686	1242.298	1287.900
	Gasoline	MC	Motorcycles	0.0923	0.0025	394.936	398.195
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0165	0.0048	297.838	299.568
Nevada	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0161	0.0064	381.872	384.014
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0426	0.0213	830.915	837.759
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0644	0.0006	357.818	359.789
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0381	0.0009	356.921	358.228
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0306	0.1685	1244.025	1289.545
	Gasoline	MC	Motorcycles	0.0938	0.0027	395.178	398.508
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0116	0.0048	311.677	313.261
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0124	0.0068	399.600	401.760
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0403	0.0233	868.038	875.346
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0526	0.0007	376.177	377.836
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0298	0.0010	375.182	376.291
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0267	0.1670	1236.392	1281.382
Nevada	Gasoline	MC	Motorcycles	0.1013	0.0031	392.824	396.476

Table 5-27. On-Road Vehicle Speciated GHG Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
New Hampshire	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0149	0.0047	299.195	300.867
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0152	0.0065	384.417	386.575
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0423	0.0220	834.007	841.008
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0653	0.0007	359.016	361.018
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0409	0.0010	358.874	360.274
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0349	0.1661	1225.564	1270.570
	Gasoline	MC	Motorcycles	0.0996	0.0027	394.988	398.497
New Jersey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0133	0.0049	290.643	292.307
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0129	0.0062	375.182	377.174
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0351	0.0201	811.536	817.859
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0623	0.0006	349.682	351.586
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0339	0.0008	351.207	352.380
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0255	0.1702	1255.272	1301.078
	Gasoline	MC	Motorcycles	0.0937	0.0023	397.347	400.590
New Mexico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0140	0.0048	298.787	300.463
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0139	0.0064	383.079	385.156
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0390	0.0213	831.856	838.591
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0582	0.0006	359.912	361.714
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0320	0.0009	358.995	360.134
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0256	0.1681	1239.497	1284.758
	Gasoline	MC	Motorcycles	0.0930	0.0026	394.520	397.817
New York	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0141	0.0047	305.725	307.371
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0149	0.0068	392.785	395.005
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0442	0.0231	853.895	861.260
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0612	0.0007	367.412	369.310
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0390	0.0010	367.147	368.511
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0359	0.1653	1221.521	1266.325
	Gasoline	MC	Motorcycles	0.1027	0.0030	393.718	397.385
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0133	0.0048	306.612	308.250
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0138	0.0067	392.669	394.821
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0425	0.0226	853.296	860.478
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0541	0.0007	369.720	371.418
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0304	0.0010	368.356	369.471
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0266	0.1660	1225.438	1270.171
	Gasoline	MC	Motorcycles	0.0986	0.0029	392.925	396.454
North Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0209	0.0049	296.496	298.366
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0194	0.0062	378.516	380.714
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0468	0.0210	827.470	834.348
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0741	0.0006	354.573	356.817
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0450	0.0009	352.506	354.004
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0367	0.1674	1232.531	1277.924
	Gasoline	MC	Motorcycles	0.0949	0.0026	393.983	397.325
Ohio	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0153	0.0047	303.957	305.639
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0156	0.0067	389.922	392.130
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0442	0.0227	848.617	855.859
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0610	0.0007	365.425	367.313
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0377	0.0010	364.631	365.952
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0338	0.1658	1224.070	1268.945
	Gasoline	MC	Motorcycles	0.0999	0.0029	393.661	397.228

Table 5-27. On-Road Vehicle Speciated GHG Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Oklahoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0141	0.0048	301.992	303.651
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0142	0.0064	387.596	389.700
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0405	0.0216	837.811	844.677
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0550	0.0007	364.189	365.903
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0301	0.0009	363.646	364.735
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0250	0.1668	1230.365	1275.271
Oregon	Gasoline	MC	Motorcycles	0.0938	0.0027	394.214	397.549
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0137	0.0048	299.979	301.626
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0139	0.0066	384.402	386.536
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0408	0.0222	840.795	847.827
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0609	0.0007	360.883	362.765
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0365	0.0010	359.660	360.940
Pacific Islands	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0314	0.1671	1233.434	1278.600
	Gasoline	MC	Motorcycles	0.0974	0.0028	393.985	397.464
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0047	304.082	305.716
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0139	0.0067	390.241	392.394
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0419	0.0225	847.898	855.033
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0553	0.0007	366.538	368.264
Pennsylvania	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0318	0.0010	365.875	367.026
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0275	0.1666	1230.840	1275.763
	Gasoline	MC	Motorcycles	0.1007	0.0029	393.873	397.455
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0143	0.0048	303.720	305.382
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0146	0.0067	389.750	391.924
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0421	0.0224	845.732	852.854
Puerto Rico	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0611	0.0007	365.133	367.025
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0374	0.0010	364.495	365.804
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0322	0.1672	1235.333	1280.537
	Gasoline	MC	Motorcycles	0.0994	0.0029	394.523	398.063
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0129	0.0047	321.967	323.565
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0138	0.0069	414.388	416.613
Rhode Island	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0446	0.0236	882.930	890.437
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0410	0.0007	389.895	391.228
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0185	0.0010	390.716	391.511
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0164	0.1652	1226.579	1270.819
	Gasoline	MC	Motorcycles	0.1016	0.0031	393.376	397.041
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0047	307.309	308.931
South Carolina	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0141	0.0069	395.724	397.953
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0430	0.0236	859.916	867.374
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0602	0.0007	369.420	371.292
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0391	0.0011	369.935	371.310
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0367	0.1651	1221.884	1266.657
	Gasoline	MC	Motorcycles	0.1074	0.0031	393.856	397.680
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0141	0.0048	305.713	307.389
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0143	0.0065	391.284	393.415
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0420	0.0220	847.515	854.515
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0527	0.0007	369.004	370.657
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0277	0.0010	367.426	368.458
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0232	0.1679	1239.813	1284.956
	Gasoline	MC	Motorcycles	0.0964	0.0028	393.666	397.103

Table 5-27. On-Road Vehicle Speciated GHG Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
South Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0183	0.0048	292.369	294.157
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0174	0.0062	376.021	378.154
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0425	0.0205	816.557	823.183
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0694	0.0006	350.540	352.642
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0411	0.0009	350.866	352.243
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0310	0.1698	1253.577	1299.451
Tennessee	Gasoline	MC	Motorcycles	0.0922	0.0025	397.023	400.256
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0146	0.0048	308.355	310.029
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0150	0.0067	395.111	397.317
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0446	0.0228	857.498	864.790
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0551	0.0007	371.670	373.397
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0316	0.0010	370.486	371.640
Texas	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0277	0.1671	1235.324	1280.371
	Gasoline	MC	Motorcycles	0.1001	0.0030	393.396	396.982
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0126	0.0047	308.522	310.125
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0130	0.0066	396.322	398.448
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0409	0.0224	852.987	860.076
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0488	0.0007	372.877	374.421
Utah	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0254	0.0010	372.666	373.636
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0218	0.1662	1228.777	1273.438
	Gasoline	MC	Motorcycles	0.1041	0.0028	393.914	397.582
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0143	0.0047	302.865	304.509
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0147	0.0067	389.046	391.227
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0417	0.0226	847.079	854.231
Vermont	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0616	0.0007	364.145	366.047
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0386	0.0010	363.746	365.087
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0335	0.1670	1235.401	1280.608
	Gasoline	MC	Motorcycles	0.0987	0.0029	394.498	398.035
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0163	0.0049	294.443	296.190
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0155	0.0062	377.154	379.238
Virgin Islands	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0401	0.0208	821.408	828.042
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0706	0.0006	352.709	354.854
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0415	0.0009	351.812	353.212
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0333	0.1673	1231.110	1276.384
	Gasoline	MC	Motorcycles	0.0915	0.0025	394.536	397.758
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0129	0.0049	311.550	313.221
Virginia	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0127	0.0061	397.869	399.843
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0383	0.0209	850.727	857.326
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0426	0.0007	377.810	379.175
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0162	0.0009	375.458	376.151
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0136	0.1629	1194.246	1237.804
	Gasoline	MC	Motorcycles	0.0919	0.0025	389.827	393.065
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0147	0.0048	303.411	305.081
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0149	0.0066	389.719	391.895
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0434	0.0223	843.859	850.974
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0566	0.0007	365.483	367.247
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0329	0.0010	365.175	366.355
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0279	0.1672	1235.163	1280.245
Virginia	Gasoline	MC	Motorcycles	0.1013	0.0028	394.661	398.243

Table 5-27. On-Road Vehicle Speciated GHG Emission Factors – 2028 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Washington	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0150	0.0047	299.584	301.248
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0155	0.0067	385.428	387.632
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0440	0.0225	840.499	847.699
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0611	0.0007	360.281	362.169
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0384	0.0010	360.393	361.727
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0334	0.1670	1234.086	1279.264
	Gasoline	MC	Motorcycles	0.0976	0.0029	395.077	398.574
West Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0154	0.0048	297.757	299.460
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0153	0.0064	382.226	384.351
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0418	0.0214	829.699	836.547
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0607	0.0006	358.156	360.029
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0350	0.0009	357.711	358.937
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0288	0.1671	1231.885	1276.981
	Gasoline	MC	Motorcycles	0.0945	0.0026	394.731	398.073
Wisconsin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0177	0.0048	296.941	298.709
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0172	0.0064	380.580	382.747
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0442	0.0213	828.168	835.059
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0680	0.0006	356.030	358.104
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0413	0.0009	355.147	356.546
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0341	0.1670	1230.342	1275.549
	Gasoline	MC	Motorcycles	0.0970	0.0026	394.649	398.058
Wyoming	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0181	0.0048	292.690	294.481
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0170	0.0062	375.563	377.682
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0421	0.0205	818.265	824.887
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0711	0.0006	350.725	352.878
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0420	0.0009	350.306	351.710
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0317	0.1697	1251.636	1297.487
	Gasoline	MC	Motorcycles	0.0911	0.0025	396.302	399.509

Table 5-28. On-Road Vehicle Speciated GHG Emission Factors – 2029

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alabama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0136	0.0048	302.588	304.228
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0138	0.0065	389.998	392.100
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0414	0.0219	853.033	859.990
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0524	0.0007	373.333	374.984
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0270	0.0010	366.837	367.858
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0237	0.1676	1209.759	1254.829
	Gasoline	MC	Motorcycles	0.0977	0.0029	391.905	395.412
Alaska	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0189	0.0047	290.040	291.813
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0185	0.0064	374.192	376.396
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0465	0.0213	823.595	830.541
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0807	0.0007	357.614	360.048
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0539	0.0009	351.749	353.508
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0465	0.1690	1220.592	1266.674
	Gasoline	MC	Motorcycles	0.0773	0.0028	390.317	393.225
Arizona	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0107	0.0046	304.207	305.729
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0112	0.0066	394.905	396.970
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0365	0.0222	855.855	862.760
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0479	0.0007	376.053	377.575
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0243	0.0010	372.115	373.061
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0212	0.1685	1220.911	1266.146
	Gasoline	MC	Motorcycles	0.1018	0.0030	393.940	397.578
Arkansas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0133	0.0047	295.640	297.256
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0134	0.0063	382.956	385.009
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0385	0.0211	834.109	840.784
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0546	0.0007	364.519	366.223
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0290	0.0009	359.895	360.958
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0245	0.1680	1212.681	1257.891
	Gasoline	MC	Motorcycles	0.0935	0.0027	393.916	397.253
Colorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0142	0.0046	292.801	294.415
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0144	0.0065	380.172	382.288
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0407	0.0217	834.007	840.897
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0626	0.0007	359.702	361.630
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0388	0.0010	355.798	357.139
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0335	0.1677	1212.341	1257.722
	Gasoline	MC	Motorcycles	0.1008	0.0029	394.737	398.319
Connecticut	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0126	0.0045	296.819	298.373
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0133	0.0067	387.185	389.339
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0394	0.0226	843.791	850.892
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0593	0.0007	364.863	366.704
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0380	0.0010	362.573	363.911
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0359	0.1654	1197.427	1242.271
	Gasoline	MC	Motorcycles	0.1047	0.0030	394.868	398.594
Delaware	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0126	0.0047	302.020	303.618
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0132	0.0066	390.173	392.299
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0406	0.0225	855.941	863.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0578	0.0007	371.689	373.496
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0337	0.0010	366.019	367.239
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0314	0.1667	1204.048	1249.093
	Gasoline	MC	Motorcycles	0.1051	0.0030	392.138	395.882

Table 5-28. On-Road Vehicle Speciated GHG Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
District of Columbia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0124	0.0048	315.169	316.775
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0130	0.0071	407.407	409.650
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0433	0.0247	901.200	908.952
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0563	0.0008	387.910	389.695
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0342	0.0012	382.279	383.552
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0376	0.1653	1198.973	1243.834
	Gasoline	MC	Motorcycles	0.1140	0.0035	389.092	393.212
Florida	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0129	0.0047	315.066	316.676
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0136	0.0068	406.830	409.013
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0439	0.0232	884.764	892.152
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0451	0.0007	389.495	390.953
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0211	0.0011	383.628	384.507
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0195	0.1671	1211.691	1256.529
	Gasoline	MC	Motorcycles	0.1028	0.0032	390.972	394.700
Georgia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0127	0.0047	303.606	305.200
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0134	0.0066	392.729	394.863
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0418	0.0225	858.490	865.621
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0522	0.0007	374.445	376.095
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0284	0.0010	369.220	370.290
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0259	0.1670	1207.602	1252.578
	Gasoline	MC	Motorcycles	0.0998	0.0030	392.362	395.959
Hawaii	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0118	0.0047	308.837	310.404
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0125	0.0067	398.942	401.073
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0418	0.0231	874.342	881.636
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0424	0.0007	382.078	383.457
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0186	0.0011	376.344	377.149
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0172	0.1647	1190.923	1235.056
	Gasoline	MC	Motorcycles	0.1007	0.0032	390.420	394.079
Idaho	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0160	0.0047	291.580	293.281
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0156	0.0063	376.346	378.441
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0414	0.0210	829.249	835.962
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0663	0.0007	357.911	359.943
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0391	0.0009	352.117	353.459
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0329	0.1688	1217.787	1263.443
	Gasoline	MC	Motorcycles	0.0942	0.0027	393.757	397.116
Illinois	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0147	0.0047	299.604	301.251
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0153	0.0066	388.039	390.221
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0436	0.0223	850.032	857.165
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0612	0.0007	368.199	370.098
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0376	0.0010	363.407	364.730
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0341	0.1680	1215.535	1261.009
	Gasoline	MC	Motorcycles	0.1058	0.0030	393.591	397.348
Indiana	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0152	0.0047	300.344	302.027
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0154	0.0065	387.143	389.306
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0436	0.0221	851.685	858.768
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0618	0.0007	369.121	371.037
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0367	0.0010	362.666	363.963
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0332	0.1680	1213.661	1259.114
	Gasoline	MC	Motorcycles	0.1010	0.0030	392.340	395.957

Table 5-28. On-Road Vehicle Speciated GHG Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Iowa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0164	0.0048	292.135	293.855
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0158	0.0062	377.194	379.285
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0410	0.0207	827.183	833.826
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0663	0.0007	358.468	360.496
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0384	0.0009	352.910	354.230
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0319	0.1687	1216.425	1262.027
Kansas	Gasoline	MC	Motorcycles	0.0929	0.0026	393.894	397.197
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0145	0.0046	291.366	293.003
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0145	0.0063	378.060	380.130
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0393	0.0209	826.183	832.815
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0596	0.0006	358.598	360.436
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0339	0.0009	354.547	355.738
Kentucky	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0279	0.1692	1222.625	1268.251
	Gasoline	MC	Motorcycles	0.0931	0.0027	395.203	398.521
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0144	0.0047	291.959	293.604
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0143	0.0063	378.922	380.995
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0395	0.0208	826.077	832.703
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0585	0.0006	359.445	361.255
Louisiana	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0326	0.0009	355.497	356.655
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0265	0.1700	1229.046	1274.851
	Gasoline	MC	Motorcycles	0.0960	0.0027	395.680	399.073
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0126	0.0047	301.988	303.581
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0130	0.0065	391.139	393.215
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0390	0.0216	847.431	854.246
Maine	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0492	0.0007	373.067	374.623
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0244	0.0010	368.348	369.289
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0208	0.1688	1221.139	1266.453
	Gasoline	MC	Motorcycles	0.0962	0.0028	393.927	397.371
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0169	0.0048	286.937	288.675
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0159	0.0061	371.191	373.253
Maryland	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0403	0.0202	815.115	821.608
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0704	0.0006	351.505	353.644
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0409	0.0009	346.832	348.217
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0334	0.1681	1209.521	1254.991
	Gasoline	MC	Motorcycles	0.0908	0.0025	394.264	397.471
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0129	0.0046	297.824	299.397
Massachusetts	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0136	0.0066	387.577	389.719
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0409	0.0223	844.023	851.085
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0565	0.0007	366.614	368.377
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0340	0.0010	363.554	364.775
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0312	0.1662	1202.197	1247.109
	Gasoline	MC	Motorcycles	0.1057	0.0029	394.433	398.173
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0046	303.010	304.611
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0146	0.0069	393.927	396.160
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0438	0.0235	864.399	871.843
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0611	0.0007	372.207	374.110
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0399	0.0011	368.665	370.071
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0401	0.1654	1198.106	1243.059
	Gasoline	MC	Motorcycles	0.1088	0.0032	392.733	396.631

Table 5-28. On-Road Vehicle Speciated GHG Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Michigan	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0164	0.0047	297.194	298.888
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0166	0.0065	384.524	386.721
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0452	0.0220	843.746	850.846
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0645	0.0007	364.748	366.737
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0403	0.0010	359.651	361.044
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0364	0.1674	1209.654	1255.041
Minnesota	Gasoline	MC	Motorcycles	0.1022	0.0029	393.523	397.161
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0181	0.0047	293.048	294.789
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0178	0.0064	379.126	381.308
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0450	0.0213	830.933	837.845
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0684	0.0007	359.012	361.102
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0427	0.0010	354.074	355.522
Mississippi	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0379	0.1665	1200.544	1245.735
	Gasoline	MC	Motorcycles	0.0964	0.0027	393.789	397.218
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0133	0.0047	294.970	296.599
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0132	0.0062	381.664	383.681
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0382	0.0207	831.530	838.097
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0523	0.0007	364.118	365.756
Missouri	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0258	0.0009	359.109	360.078
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0216	0.1678	1209.327	1254.394
	Gasoline	MC	Motorcycles	0.0929	0.0026	393.220	396.520
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0138	0.0046	292.108	293.722
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0140	0.0063	379.710	381.784
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0390	0.0210	826.253	832.910
Montana	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0586	0.0006	359.538	361.349
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0335	0.0009	356.142	357.326
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0277	0.1690	1221.636	1267.203
	Gasoline	MC	Motorcycles	0.0961	0.0027	395.772	399.172
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0172	0.0048	286.945	288.687
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0162	0.0061	370.965	373.034
Nebraska	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0406	0.0202	816.476	822.964
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0711	0.0006	351.567	353.725
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0417	0.0009	346.573	347.974
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0330	0.1698	1224.405	1270.325
	Gasoline	MC	Motorcycles	0.0913	0.0025	394.965	398.196
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0158	0.0047	290.380	292.066
Nevada	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0155	0.0062	376.110	378.195
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0404	0.0207	823.998	830.608
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0646	0.0006	356.636	358.613
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0377	0.0009	352.056	353.351
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0305	0.1698	1226.096	1271.937
	Gasoline	MC	Motorcycles	0.0928	0.0027	395.207	398.509
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0111	0.0047	303.922	305.467
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0118	0.0067	393.622	395.725
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0382	0.0226	860.661	867.720
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0528	0.0007	374.934	376.600
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0293	0.0010	370.105	371.200
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0265	0.1682	1218.235	1263.545
Nevada	Gasoline	MC	Motorcycles	0.1002	0.0031	392.852	396.473

Table 5-28. On-Road Vehicle Speciated GHG Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
New Hampshire	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0143	0.0046	291.703	293.333
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0146	0.0064	378.605	380.707
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0402	0.0213	827.020	833.786
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0655	0.0007	357.838	359.846
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0405	0.0010	353.979	355.367
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0348	0.1673	1207.722	1253.041
	Gasoline	MC	Motorcycles	0.0985	0.0027	395.016	398.496
New Jersey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0128	0.0048	283.367	284.989
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0123	0.0060	369.539	371.479
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0334	0.0195	804.867	810.979
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0625	0.0006	348.526	350.436
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0335	0.0008	346.425	347.587
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0253	0.1714	1237.382	1283.512
	Gasoline	MC	Motorcycles	0.0927	0.0023	397.378	400.594
New Mexico	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0047	291.326	292.959
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0133	0.0062	377.327	379.349
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0370	0.0206	824.913	831.417
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0584	0.0006	358.725	360.533
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0315	0.0009	354.115	355.242
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0254	0.1693	1221.569	1267.145
	Gasoline	MC	Motorcycles	0.0920	0.0026	394.550	397.819
New York	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0046	298.088	299.693
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0143	0.0066	386.860	389.022
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0421	0.0224	846.678	853.796
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0614	0.0007	366.209	368.113
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0385	0.0010	362.152	363.504
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0358	0.1665	1203.542	1248.660
	Gasoline	MC	Motorcycles	0.1016	0.0030	393.746	397.381
North Carolina	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0127	0.0047	298.973	300.570
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0132	0.0065	386.784	388.878
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0402	0.0219	846.078	853.011
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0544	0.0007	368.501	370.206
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0299	0.0010	363.361	364.463
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0265	0.1672	1207.417	1252.460
	Gasoline	MC	Motorcycles	0.0975	0.0029	392.954	396.453
North Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0201	0.0048	289.037	290.858
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0187	0.0061	372.765	374.905
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0444	0.0204	820.591	827.233
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0744	0.0006	353.404	355.655
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0446	0.0009	347.678	349.164
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0367	0.1686	1214.651	1260.358
	Gasoline	MC	Motorcycles	0.0938	0.0026	394.012	397.324
Ohio	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0147	0.0046	296.363	298.002
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0150	0.0065	384.045	386.193
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0419	0.0220	841.464	848.459
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0612	0.0007	364.225	366.119
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0373	0.0010	359.670	360.978
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0337	0.1670	1206.111	1251.299
	Gasoline	MC	Motorcycles	0.0989	0.0029	393.689	397.226

Table 5-28. On-Road Vehicle Speciated GHG Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Oklahoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0047	294.462	296.079
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0135	0.0063	381.791	383.838
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0383	0.0210	830.768	837.397
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0553	0.0007	362.983	364.703
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0296	0.0009	358.710	359.787
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0248	0.1680	1212.448	1257.664
Oregon	Gasoline	MC	Motorcycles	0.0928	0.0027	394.244	397.551
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0131	0.0047	292.484	294.090
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0133	0.0064	378.611	380.688
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0387	0.0215	833.764	840.556
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0611	0.0007	359.698	361.587
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0361	0.0010	354.767	356.034
Pacific Islands	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0313	0.1683	1215.484	1260.967
	Gasoline	MC	Motorcycles	0.0964	0.0028	394.013	397.462
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0129	0.0046	296.503	298.095
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0133	0.0065	384.387	386.483
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0396	0.0218	840.755	847.646
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0555	0.0007	365.330	367.063
Pennsylvania	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0313	0.0010	360.911	362.048
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0274	0.1678	1212.861	1258.099
	Gasoline	MC	Motorcycles	0.0997	0.0029	393.902	397.454
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0137	0.0047	296.131	297.752
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0140	0.0065	383.877	385.994
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0399	0.0217	838.615	845.494
Puerto Rico	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0614	0.0007	363.935	365.833
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0370	0.0010	359.537	360.834
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0321	0.1684	1217.366	1262.889
	Gasoline	MC	Motorcycles	0.0984	0.0028	394.552	398.061
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0123	0.0046	313.986	315.544
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0132	0.0068	408.247	410.411
Rhode Island	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0421	0.0229	875.288	882.534
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0412	0.0007	388.590	389.930
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0179	0.0010	385.457	386.236
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0161	0.1664	1208.373	1252.923
	Gasoline	MC	Motorcycles	0.1005	0.0031	393.405	397.040
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0130	0.0046	299.638	301.220
South Carolina	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0135	0.0068	389.757	391.929
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0410	0.0229	852.634	859.844
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0604	0.0007	368.211	370.089
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0387	0.0011	364.907	366.269
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0367	0.1663	1203.870	1248.961
	Gasoline	MC	Motorcycles	0.1063	0.0031	393.883	397.676
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0135	0.0047	298.098	299.732
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0136	0.0064	385.432	387.506
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0397	0.0213	840.368	847.124
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0529	0.0007	367.783	369.442
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0272	0.0010	362.447	363.466
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0230	0.1691	1221.779	1267.237
	Gasoline	MC	Motorcycles	0.0954	0.0028	393.696	397.103

Table 5-28. On-Road Vehicle Speciated GHG Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
South Dakota	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0176	0.0047	285.028	286.769
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0167	0.0061	370.331	372.407
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0404	0.0199	809.831	816.231
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0696	0.0006	349.380	351.489
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0406	0.0009	346.073	347.437
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0309	0.1711	1235.683	1281.883
	Gasoline	MC	Motorcycles	0.0912	0.0025	397.053	400.258
Tennessee	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0140	0.0047	300.671	302.303
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0144	0.0066	389.186	391.332
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0421	0.0221	850.238	857.277
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0553	0.0007	370.445	372.179
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0312	0.0010	365.463	366.603
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0275	0.1683	1217.254	1262.618
	Gasoline	MC	Motorcycles	0.0990	0.0030	393.425	396.980
Texas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0120	0.0046	300.851	302.414
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0125	0.0065	390.413	392.483
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0388	0.0217	845.743	852.590
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0490	0.0007	371.639	373.189
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0248	0.0010	367.625	368.581
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0215	0.1674	1210.775	1255.747
	Gasoline	MC	Motorcycles	0.1030	0.0028	393.944	397.582
Utah	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0137	0.0046	295.296	296.899
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0141	0.0065	383.179	385.303
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0396	0.0219	839.964	846.874
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0618	0.0007	362.945	364.853
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0382	0.0010	358.796	360.125
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0335	0.1683	1217.428	1262.956
	Gasoline	MC	Motorcycles	0.0977	0.0029	394.526	398.033
Vermont	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0157	0.0048	287.047	288.751
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0148	0.0061	371.442	373.471
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0381	0.0202	814.592	821.001
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0708	0.0006	351.550	353.701
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0411	0.0009	347.002	348.391
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0332	0.1685	1213.279	1258.864
	Gasoline	MC	Motorcycles	0.0905	0.0025	394.565	397.759
Virgin Islands	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0124	0.0048	303.816	305.444
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0122	0.0060	391.977	393.897
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0361	0.0202	843.437	849.804
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0428	0.0007	376.533	377.904
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0157	0.0009	370.382	371.061
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0133	0.1640	1176.189	1220.016
	Gasoline	MC	Motorcycles	0.0909	0.0025	389.858	393.069
Virginia	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0141	0.0047	295.843	297.471
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0143	0.0065	383.868	385.986
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0411	0.0216	836.756	843.627
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0569	0.0007	364.280	366.050
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0324	0.0010	360.217	361.384
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0278	0.1684	1217.209	1262.608
	Gasoline	MC	Motorcycles	0.1003	0.0028	394.690	398.242

Table 5-28. On-Road Vehicle Speciated GHG Emission Factors – 2029 (cont.)

State	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Washington	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0144	0.0046	292.100	293.722
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0148	0.0065	379.616	381.761
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0417	0.0218	833.469	840.423
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0613	0.0007	359.100	360.994
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0379	0.0010	355.490	356.811
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0333	0.1682	1216.172	1261.671
West Virginia	Gasoline	MC	Motorcycles	0.0966	0.0029	395.105	398.572
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0148	0.0047	290.313	291.973
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0146	0.0063	376.473	378.541
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0396	0.0208	822.772	829.385
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0610	0.0006	356.978	358.857
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0346	0.0009	352.842	354.056
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0287	0.1683	1214.019	1259.428
Wisconsin	Gasoline	MC	Motorcycles	0.0935	0.0026	394.761	398.073
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0170	0.0047	289.494	291.216
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0165	0.0062	374.821	376.930
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0420	0.0207	821.265	827.921
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0682	0.0006	354.859	356.939
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0409	0.0009	350.296	351.683
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0340	0.1682	1212.491	1258.012
Wyoming	Gasoline	MC	Motorcycles	0.0960	0.0026	394.678	398.057
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.0174	0.0047	285.337	287.081
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.0163	0.0061	369.874	371.937
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.0400	0.0199	811.524	817.920
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.0713	0.0006	349.567	351.726
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.0416	0.0009	345.517	346.910
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.0316	0.1709	1233.732	1279.907
Wyoming	Gasoline	MC	Motorcycles	0.0901	0.0025	396.332	399.511

Table 5-29. EMFAC County-Specific On-Road Vehicle Composite EFs – 2025 POV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	1.399	0.220	0.152	0.003	0.020	0.007	0.038
ALPINE	All Vehicles	1.745	0.247	0.187	0.003	0.022	0.008	0.038
AMADOR	All Vehicles	2.186	0.341	0.258	0.003	0.021	0.008	0.037
BUTTE	All Vehicles	1.803	0.292	0.192	0.003	0.021	0.008	0.038
CALAVERAS	All Vehicles	2.331	0.352	0.262	0.003	0.023	0.009	0.037
COLUSA	All Vehicles	1.532	0.239	0.167	0.003	0.019	0.007	0.038
CONTRA COSTA	All Vehicles	1.417	0.221	0.151	0.003	0.020	0.008	0.038
DEL NORTE	All Vehicles	2.060	0.325	0.254	0.003	0.021	0.009	0.036
EL DORADO	All Vehicles	1.723	0.282	0.182	0.003	0.021	0.008	0.037
FRESNO	All Vehicles	1.506	0.243	0.161	0.003	0.019	0.007	0.038
GLENN	All Vehicles	1.628	0.257	0.169	0.003	0.021	0.008	0.038
HUMBOLDT	All Vehicles	1.985	0.319	0.233	0.003	0.021	0.008	0.036
IMPERIAL	All Vehicles	1.703	0.255	0.175	0.003	0.019	0.007	0.039
INYO	All Vehicles	1.717	0.268	0.183	0.003	0.020	0.008	0.038
KERN	All Vehicles	1.492	0.233	0.160	0.003	0.019	0.007	0.039
KINGS	All Vehicles	1.470	0.234	0.166	0.003	0.017	0.007	0.039
LAKE	All Vehicles	2.273	0.364	0.259	0.003	0.022	0.009	0.036
LASSEN	All Vehicles	1.963	0.298	0.214	0.003	0.022	0.009	0.037
LOS ANGELES	All Vehicles	1.473	0.203	0.150	0.003	0.022	0.008	0.039
MADERA	All Vehicles	1.539	0.257	0.174	0.003	0.017	0.007	0.038
MARIN	All Vehicles	1.539	0.257	0.174	0.003	0.017	0.007	0.038
MARIPOSA	All Vehicles	2.464	0.381	0.283	0.003	0.023	0.010	0.036
MENDOCINO	All Vehicles	1.900	0.303	0.217	0.003	0.021	0.008	0.038
MERCED	All Vehicles	1.695	0.255	0.184	0.003	0.020	0.008	0.038
MODOC	All Vehicles	2.100	0.295	0.233	0.004	0.024	0.010	0.037
MONO	All Vehicles	1.810	0.266	0.200	0.003	0.020	0.008	0.038
MONTEREY	All Vehicles	1.646	0.261	0.188	0.003	0.020	0.008	0.037
NAPA	All Vehicles	1.533	0.238	0.168	0.003	0.021	0.008	0.037
NEVADA	All Vehicles	1.910	0.318	0.210	0.003	0.021	0.008	0.037

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	1.333	0.195	0.129	0.003	0.020	0.008	0.039
PLACER	All Vehicles	1.519	0.234	0.154	0.003	0.021	0.008	0.038
PLUMAS	All Vehicles	2.316	0.338	0.254	0.004	0.024	0.010	0.037
RIVERSIDE	All Vehicles	1.428	0.213	0.149	0.003	0.019	0.007	0.039
SACRAMENTO	All Vehicles	1.587	0.254	0.175	0.003	0.021	0.008	0.037
SAN BENITO	All Vehicles	1.604	0.258	0.168	0.003	0.022	0.008	0.038
SAN BERNARDINO	All Vehicles	1.465	0.223	0.156	0.003	0.019	0.007	0.039
SAN DIEGO	All Vehicles	1.460	0.220	0.155	0.003	0.021	0.008	0.038
SAN FRANCISCO	All Vehicles	1.501	0.228	0.145	0.003	0.023	0.009	0.039
SAN JOAQUIN	All Vehicles	1.564	0.241	0.160	0.003	0.022	0.008	0.038
SAN LUIS OBISPO	All Vehicles	1.572	0.268	0.174	0.003	0.019	0.007	0.037
SAN MATEO	All Vehicles	1.284	0.207	0.126	0.003	0.019	0.007	0.040
SANTA BARBARA	All Vehicles	1.620	0.270	0.184	0.003	0.020	0.007	0.037
SANTA CLARA	All Vehicles	1.419	0.216	0.150	0.003	0.020	0.008	0.038
SANTA CRUZ	All Vehicles	1.884	0.299	0.205	0.003	0.023	0.009	0.037
SHASTA	All Vehicles	1.677	0.274	0.181	0.003	0.020	0.008	0.038
SIERRA	All Vehicles	2.027	0.291	0.224	0.004	0.024	0.010	0.037
SISKIYOU	All Vehicles	2.040	0.306	0.217	0.004	0.022	0.009	0.038
SOLANO	All Vehicles	1.424	0.229	0.160	0.003	0.018	0.007	0.038
SONOMA	All Vehicles	1.692	0.265	0.180	0.003	0.022	0.008	0.037
STANISLAUS	All Vehicles	1.636	0.255	0.167	0.003	0.022	0.008	0.038
SUTTER	All Vehicles	1.641	0.255	0.168	0.003	0.021	0.008	0.038
TEHAMA	All Vehicles	1.718	0.268	0.185	0.003	0.021	0.008	0.038
TRINITY	All Vehicles	2.159	0.307	0.227	0.004	0.024	0.010	0.038
TULARE	All Vehicles	1.635	0.252	0.178	0.003	0.020	0.008	0.038
TUOLUMNE	All Vehicles	2.250	0.359	0.251	0.003	0.023	0.009	0.036
VENTURA	All Vehicles	1.442	0.226	0.155	0.003	0.020	0.007	0.038
YOLO	All Vehicles	1.528	0.237	0.153	0.003	0.021	0.008	0.038
YUBA	All Vehicles	1.702	0.272	0.189	0.003	0.020	0.008	0.037

Table 5-30. EMFAC County-Specific On-Road Vehicle Composite EFs – 2026 POV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	1.331	0.213	0.143	0.003	0.020	0.007	0.039
ALPINE	All Vehicles	1.660	0.241	0.176	0.003	0.022	0.008	0.039
AMADOR	All Vehicles	2.055	0.329	0.241	0.003	0.020	0.008	0.038
BUTTE	All Vehicles	1.698	0.282	0.179	0.003	0.021	0.008	0.039
CALAVERAS	All Vehicles	2.199	0.342	0.245	0.003	0.023	0.009	0.038
COLUSA	All Vehicles	1.448	0.231	0.156	0.003	0.019	0.007	0.039
CONTRA COSTA	All Vehicles	1.349	0.215	0.142	0.003	0.020	0.007	0.039
DEL NORTE	All Vehicles	1.938	0.315	0.237	0.003	0.021	0.009	0.037
EL DORADO	All Vehicles	1.642	0.276	0.170	0.003	0.021	0.008	0.038
FRESNO	All Vehicles	1.426	0.235	0.151	0.003	0.019	0.007	0.039
GLENN	All Vehicles	1.538	0.248	0.158	0.003	0.021	0.008	0.039
HUMBOLDT	All Vehicles	1.876	0.311	0.218	0.003	0.021	0.008	0.037
IMPERIAL	All Vehicles	1.600	0.245	0.163	0.003	0.018	0.007	0.039
INYO	All Vehicles	1.628	0.261	0.172	0.003	0.020	0.008	0.038
KERN	All Vehicles	1.412	0.226	0.151	0.003	0.019	0.007	0.039
KINGS	All Vehicles	1.388	0.225	0.156	0.003	0.017	0.007	0.039
LAKE	All Vehicles	2.128	0.351	0.240	0.003	0.021	0.009	0.037
LASSEN	All Vehicles	1.858	0.289	0.200	0.003	0.022	0.009	0.037
LOS ANGELES	All Vehicles	1.400	0.197	0.140	0.003	0.022	0.008	0.039
MADERA	All Vehicles	1.450	0.248	0.163	0.003	0.017	0.007	0.039
MARIN	All Vehicles	1.450	0.248	0.163	0.003	0.017	0.007	0.039
MARIPOSA	All Vehicles	2.314	0.368	0.264	0.003	0.023	0.009	0.037
MENDOCINO	All Vehicles	1.794	0.294	0.203	0.003	0.021	0.008	0.038
MERCED	All Vehicles	1.588	0.244	0.172	0.003	0.020	0.008	0.038
MODOC	All Vehicles	1.979	0.284	0.217	0.004	0.024	0.010	0.038
MONO	All Vehicles	1.714	0.258	0.187	0.003	0.020	0.008	0.039
MONTEREY	All Vehicles	1.555	0.253	0.175	0.003	0.020	0.007	0.038
NAPA	All Vehicles	1.456	0.231	0.158	0.003	0.021	0.008	0.038
NEVADA	All Vehicles	1.815	0.312	0.197	0.003	0.021	0.008	0.038

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	1.274	0.189	0.122	0.003	0.020	0.008	0.039
PLACER	All Vehicles	1.448	0.227	0.145	0.003	0.021	0.008	0.039
PLUMAS	All Vehicles	2.178	0.327	0.236	0.003	0.024	0.010	0.037
RIVERSIDE	All Vehicles	1.359	0.207	0.140	0.003	0.019	0.007	0.039
SACRAMENTO	All Vehicles	1.511	0.248	0.163	0.003	0.021	0.008	0.038
SAN BENITO	All Vehicles	1.522	0.252	0.158	0.003	0.022	0.008	0.039
SAN BERNARDINO	All Vehicles	1.388	0.216	0.147	0.003	0.019	0.007	0.039
SAN DIEGO	All Vehicles	1.388	0.213	0.145	0.003	0.020	0.008	0.039
SAN FRANCISCO	All Vehicles	1.441	0.224	0.137	0.003	0.023	0.009	0.039
SAN JOAQUIN	All Vehicles	1.482	0.234	0.150	0.003	0.022	0.008	0.039
SAN LUIS OBISPO	All Vehicles	1.494	0.261	0.164	0.003	0.019	0.007	0.038
SAN MATEO	All Vehicles	1.239	0.204	0.118	0.003	0.019	0.007	0.040
SANTA BARBARA	All Vehicles	1.513	0.261	0.171	0.003	0.019	0.007	0.038
SANTA CLARA	All Vehicles	1.354	0.210	0.141	0.003	0.020	0.008	0.039
SANTA CRUZ	All Vehicles	1.788	0.292	0.191	0.003	0.023	0.009	0.038
SHASTA	All Vehicles	1.587	0.267	0.169	0.003	0.020	0.008	0.039
SIERRA	All Vehicles	1.918	0.282	0.208	0.003	0.024	0.010	0.038
SISKIYOU	All Vehicles	1.927	0.296	0.203	0.004	0.022	0.009	0.039
SOLANO	All Vehicles	1.351	0.222	0.151	0.003	0.018	0.007	0.038
SONOMA	All Vehicles	1.604	0.257	0.168	0.003	0.022	0.008	0.038
STANISLAUS	All Vehicles	1.547	0.246	0.156	0.003	0.022	0.008	0.038
SUTTER	All Vehicles	1.550	0.246	0.157	0.003	0.021	0.008	0.039
TEHAMA	All Vehicles	1.622	0.258	0.173	0.003	0.020	0.008	0.039
TRINITY	All Vehicles	2.034	0.296	0.212	0.004	0.024	0.010	0.038
TULARE	All Vehicles	1.539	0.242	0.166	0.003	0.020	0.008	0.039
TUOLUMNE	All Vehicles	2.118	0.348	0.234	0.003	0.023	0.009	0.037
VENTURA	All Vehicles	1.369	0.219	0.145	0.003	0.019	0.007	0.039
YOLO	All Vehicles	1.453	0.231	0.144	0.003	0.021	0.008	0.039
YUBA	All Vehicles	1.599	0.263	0.175	0.003	0.020	0.008	0.037

Table 5-31. EMFAC County-Specific On-Road Vehicle Composite EFs – 2027 POV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	1.273	0.207	0.135	0.003	0.020	0.007	0.040
ALPINE	All Vehicles	1.586	0.236	0.166	0.003	0.022	0.008	0.040
AMADOR	All Vehicles	1.938	0.319	0.226	0.003	0.020	0.008	0.038
BUTTE	All Vehicles	1.607	0.274	0.167	0.003	0.021	0.008	0.039
CALAVERAS	All Vehicles	2.078	0.333	0.230	0.003	0.023	0.009	0.038
COLUSA	All Vehicles	1.376	0.224	0.147	0.003	0.019	0.007	0.040
CONTRA COSTA	All Vehicles	1.288	0.209	0.134	0.003	0.020	0.007	0.039
DEL NORTE	All Vehicles	1.832	0.307	0.221	0.003	0.021	0.008	0.037
EL DORADO	All Vehicles	1.573	0.271	0.160	0.003	0.021	0.008	0.039
FRESNO	All Vehicles	1.355	0.229	0.143	0.003	0.019	0.007	0.040
GLENN	All Vehicles	1.462	0.241	0.149	0.003	0.021	0.008	0.039
HUMBOLDT	All Vehicles	1.779	0.304	0.204	0.003	0.021	0.008	0.038
IMPERIAL	All Vehicles	1.496	0.236	0.153	0.003	0.018	0.007	0.040
INYO	All Vehicles	1.549	0.255	0.161	0.003	0.020	0.008	0.039
KERN	All Vehicles	1.344	0.219	0.143	0.003	0.019	0.007	0.040
KINGS	All Vehicles	1.318	0.218	0.147	0.003	0.017	0.006	0.040
LAKE	All Vehicles	1.999	0.339	0.223	0.003	0.021	0.008	0.038
LASSEN	All Vehicles	1.767	0.283	0.187	0.003	0.022	0.009	0.038
LOS ANGELES	All Vehicles	1.337	0.192	0.132	0.003	0.021	0.008	0.040
MADERA	All Vehicles	1.372	0.240	0.153	0.003	0.017	0.007	0.039
MARIN	All Vehicles	1.372	0.240	0.153	0.003	0.017	0.007	0.039
MARIPOSA	All Vehicles	2.181	0.357	0.247	0.003	0.023	0.009	0.037
MENDOCINO	All Vehicles	1.701	0.288	0.190	0.003	0.021	0.008	0.039
MERCED	All Vehicles	1.498	0.233	0.160	0.003	0.020	0.008	0.039
MODOC	All Vehicles	1.873	0.273	0.202	0.003	0.024	0.010	0.038
MONO	All Vehicles	1.631	0.251	0.176	0.003	0.020	0.008	0.039
MONTEREY	All Vehicles	1.476	0.247	0.164	0.003	0.019	0.007	0.039
NAPA	All Vehicles	1.388	0.224	0.149	0.003	0.021	0.008	0.039
NEVADA	All Vehicles	1.731	0.308	0.186	0.003	0.021	0.008	0.038

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	1.223	0.185	0.115	0.003	0.020	0.007	0.040
PLACER	All Vehicles	1.389	0.221	0.137	0.003	0.021	0.008	0.040
PLUMAS	All Vehicles	2.059	0.319	0.220	0.003	0.024	0.010	0.038
RIVERSIDE	All Vehicles	1.297	0.201	0.133	0.003	0.019	0.007	0.040
SACRAMENTO	All Vehicles	1.448	0.242	0.153	0.003	0.021	0.008	0.039
SAN BENITO	All Vehicles	1.451	0.246	0.149	0.003	0.022	0.008	0.040
SAN BERNARDINO	All Vehicles	1.322	0.210	0.138	0.003	0.019	0.007	0.040
SAN DIEGO	All Vehicles	1.334	0.208	0.137	0.003	0.020	0.008	0.039
SAN FRANCISCO	All Vehicles	1.389	0.220	0.129	0.003	0.022	0.008	0.040
SAN JOAQUIN	All Vehicles	1.418	0.227	0.141	0.003	0.022	0.008	0.040
SAN LUIS OBISPO	All Vehicles	1.424	0.255	0.154	0.003	0.019	0.007	0.038
SAN MATEO	All Vehicles	1.203	0.202	0.113	0.003	0.019	0.007	0.041
SANTA BARBARA	All Vehicles	1.435	0.254	0.160	0.003	0.019	0.007	0.039
SANTA CLARA	All Vehicles	1.297	0.205	0.133	0.003	0.020	0.007	0.040
SANTA CRUZ	All Vehicles	1.703	0.286	0.178	0.003	0.023	0.009	0.038
SHASTA	All Vehicles	1.508	0.260	0.159	0.003	0.020	0.007	0.039
SIERRA	All Vehicles	1.822	0.276	0.194	0.003	0.023	0.009	0.038
SISKIYOU	All Vehicles	1.827	0.288	0.191	0.003	0.022	0.009	0.039
SOLANO	All Vehicles	1.287	0.216	0.142	0.003	0.018	0.007	0.039
SONOMA	All Vehicles	1.527	0.250	0.158	0.003	0.022	0.008	0.039
STANISLAUS	All Vehicles	1.447	0.238	0.146	0.003	0.021	0.008	0.039
SUTTER	All Vehicles	1.475	0.238	0.148	0.003	0.021	0.008	0.040
TEHAMA	All Vehicles	1.538	0.250	0.163	0.003	0.020	0.008	0.040
TRINITY	All Vehicles	1.926	0.287	0.198	0.004	0.023	0.009	0.039
TULARE	All Vehicles	1.453	0.234	0.155	0.003	0.020	0.008	0.039
TUOLUMNE	All Vehicles	2.002	0.339	0.219	0.003	0.023	0.009	0.038
VENTURA	All Vehicles	1.304	0.212	0.137	0.003	0.019	0.007	0.039
YOLO	All Vehicles	1.392	0.225	0.136	0.003	0.021	0.008	0.039
YUBA	All Vehicles	1.509	0.254	0.162	0.003	0.020	0.008	0.038

Table 5-32. EMFAC County-Specific On-Road Vehicle Composite EFs – 2028 POV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	1.222	0.202	0.129	0.003	0.019	0.007	0.040
ALPINE	All Vehicles	1.523	0.231	0.158	0.003	0.022	0.008	0.040
AMADOR	All Vehicles	1.832	0.309	0.212	0.003	0.020	0.008	0.039
BUTTE	All Vehicles	1.529	0.265	0.157	0.003	0.021	0.008	0.040
CALAVERAS	All Vehicles	1.971	0.325	0.216	0.003	0.023	0.009	0.039
COLUSA	All Vehicles	1.315	0.217	0.139	0.003	0.019	0.007	0.040
CONTRA COSTA	All Vehicles	1.237	0.203	0.127	0.003	0.020	0.007	0.040
DEL NORTE	All Vehicles	1.738	0.298	0.207	0.003	0.021	0.008	0.038
EL DORADO	All Vehicles	1.510	0.266	0.151	0.003	0.021	0.008	0.039
FRESNO	All Vehicles	1.296	0.222	0.135	0.003	0.018	0.007	0.040
GLENN	All Vehicles	1.397	0.234	0.141	0.003	0.021	0.008	0.040
HUMBOLDT	All Vehicles	1.694	0.297	0.192	0.003	0.020	0.008	0.038
IMPERIAL	All Vehicles	1.425	0.228	0.144	0.003	0.018	0.007	0.041
INYO	All Vehicles	1.481	0.249	0.152	0.003	0.020	0.007	0.040
KERN	All Vehicles	1.286	0.212	0.136	0.003	0.019	0.007	0.040
KINGS	All Vehicles	1.258	0.211	0.140	0.003	0.017	0.006	0.041
LAKE	All Vehicles	1.887	0.329	0.208	0.003	0.021	0.008	0.038
LASSEN	All Vehicles	1.687	0.276	0.176	0.003	0.022	0.009	0.039
LOS ANGELES	All Vehicles	1.286	0.187	0.125	0.003	0.021	0.008	0.041
MADERA	All Vehicles	1.306	0.232	0.144	0.003	0.017	0.006	0.040
MARIN	All Vehicles	1.306	0.232	0.144	0.003	0.017	0.006	0.040
MARIPOSA	All Vehicles	2.060	0.345	0.232	0.003	0.023	0.009	0.038
MENDOCINO	All Vehicles	1.620	0.280	0.179	0.003	0.021	0.008	0.039
MERCED	All Vehicles	1.418	0.223	0.150	0.003	0.020	0.008	0.040
MODOC	All Vehicles	1.782	0.264	0.190	0.003	0.023	0.009	0.039
MONO	All Vehicles	1.559	0.244	0.167	0.003	0.020	0.008	0.040
MONTEREY	All Vehicles	1.408	0.240	0.154	0.003	0.019	0.007	0.039
NAPA	All Vehicles	1.329	0.218	0.141	0.003	0.021	0.008	0.039
NEVADA	All Vehicles	1.657	0.303	0.176	0.003	0.021	0.008	0.039

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	1.179	0.180	0.109	0.003	0.020	0.007	0.040
PLACER	All Vehicles	1.336	0.215	0.131	0.003	0.021	0.008	0.040
PLUMAS	All Vehicles	1.957	0.310	0.206	0.003	0.024	0.009	0.039
RIVERSIDE	All Vehicles	1.245	0.196	0.126	0.003	0.019	0.007	0.040
SACRAMENTO	All Vehicles	1.394	0.236	0.145	0.003	0.021	0.008	0.040
SAN BENITO	All Vehicles	1.392	0.241	0.142	0.003	0.022	0.008	0.040
SAN BERNARDINO	All Vehicles	1.265	0.203	0.131	0.003	0.019	0.007	0.040
SAN DIEGO	All Vehicles	1.282	0.203	0.129	0.003	0.020	0.008	0.040
SAN FRANCISCO	All Vehicles	1.343	0.216	0.123	0.003	0.022	0.008	0.041
SAN JOAQUIN	All Vehicles	1.358	0.220	0.134	0.003	0.022	0.008	0.040
SAN LUIS OBISPO	All Vehicles	1.363	0.249	0.145	0.003	0.019	0.007	0.039
SAN MATEO	All Vehicles	1.174	0.201	0.108	0.003	0.019	0.007	0.041
SANTA BARBARA	All Vehicles	1.369	0.246	0.150	0.003	0.019	0.007	0.039
SANTA CLARA	All Vehicles	1.249	0.200	0.126	0.003	0.020	0.007	0.040
SANTA CRUZ	All Vehicles	1.628	0.279	0.167	0.003	0.022	0.008	0.039
SHASTA	All Vehicles	1.441	0.253	0.151	0.003	0.020	0.007	0.040
SIERRA	All Vehicles	1.741	0.269	0.182	0.003	0.023	0.009	0.039
SISKIYOU	All Vehicles	1.741	0.280	0.180	0.003	0.022	0.008	0.040
SOLANO	All Vehicles	1.231	0.209	0.135	0.003	0.018	0.007	0.040
SONOMA	All Vehicles	1.461	0.243	0.149	0.003	0.021	0.008	0.039
STANISLAUS	All Vehicles	1.382	0.230	0.138	0.003	0.021	0.008	0.040
SUTTER	All Vehicles	1.411	0.230	0.140	0.003	0.021	0.008	0.040
TEHAMA	All Vehicles	1.465	0.242	0.154	0.003	0.020	0.008	0.040
TRINITY	All Vehicles	1.833	0.279	0.186	0.004	0.023	0.009	0.040
TULARE	All Vehicles	1.381	0.225	0.146	0.003	0.020	0.007	0.040
TUOLUMNE	All Vehicles	1.899	0.330	0.205	0.003	0.022	0.009	0.038
VENTURA	All Vehicles	1.249	0.206	0.129	0.003	0.019	0.007	0.040
YOLO	All Vehicles	1.339	0.219	0.129	0.003	0.021	0.008	0.040
YUBA	All Vehicles	1.440	0.246	0.151	0.003	0.020	0.008	0.039

Table 5-33. EMFAC County-Specific On-Road Vehicle Composite EFs – 2029 POV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	1.178	0.195	0.123	0.003	0.019	0.007	0.041
ALPINE	All Vehicles	1.464	0.224	0.150	0.003	0.022	0.008	0.041
AMADOR	All Vehicles	1.734	0.298	0.198	0.003	0.020	0.008	0.039
BUTTE	All Vehicles	1.460	0.256	0.149	0.003	0.021	0.008	0.040
CALAVERAS	All Vehicles	1.872	0.315	0.203	0.003	0.022	0.009	0.039
COLUSA	All Vehicles	1.263	0.210	0.133	0.003	0.019	0.007	0.041
CONTRA COSTA	All Vehicles	1.191	0.197	0.121	0.003	0.020	0.007	0.040
DEL NORTE	All Vehicles	1.655	0.289	0.194	0.003	0.021	0.008	0.039
EL DORADO	All Vehicles	1.455	0.260	0.144	0.003	0.021	0.008	0.040
FRESNO	All Vehicles	1.245	0.215	0.129	0.003	0.018	0.007	0.041
GLENN	All Vehicles	1.341	0.227	0.134	0.003	0.020	0.008	0.041
HUMBOLDT	All Vehicles	1.616	0.289	0.181	0.003	0.020	0.008	0.039
IMPERIAL	All Vehicles	1.358	0.220	0.136	0.003	0.018	0.007	0.041
INYO	All Vehicles	1.420	0.242	0.144	0.003	0.019	0.007	0.040
KERN	All Vehicles	1.235	0.205	0.130	0.003	0.019	0.007	0.041
KINGS	All Vehicles	1.207	0.204	0.133	0.003	0.017	0.006	0.041
LAKE	All Vehicles	1.784	0.317	0.195	0.003	0.021	0.008	0.039
LASSEN	All Vehicles	1.616	0.269	0.166	0.003	0.022	0.008	0.039
LOS ANGELES	All Vehicles	1.241	0.181	0.119	0.003	0.021	0.008	0.041
MADERA	All Vehicles	1.247	0.224	0.137	0.003	0.017	0.006	0.040
MARIN	All Vehicles	1.247	0.224	0.137	0.003	0.017	0.006	0.040
MARIPOSA	All Vehicles	1.953	0.334	0.218	0.003	0.023	0.009	0.038
MENDOCINO	All Vehicles	1.546	0.272	0.169	0.003	0.021	0.008	0.040
MERCED	All Vehicles	1.347	0.213	0.142	0.003	0.020	0.007	0.040
MODOC	All Vehicles	1.701	0.254	0.179	0.003	0.023	0.009	0.039
MONO	All Vehicles	1.492	0.237	0.158	0.003	0.020	0.007	0.041
MONTEREY	All Vehicles	1.347	0.232	0.145	0.003	0.019	0.007	0.040
NAPA	All Vehicles	1.276	0.211	0.134	0.003	0.020	0.008	0.040
NEVADA	All Vehicles	1.591	0.297	0.167	0.003	0.020	0.008	0.039

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	1.141	0.175	0.104	0.003	0.020	0.007	0.041
PLACER	All Vehicles	1.288	0.209	0.125	0.003	0.021	0.008	0.041
PLUMAS	All Vehicles	1.863	0.301	0.194	0.003	0.024	0.009	0.039
RIVERSIDE	All Vehicles	1.199	0.191	0.121	0.003	0.019	0.007	0.041
SACRAMENTO	All Vehicles	1.343	0.230	0.137	0.003	0.021	0.008	0.040
SAN BENITO	All Vehicles	1.342	0.235	0.136	0.003	0.022	0.008	0.041
SAN BERNARDINO	All Vehicles	1.215	0.197	0.125	0.003	0.019	0.007	0.041
SAN DIEGO	All Vehicles	1.236	0.197	0.123	0.003	0.020	0.008	0.040
SAN FRANCISCO	All Vehicles	1.303	0.211	0.117	0.003	0.022	0.008	0.041
SAN JOAQUIN	All Vehicles	1.306	0.213	0.128	0.003	0.021	0.008	0.041
SAN LUIS OBISPO	All Vehicles	1.309	0.243	0.138	0.003	0.019	0.007	0.040
SAN MATEO	All Vehicles	1.150	0.199	0.104	0.003	0.019	0.007	0.042
SANTA BARBARA	All Vehicles	1.310	0.238	0.141	0.003	0.019	0.007	0.040
SANTA CLARA	All Vehicles	1.207	0.194	0.120	0.003	0.020	0.007	0.041
SANTA CRUZ	All Vehicles	1.560	0.272	0.157	0.003	0.022	0.008	0.040
SHASTA	All Vehicles	1.381	0.245	0.143	0.003	0.019	0.007	0.041
SIERRA	All Vehicles	1.669	0.261	0.172	0.003	0.023	0.009	0.040
SISKIYOU	All Vehicles	1.665	0.272	0.170	0.003	0.022	0.008	0.040
SOLANO	All Vehicles	1.182	0.202	0.129	0.003	0.018	0.007	0.040
SONOMA	All Vehicles	1.401	0.236	0.141	0.003	0.021	0.008	0.040
STANISLAUS	All Vehicles	1.325	0.222	0.132	0.003	0.021	0.008	0.040
SUTTER	All Vehicles	1.352	0.221	0.133	0.003	0.021	0.008	0.041
TEHAMA	All Vehicles	1.402	0.234	0.146	0.003	0.020	0.008	0.041
TRINITY	All Vehicles	1.748	0.269	0.176	0.004	0.023	0.009	0.040
TULARE	All Vehicles	1.318	0.216	0.138	0.003	0.020	0.007	0.040
TUOLUMNE	All Vehicles	1.803	0.319	0.193	0.003	0.022	0.009	0.039
VENTURA	All Vehicles	1.201	0.200	0.122	0.003	0.019	0.007	0.040
YOLO	All Vehicles	1.290	0.212	0.123	0.003	0.021	0.008	0.040
YUBA	All Vehicles	1.373	0.237	0.141	0.003	0.020	0.008	0.039

Table 5-34. EMFAC County-Specific On-Road Vehicle Composite EFs – 2025 GOV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	0.917	0.108	0.524	0.005	0.041	0.018	0.067
ALPINE	All Vehicles	1.196	0.135	0.619	0.005	0.046	0.021	0.064
AMADOR	All Vehicles	1.554	0.210	0.804	0.004	0.046	0.023	0.054
BUTTE	All Vehicles	1.246	0.161	0.629	0.005	0.045	0.021	0.062
CALAVERAS	All Vehicles	1.691	0.217	0.811	0.005	0.049	0.025	0.054
COLUSA	All Vehicles	1.062	0.129	0.575	0.005	0.043	0.020	0.064
CONTRA COSTA	All Vehicles	0.920	0.111	0.522	0.005	0.041	0.018	0.063
DEL NORTE	All Vehicles	1.473	0.209	0.837	0.005	0.048	0.025	0.051
EL DORADO	All Vehicles	1.135	0.155	0.619	0.005	0.043	0.021	0.056
FRESNO	All Vehicles	1.026	0.123	0.568	0.005	0.042	0.019	0.066
GLENN	All Vehicles	1.123	0.140	0.593	0.005	0.044	0.021	0.063
HUMBOLDT	All Vehicles	1.375	0.187	0.725	0.005	0.046	0.023	0.057
IMPERIAL	All Vehicles	1.210	0.132	0.559	0.005	0.042	0.019	0.067
INYO	All Vehicles	1.193	0.151	0.614	0.005	0.044	0.021	0.061
KERN	All Vehicles	1.019	0.116	0.566	0.006	0.043	0.019	0.067
KINGS	All Vehicles	1.030	0.121	0.586	0.006	0.042	0.019	0.067
LAKE	All Vehicles	1.565	0.219	0.788	0.005	0.047	0.024	0.054
LASSEN	All Vehicles	1.374	0.185	0.724	0.005	0.047	0.024	0.053
LOS ANGELES	All Vehicles	0.995	0.103	0.492	0.005	0.042	0.018	0.066
MADERA	All Vehicles	1.051	0.136	0.597	0.005	0.041	0.019	0.065
MARIN	All Vehicles	1.051	0.136	0.597	0.005	0.041	0.019	0.065
MARIPOSA	All Vehicles	1.769	0.247	0.892	0.005	0.050	0.026	0.049
MENDOCINO	All Vehicles	1.336	0.174	0.691	0.005	0.046	0.022	0.061
MERCED	All Vehicles	1.206	0.137	0.619	0.006	0.045	0.020	0.067
MODOC	All Vehicles	1.491	0.186	0.800	0.005	0.050	0.025	0.054
MONO	All Vehicles	1.237	0.150	0.646	0.005	0.044	0.021	0.063
MONTEREY	All Vehicles	1.108	0.143	0.576	0.005	0.041	0.019	0.062
NAPA	All Vehicles	1.018	0.127	0.584	0.005	0.042	0.019	0.061
NEVADA	All Vehicles	1.304	0.171	0.677	0.005	0.045	0.022	0.060

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	0.863	0.094	0.419	0.005	0.038	0.016	0.065
PLACER	All Vehicles	0.983	0.114	0.552	0.005	0.043	0.020	0.063
PLUMAS	All Vehicles	1.656	0.211	0.835	0.005	0.050	0.025	0.052
RIVERSIDE	All Vehicles	0.971	0.102	0.521	0.005	0.041	0.018	0.067
SACRAMENTO	All Vehicles	1.026	0.128	0.672	0.005	0.042	0.019	0.061
SAN BENITO	All Vehicles	1.085	0.129	0.576	0.005	0.045	0.020	0.067
SAN BERNARDINO	All Vehicles	0.992	0.111	0.534	0.005	0.041	0.018	0.066
SAN DIEGO	All Vehicles	1.002	0.120	0.538	0.005	0.042	0.019	0.062
SAN FRANCISCO	All Vehicles	0.930	0.107	0.491	0.005	0.042	0.018	0.065
SAN JOAQUIN	All Vehicles	1.052	0.121	0.558	0.005	0.044	0.019	0.065
SAN LUIS OBISPO	All Vehicles	1.019	0.143	0.581	0.005	0.042	0.020	0.058
SAN MATEO	All Vehicles	0.801	0.098	0.391	0.005	0.036	0.015	0.065
SANTA BARBARA	All Vehicles	1.077	0.145	0.572	0.005	0.040	0.018	0.061
SANTA CLARA	All Vehicles	0.943	0.111	0.506	0.005	0.041	0.018	0.065
SANTA CRUZ	All Vehicles	1.235	0.159	0.638	0.005	0.044	0.021	0.059
SHASTA	All Vehicles	1.133	0.144	0.627	0.005	0.044	0.020	0.063
SIERRA	All Vehicles	1.434	0.180	0.755	0.005	0.049	0.024	0.054
SISKIYOU	All Vehicles	1.433	0.171	0.682	0.006	0.048	0.023	0.064
SOLANO	All Vehicles	0.934	0.116	0.562	0.005	0.041	0.019	0.064
SONOMA	All Vehicles	1.122	0.145	0.578	0.005	0.043	0.020	0.061
STANISLAUS	All Vehicles	1.113	0.134	0.573	0.005	0.044	0.020	0.064
SUTTER	All Vehicles	1.119	0.133	0.558	0.005	0.044	0.020	0.065
TEHAMA	All Vehicles	1.189	0.144	0.622	0.005	0.045	0.021	0.064
TRINITY	All Vehicles	1.542	0.177	0.714	0.006	0.050	0.024	0.061
TULARE	All Vehicles	1.139	0.137	0.598	0.005	0.043	0.020	0.063
TUOLUMNE	All Vehicles	1.579	0.221	0.797	0.005	0.048	0.025	0.052
VENTURA	All Vehicles	0.933	0.113	0.505	0.005	0.039	0.017	0.062
YOLO	All Vehicles	1.004	0.119	0.535	0.005	0.041	0.018	0.063
YUBA	All Vehicles	1.159	0.157	0.674	0.005	0.044	0.021	0.055

Table 5-35. EMFAC County-Specific On-Road Vehicle Composite EFs – 2026 GOV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	0.873	0.103	0.502	0.005	0.041	0.018	0.067
ALPINE	All Vehicles	1.135	0.129	0.593	0.005	0.046	0.021	0.065
AMADOR	All Vehicles	1.451	0.199	0.762	0.004	0.044	0.022	0.055
BUTTE	All Vehicles	1.168	0.152	0.597	0.005	0.045	0.021	0.063
CALAVERAS	All Vehicles	1.588	0.207	0.774	0.005	0.048	0.024	0.055
COLUSA	All Vehicles	1.002	0.122	0.551	0.005	0.042	0.019	0.065
CONTRA COSTA	All Vehicles	0.874	0.106	0.497	0.005	0.041	0.018	0.064
DEL NORTE	All Vehicles	1.378	0.199	0.794	0.004	0.047	0.025	0.052
EL DORADO	All Vehicles	1.078	0.150	0.586	0.005	0.042	0.020	0.057
FRESNO	All Vehicles	0.968	0.117	0.546	0.005	0.041	0.018	0.067
GLENN	All Vehicles	1.057	0.133	0.568	0.005	0.044	0.020	0.064
HUMBOLDT	All Vehicles	1.293	0.179	0.690	0.005	0.045	0.022	0.058
IMPERIAL	All Vehicles	1.131	0.124	0.533	0.005	0.041	0.018	0.068
INYO	All Vehicles	1.127	0.144	0.583	0.005	0.044	0.020	0.062
KERN	All Vehicles	0.962	0.110	0.546	0.005	0.042	0.019	0.068
KINGS	All Vehicles	0.970	0.114	0.567	0.006	0.042	0.019	0.068
LAKE	All Vehicles	1.455	0.207	0.748	0.005	0.046	0.023	0.055
LASSEN	All Vehicles	1.293	0.176	0.684	0.005	0.046	0.023	0.055
LOS ANGELES	All Vehicles	0.941	0.098	0.465	0.005	0.041	0.017	0.067
MADERA	All Vehicles	0.987	0.128	0.575	0.005	0.041	0.018	0.066
MARIN	All Vehicles	0.987	0.128	0.575	0.005	0.041	0.018	0.066
MARIPOSA	All Vehicles	1.653	0.235	0.849	0.005	0.049	0.025	0.050
MENDOCINO	All Vehicles	1.256	0.166	0.659	0.005	0.045	0.022	0.062
MERCED	All Vehicles	1.124	0.128	0.596	0.005	0.045	0.020	0.067
MODOC	All Vehicles	1.399	0.176	0.754	0.005	0.049	0.025	0.055
MONO	All Vehicles	1.170	0.143	0.617	0.005	0.044	0.020	0.063
MONTEREY	All Vehicles	1.043	0.136	0.548	0.005	0.040	0.018	0.063
NAPA	All Vehicles	0.966	0.121	0.558	0.005	0.042	0.019	0.062
NEVADA	All Vehicles	1.237	0.165	0.646	0.005	0.045	0.021	0.061

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	0.822	0.090	0.397	0.005	0.038	0.016	0.066
PLACER	All Vehicles	0.936	0.109	0.528	0.005	0.043	0.019	0.064
PLUMAS	All Vehicles	1.550	0.200	0.790	0.005	0.049	0.024	0.053
RIVERSIDE	All Vehicles	0.920	0.097	0.501	0.005	0.041	0.018	0.067
SACRAMENTO	All Vehicles	0.972	0.123	0.633	0.005	0.041	0.018	0.062
SAN BENITO	All Vehicles	1.023	0.123	0.557	0.005	0.045	0.020	0.067
SAN BERNARDINO	All Vehicles	0.936	0.105	0.511	0.005	0.041	0.018	0.067
SAN DIEGO	All Vehicles	0.949	0.114	0.508	0.005	0.041	0.019	0.063
SAN FRANCISCO	All Vehicles	0.891	0.104	0.462	0.005	0.042	0.018	0.066
SAN JOAQUIN	All Vehicles	0.993	0.114	0.537	0.005	0.043	0.019	0.066
SAN LUIS OBISPO	All Vehicles	0.965	0.137	0.553	0.005	0.041	0.020	0.059
SAN MATEO	All Vehicles	0.770	0.095	0.365	0.005	0.036	0.015	0.066
SANTA BARBARA	All Vehicles	0.999	0.138	0.543	0.005	0.039	0.018	0.062
SANTA CLARA	All Vehicles	0.898	0.106	0.481	0.005	0.040	0.017	0.066
SANTA CRUZ	All Vehicles	1.164	0.152	0.602	0.005	0.043	0.020	0.060
SHASTA	All Vehicles	1.068	0.136	0.601	0.005	0.044	0.020	0.064
SIERRA	All Vehicles	1.349	0.172	0.705	0.005	0.048	0.024	0.055
SISKIYOU	All Vehicles	1.350	0.163	0.650	0.006	0.047	0.022	0.065
SOLANO	All Vehicles	0.885	0.111	0.541	0.005	0.041	0.018	0.065
SONOMA	All Vehicles	1.060	0.138	0.551	0.005	0.042	0.019	0.062
STANISLAUS	All Vehicles	1.047	0.127	0.550	0.005	0.044	0.020	0.065
SUTTER	All Vehicles	1.053	0.125	0.537	0.005	0.044	0.019	0.066
TEHAMA	All Vehicles	1.118	0.135	0.597	0.005	0.045	0.021	0.065
TRINITY	All Vehicles	1.447	0.167	0.678	0.006	0.049	0.024	0.062
TULARE	All Vehicles	1.065	0.128	0.571	0.005	0.043	0.019	0.064
TUOLUMNE	All Vehicles	1.481	0.211	0.757	0.004	0.047	0.024	0.053
VENTURA	All Vehicles	0.882	0.107	0.477	0.005	0.038	0.016	0.063
YOLO	All Vehicles	0.952	0.113	0.513	0.005	0.041	0.018	0.064
YUBA	All Vehicles	1.078	0.147	0.636	0.005	0.043	0.021	0.057

Table 5-36. EMFAC County-Specific On-Road Vehicle Composite EFs – 2027 GOV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	0.834	0.099	0.482	0.005	0.041	0.017	0.068
ALPINE	All Vehicles	1.082	0.124	0.569	0.005	0.046	0.020	0.066
AMADOR	All Vehicles	1.359	0.189	0.726	0.004	0.044	0.022	0.056
BUTTE	All Vehicles	1.098	0.143	0.568	0.005	0.044	0.020	0.064
CALAVERAS	All Vehicles	1.491	0.197	0.738	0.005	0.047	0.023	0.056
COLUSA	All Vehicles	0.950	0.116	0.530	0.005	0.042	0.019	0.066
CONTRA COSTA	All Vehicles	0.834	0.102	0.473	0.005	0.041	0.018	0.065
DEL NORTE	All Vehicles	1.291	0.189	0.751	0.004	0.046	0.024	0.053
EL DORADO	All Vehicles	1.029	0.144	0.556	0.005	0.042	0.020	0.059
FRESNO	All Vehicles	0.917	0.111	0.526	0.005	0.041	0.018	0.067
GLENN	All Vehicles	1.001	0.126	0.545	0.005	0.044	0.020	0.065
HUMBOLDT	All Vehicles	1.217	0.170	0.653	0.005	0.044	0.021	0.059
IMPERIAL	All Vehicles	1.051	0.116	0.511	0.005	0.041	0.018	0.068
INYO	All Vehicles	1.069	0.137	0.555	0.005	0.043	0.020	0.063
KERN	All Vehicles	0.915	0.104	0.528	0.005	0.042	0.018	0.069
KINGS	All Vehicles	0.919	0.108	0.547	0.005	0.041	0.018	0.068
LAKE	All Vehicles	1.355	0.195	0.709	0.005	0.045	0.022	0.056
LASSEN	All Vehicles	1.223	0.169	0.647	0.004	0.045	0.022	0.056
LOS ANGELES	All Vehicles	0.894	0.093	0.442	0.005	0.041	0.017	0.067
MADERA	All Vehicles	0.932	0.121	0.554	0.005	0.041	0.018	0.066
MARIN	All Vehicles	0.932	0.121	0.554	0.005	0.041	0.018	0.066
MARIPOSA	All Vehicles	1.549	0.224	0.808	0.005	0.048	0.024	0.052
MENDOCINO	All Vehicles	1.183	0.158	0.626	0.005	0.045	0.021	0.062
MERCED	All Vehicles	1.055	0.119	0.573	0.005	0.044	0.019	0.068
MODOC	All Vehicles	1.318	0.166	0.712	0.005	0.048	0.024	0.056
MONO	All Vehicles	1.112	0.137	0.592	0.005	0.044	0.020	0.064
MONTEREY	All Vehicles	0.986	0.130	0.521	0.005	0.040	0.018	0.064
NAPA	All Vehicles	0.919	0.116	0.533	0.005	0.042	0.019	0.063
NEVADA	All Vehicles	1.177	0.159	0.617	0.005	0.045	0.021	0.062

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	0.787	0.086	0.378	0.005	0.038	0.015	0.066
PLACER	All Vehicles	0.897	0.104	0.506	0.005	0.043	0.019	0.065
PLUMAS	All Vehicles	1.458	0.191	0.747	0.005	0.048	0.024	0.055
RIVERSIDE	All Vehicles	0.875	0.092	0.480	0.005	0.041	0.018	0.068
SACRAMENTO	All Vehicles	0.929	0.118	0.598	0.005	0.041	0.018	0.063
SAN BENITO	All Vehicles	0.969	0.116	0.539	0.005	0.045	0.020	0.068
SAN BERNARDINO	All Vehicles	0.889	0.100	0.491	0.005	0.041	0.018	0.068
SAN DIEGO	All Vehicles	0.909	0.109	0.482	0.005	0.041	0.018	0.064
SAN FRANCISCO	All Vehicles	0.857	0.100	0.435	0.005	0.042	0.017	0.066
SAN JOAQUIN	All Vehicles	0.948	0.109	0.517	0.005	0.043	0.019	0.067
SAN LUIS OBISPO	All Vehicles	0.916	0.131	0.526	0.005	0.040	0.019	0.060
SAN MATEO	All Vehicles	0.746	0.092	0.343	0.004	0.036	0.015	0.067
SANTA BARBARA	All Vehicles	0.943	0.131	0.515	0.005	0.039	0.017	0.063
SANTA CLARA	All Vehicles	0.857	0.102	0.457	0.005	0.040	0.017	0.066
SANTA CRUZ	All Vehicles	1.100	0.145	0.565	0.005	0.042	0.019	0.061
SHASTA	All Vehicles	1.012	0.129	0.576	0.005	0.043	0.020	0.065
SIERRA	All Vehicles	1.275	0.164	0.664	0.005	0.047	0.023	0.057
SISKIYOU	All Vehicles	1.276	0.155	0.621	0.005	0.047	0.021	0.066
SOLANO	All Vehicles	0.842	0.106	0.520	0.005	0.041	0.018	0.066
SONOMA	All Vehicles	1.003	0.131	0.522	0.005	0.042	0.019	0.063
STANISLAUS	All Vehicles	0.973	0.120	0.528	0.005	0.043	0.019	0.065
SUTTER	All Vehicles	0.998	0.118	0.518	0.005	0.043	0.019	0.067
TEHAMA	All Vehicles	1.057	0.128	0.575	0.005	0.045	0.020	0.066
TRINITY	All Vehicles	1.365	0.158	0.645	0.005	0.048	0.023	0.063
TULARE	All Vehicles	0.999	0.121	0.545	0.005	0.042	0.019	0.065
TUOLUMNE	All Vehicles	1.392	0.202	0.721	0.004	0.047	0.023	0.054
VENTURA	All Vehicles	0.836	0.102	0.452	0.004	0.038	0.016	0.064
YOLO	All Vehicles	0.909	0.108	0.494	0.005	0.041	0.018	0.065
YUBA	All Vehicles	1.006	0.138	0.599	0.005	0.043	0.020	0.058

Table 5-37. EMFAC County-Specific On-Road Vehicle Composite EFs – 2028 GOV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	0.802	0.095	0.465	0.005	0.040	0.017	0.068
ALPINE	All Vehicles	1.038	0.120	0.548	0.005	0.046	0.020	0.067
AMADOR	All Vehicles	1.278	0.180	0.689	0.004	0.043	0.021	0.057
BUTTE	All Vehicles	1.040	0.136	0.544	0.005	0.044	0.019	0.065
CALAVERAS	All Vehicles	1.407	0.188	0.706	0.005	0.047	0.023	0.057
COLUSA	All Vehicles	0.906	0.110	0.512	0.005	0.042	0.018	0.067
CONTRA COSTA	All Vehicles	0.800	0.097	0.453	0.005	0.040	0.017	0.066
DEL NORTE	All Vehicles	1.217	0.180	0.713	0.004	0.046	0.023	0.054
EL DORADO	All Vehicles	0.985	0.139	0.528	0.004	0.042	0.019	0.060
FRESNO	All Vehicles	0.876	0.105	0.508	0.005	0.041	0.018	0.068
GLENN	All Vehicles	0.954	0.119	0.525	0.005	0.043	0.019	0.066
HUMBOLDT	All Vehicles	1.154	0.163	0.625	0.005	0.043	0.020	0.060
IMPERIAL	All Vehicles	0.998	0.110	0.491	0.005	0.041	0.018	0.069
INYO	All Vehicles	1.019	0.131	0.530	0.005	0.043	0.020	0.064
KERN	All Vehicles	0.875	0.099	0.513	0.005	0.042	0.018	0.069
KINGS	All Vehicles	0.877	0.102	0.530	0.005	0.041	0.018	0.069
LAKE	All Vehicles	1.270	0.185	0.673	0.005	0.044	0.022	0.057
LASSEN	All Vehicles	1.161	0.162	0.613	0.004	0.045	0.022	0.057
LOS ANGELES	All Vehicles	0.857	0.089	0.421	0.005	0.041	0.017	0.068
MADERA	All Vehicles	0.886	0.115	0.537	0.005	0.040	0.018	0.067
MARIN	All Vehicles	0.886	0.115	0.537	0.005	0.040	0.018	0.067
MARIPOSA	All Vehicles	1.455	0.214	0.773	0.004	0.047	0.023	0.053
MENDOCINO	All Vehicles	1.122	0.150	0.598	0.005	0.044	0.020	0.063
MERCED	All Vehicles	0.996	0.112	0.554	0.005	0.044	0.019	0.068
MODOC	All Vehicles	1.247	0.158	0.674	0.005	0.047	0.022	0.058
MONO	All Vehicles	1.062	0.131	0.570	0.005	0.044	0.020	0.065
MONTEREY	All Vehicles	0.937	0.124	0.498	0.005	0.040	0.017	0.065
NAPA	All Vehicles	0.878	0.111	0.511	0.005	0.041	0.018	0.064
NEVADA	All Vehicles	1.124	0.154	0.592	0.005	0.044	0.020	0.063

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	0.757	0.083	0.360	0.004	0.037	0.015	0.067
PLACER	All Vehicles	0.864	0.100	0.487	0.005	0.043	0.019	0.066
PLUMAS	All Vehicles	1.379	0.183	0.707	0.005	0.048	0.023	0.056
RIVERSIDE	All Vehicles	0.839	0.088	0.464	0.005	0.041	0.018	0.069
SACRAMENTO	All Vehicles	0.891	0.113	0.566	0.005	0.041	0.018	0.064
SAN BENITO	All Vehicles	0.927	0.111	0.524	0.005	0.045	0.019	0.069
SAN BERNARDINO	All Vehicles	0.848	0.095	0.474	0.005	0.041	0.017	0.068
SAN DIEGO	All Vehicles	0.872	0.104	0.458	0.005	0.041	0.018	0.065
SAN FRANCISCO	All Vehicles	0.829	0.097	0.414	0.005	0.041	0.017	0.067
SAN JOAQUIN	All Vehicles	0.907	0.103	0.500	0.005	0.043	0.018	0.068
SAN LUIS OBISPO	All Vehicles	0.874	0.126	0.502	0.005	0.040	0.018	0.061
SAN MATEO	All Vehicles	0.727	0.090	0.324	0.004	0.036	0.015	0.067
SANTA BARBARA	All Vehicles	0.895	0.125	0.490	0.005	0.038	0.017	0.064
SANTA CLARA	All Vehicles	0.824	0.098	0.437	0.005	0.040	0.017	0.067
SANTA CRUZ	All Vehicles	1.045	0.139	0.533	0.005	0.042	0.018	0.062
SHASTA	All Vehicles	0.964	0.123	0.555	0.005	0.043	0.019	0.066
SIERRA	All Vehicles	1.211	0.157	0.629	0.005	0.047	0.022	0.058
SISKIYOU	All Vehicles	1.213	0.148	0.596	0.005	0.046	0.021	0.067
SOLANO	All Vehicles	0.806	0.101	0.502	0.005	0.041	0.018	0.067
SONOMA	All Vehicles	0.955	0.125	0.499	0.005	0.041	0.018	0.064
STANISLAUS	All Vehicles	0.926	0.113	0.508	0.005	0.043	0.019	0.066
SUTTER	All Vehicles	0.953	0.112	0.501	0.005	0.043	0.019	0.067
TEHAMA	All Vehicles	1.006	0.122	0.555	0.005	0.044	0.020	0.067
TRINITY	All Vehicles	1.293	0.150	0.615	0.005	0.047	0.022	0.064
TULARE	All Vehicles	0.945	0.114	0.523	0.005	0.042	0.018	0.066
TUOLUMNE	All Vehicles	1.314	0.193	0.686	0.004	0.046	0.023	0.055
VENTURA	All Vehicles	0.798	0.097	0.429	0.004	0.038	0.016	0.065
YOLO	All Vehicles	0.873	0.103	0.476	0.005	0.041	0.017	0.066
YUBA	All Vehicles	0.952	0.130	0.565	0.004	0.042	0.020	0.059

Table 5-38. EMFAC County-Specific On-Road Vehicle Composite EFs – 2029 GOV

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ALAMEDA	All Vehicles	0.773	0.091	0.450	0.005	0.040	0.017	0.069
ALPINE	All Vehicles	0.997	0.114	0.530	0.005	0.046	0.020	0.067
AMADOR	All Vehicles	1.200	0.170	0.657	0.004	0.042	0.020	0.058
BUTTE	All Vehicles	0.990	0.128	0.524	0.005	0.043	0.019	0.066
CALAVERAS	All Vehicles	1.326	0.178	0.676	0.005	0.046	0.022	0.058
COLUSA	All Vehicles	0.869	0.104	0.497	0.005	0.042	0.018	0.067
CONTRA COSTA	All Vehicles	0.771	0.093	0.435	0.005	0.040	0.017	0.066
DEL NORTE	All Vehicles	1.151	0.170	0.675	0.004	0.045	0.022	0.055
EL DORADO	All Vehicles	0.945	0.134	0.503	0.004	0.041	0.019	0.061
FRESNO	All Vehicles	0.841	0.100	0.493	0.005	0.041	0.017	0.069
GLENN	All Vehicles	0.913	0.113	0.506	0.005	0.043	0.019	0.066
HUMBOLDT	All Vehicles	1.096	0.155	0.598	0.005	0.043	0.020	0.061
IMPERIAL	All Vehicles	0.948	0.104	0.474	0.005	0.041	0.018	0.069
INYO	All Vehicles	0.974	0.125	0.507	0.005	0.043	0.019	0.065
KERN	All Vehicles	0.840	0.094	0.499	0.005	0.042	0.018	0.070
KINGS	All Vehicles	0.840	0.097	0.516	0.005	0.041	0.018	0.069
LAKE	All Vehicles	1.191	0.173	0.642	0.004	0.044	0.021	0.058
LASSEN	All Vehicles	1.105	0.154	0.582	0.004	0.044	0.021	0.058
LOS ANGELES	All Vehicles	0.824	0.085	0.404	0.005	0.041	0.017	0.069
MADERA	All Vehicles	0.846	0.108	0.521	0.005	0.040	0.018	0.068
MARIN	All Vehicles	0.846	0.108	0.521	0.005	0.040	0.018	0.068
MARIPOSA	All Vehicles	1.372	0.203	0.741	0.004	0.046	0.023	0.054
MENDOCINO	All Vehicles	1.066	0.143	0.575	0.005	0.044	0.020	0.064
MERCED	All Vehicles	0.943	0.104	0.537	0.005	0.044	0.019	0.069
MODOC	All Vehicles	1.183	0.149	0.643	0.005	0.046	0.022	0.059
MONO	All Vehicles	1.016	0.125	0.550	0.005	0.044	0.019	0.066
MONTEREY	All Vehicles	0.894	0.117	0.477	0.005	0.040	0.017	0.065
NAPA	All Vehicles	0.842	0.106	0.491	0.005	0.041	0.018	0.065
NEVADA	All Vehicles	1.075	0.148	0.570	0.005	0.044	0.020	0.064

County	Vehicle Type	Emission Factors (g/mi)						
		Criteria Pollutants and Ozone Precursors						
		CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
ORANGE	All Vehicles	0.731	0.079	0.345	0.004	0.037	0.015	0.068
PLACER	All Vehicles	0.833	0.095	0.470	0.005	0.043	0.019	0.067
PLUMAS	All Vehicles	1.305	0.174	0.673	0.005	0.047	0.023	0.057
RIVERSIDE	All Vehicles	0.807	0.084	0.450	0.005	0.041	0.017	0.069
SACRAMENTO	All Vehicles	0.857	0.107	0.538	0.005	0.040	0.017	0.065
SAN BENITO	All Vehicles	0.892	0.105	0.512	0.005	0.045	0.019	0.069
SAN BERNARDINO	All Vehicles	0.814	0.090	0.459	0.005	0.041	0.017	0.069
SAN DIEGO	All Vehicles	0.839	0.099	0.437	0.005	0.041	0.018	0.066
SAN FRANCISCO	All Vehicles	0.803	0.093	0.389	0.005	0.041	0.016	0.067
SAN JOAQUIN	All Vehicles	0.872	0.097	0.485	0.005	0.043	0.018	0.068
SAN LUIS OBISPO	All Vehicles	0.836	0.120	0.480	0.005	0.040	0.018	0.062
SAN MATEO	All Vehicles	0.712	0.088	0.309	0.004	0.035	0.014	0.068
SANTA BARBARA	All Vehicles	0.853	0.118	0.469	0.005	0.038	0.017	0.064
SANTA CLARA	All Vehicles	0.796	0.094	0.420	0.005	0.040	0.017	0.068
SANTA CRUZ	All Vehicles	0.995	0.132	0.506	0.005	0.041	0.018	0.063
SHASTA	All Vehicles	0.922	0.116	0.536	0.005	0.043	0.019	0.066
SIERRA	All Vehicles	1.154	0.149	0.597	0.005	0.046	0.022	0.059
SISKIYOU	All Vehicles	1.157	0.141	0.575	0.005	0.046	0.021	0.067
SOLANO	All Vehicles	0.775	0.096	0.486	0.005	0.041	0.018	0.067
SONOMA	All Vehicles	0.912	0.119	0.478	0.005	0.041	0.018	0.064
STANISLAUS	All Vehicles	0.886	0.107	0.492	0.005	0.043	0.018	0.067
SUTTER	All Vehicles	0.911	0.105	0.486	0.005	0.043	0.019	0.068
TEHAMA	All Vehicles	0.961	0.114	0.538	0.005	0.044	0.019	0.067
TRINITY	All Vehicles	1.229	0.142	0.590	0.005	0.047	0.021	0.065
TULARE	All Vehicles	0.899	0.106	0.504	0.005	0.042	0.018	0.067
TUOLUMNE	All Vehicles	1.239	0.184	0.654	0.004	0.045	0.022	0.056
VENTURA	All Vehicles	0.765	0.092	0.410	0.004	0.037	0.016	0.066
YOLO	All Vehicles	0.840	0.098	0.461	0.005	0.041	0.017	0.066
YUBA	All Vehicles	0.901	0.122	0.535	0.004	0.042	0.019	0.060

Table 5-39. EMFAC County-Specific On-Road Vehicle EFs – 2025

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.079	0.132	0.072	0.003	0.016	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.274	0.145	0.107	0.003	0.018	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.501	0.186	0.178	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.346	0.029	0.220	0.002	0.034	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.144	0.015	0.059	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.566	0.071	2.108	0.013	0.122	0.055	0.205
	Gasoline	MC	Motorcycles	15.793	4.804	0.633	0.002	0.019	0.008	0.009
Alpine	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.229	0.128	0.080	0.003	0.018	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.703	0.182	0.147	0.003	0.020	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.038	0.259	0.264	0.005	0.030	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.383	0.030	0.205	0.002	0.034	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.185	0.019	0.054	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.719	0.102	2.449	0.013	0.139	0.067	0.193
	Gasoline	MC	Motorcycles	19.194	5.260	0.739	0.002	0.019	0.008	0.009
Amador	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.424	0.169	0.100	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.396	0.280	0.239	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.497	0.390	0.329	0.005	0.030	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.374	0.030	0.428	0.002	0.035	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.187	0.022	0.159	0.003	0.031	0.019	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.686	0.189	3.012	0.009	0.135	0.075	0.144
	Gasoline	MC	Motorcycles	20.496	6.539	0.838	0.002	0.019	0.008	0.008
Butte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.228	0.146	0.078	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.830	0.223	0.160	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.021	0.292	0.249	0.005	0.029	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.384	0.031	0.259	0.002	0.035	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.202	0.024	0.119	0.003	0.031	0.018	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.665	0.117	2.421	0.012	0.132	0.066	0.184
	Gasoline	MC	Motorcycles	19.244	6.159	0.747	0.002	0.019	0.008	0.009
Calaveras	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.476	0.177	0.097	0.003	0.019	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.606	0.287	0.248	0.004	0.021	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.603	0.394	0.335	0.005	0.032	0.012	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.504	0.041	0.391	0.002	0.041	0.028	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.271	0.030	0.132	0.003	0.032	0.018	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.755	0.194	3.046	0.009	0.140	0.078	0.144
	Gasoline	MC	Motorcycles	21.524	6.782	0.836	0.002	0.019	0.008	0.008
Colusa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.088	0.123	0.068	0.003	0.016	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.501	0.174	0.129	0.003	0.017	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.745	0.234	0.209	0.005	0.026	0.009	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.377	0.029	0.253	0.002	0.032	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.164	0.018	0.062	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.677	0.101	2.295	0.012	0.132	0.064	0.193
	Gasoline	MC	Motorcycles	16.482	5.164	0.665	0.002	0.019	0.008	0.009
Contra Costa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.072	0.128	0.070	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.287	0.141	0.106	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.558	0.193	0.188	0.005	0.027	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.306	0.023	0.182	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.141	0.014	0.053	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.547	0.097	2.109	0.011	0.121	0.058	0.189
	Gasoline	MC	Motorcycles	16.569	4.998	0.658	0.002	0.019	0.008	0.009
Del Norte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.304	0.156	0.095	0.003	0.017	0.006	0.034
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.207	0.274	0.230	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.139	0.304	0.292	0.005	0.029	0.010	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.536	0.043	0.331	0.002	0.038	0.027	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.324	0.038	0.157	0.003	0.034	0.022	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.746	0.210	3.202	0.008	0.142	0.081	0.131
	Gasoline	MC	Motorcycles	21.514	6.279	0.823	0.002	0.019	0.008	0.008

Table 5-39. EMFAC County-Specific On-Road Vehicle EFs – 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.170	0.128	0.074	0.003	0.018	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.655	0.199	0.138	0.004	0.020	0.007	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.989	0.279	0.241	0.005	0.030	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.385	0.030	0.268	0.002	0.034	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.169	0.017	0.052	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.587	0.157	2.478	0.009	0.125	0.067	0.157
	Gasoline	MC	Motorcycles	20.738	6.556	0.799	0.002	0.019	0.008	0.008
Fresno	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.058	0.121	0.065	0.003	0.015	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.459	0.172	0.121	0.003	0.017	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.686	0.230	0.196	0.005	0.024	0.009	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.303	0.025	0.212	0.002	0.031	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.138	0.015	0.073	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.647	0.080	2.275	0.013	0.129	0.060	0.202
	Gasoline	MC	Motorcycles	17.010	5.515	0.683	0.002	0.019	0.008	0.009
Glenn	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.160	0.129	0.070	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.583	0.186	0.127	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.916	0.262	0.222	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.405	0.030	0.183	0.002	0.031	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.207	0.023	0.070	0.003	0.026	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.678	0.113	2.378	0.012	0.132	0.065	0.187
	Gasoline	MC	Motorcycles	17.694	5.597	0.691	0.002	0.019	0.008	0.009
Humboldt	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.318	0.160	0.096	0.003	0.017	0.006	0.034
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.041	0.255	0.208	0.004	0.019	0.007	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.099	0.294	0.282	0.005	0.029	0.010	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.547	0.049	0.517	0.002	0.046	0.034	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.255	0.030	0.190	0.003	0.033	0.020	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.700	0.153	2.692	0.010	0.133	0.070	0.160
	Gasoline	MC	Motorcycles	21.499	6.412	0.844	0.002	0.019	0.008	0.008
Imperial	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.183	0.134	0.069	0.003	0.015	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.822	0.197	0.155	0.004	0.016	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.882	0.230	0.207	0.005	0.025	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.389	0.035	0.279	0.002	0.038	0.027	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.132	0.015	0.070	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.614	0.063	2.157	0.013	0.129	0.061	0.204
	Gasoline	MC	Motorcycles	15.393	5.254	0.607	0.002	0.019	0.008	0.009
Inyo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.200	0.134	0.076	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.704	0.200	0.145	0.004	0.018	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.067	0.275	0.251	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.493	0.040	0.337	0.002	0.039	0.027	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.205	0.022	0.065	0.003	0.024	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.689	0.128	2.423	0.011	0.137	0.069	0.179
	Gasoline	MC	Motorcycles	18.267	5.714	0.711	0.002	0.019	0.008	0.009
Kern	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.076	0.121	0.067	0.003	0.016	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.426	0.161	0.118	0.003	0.017	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.685	0.219	0.197	0.005	0.025	0.009	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.304	0.025	0.204	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.124	0.014	0.059	0.003	0.022	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.688	0.077	2.281	0.014	0.133	0.062	0.207
	Gasoline	MC	Motorcycles	16.632	5.295	0.670	0.002	0.019	0.008	0.009
Kings	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.995	0.113	0.063	0.003	0.014	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.454	0.169	0.130	0.004	0.015	0.005	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.599	0.223	0.188	0.005	0.023	0.008	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.341	0.027	0.218	0.002	0.030	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.164	0.019	0.073	0.003	0.023	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.704	0.079	2.344	0.014	0.135	0.063	0.206
	Gasoline	MC	Motorcycles	16.634	5.270	0.671	0.002	0.019	0.008	0.009

Table 5-39. EMFAC County-Specific On-Road Vehicle EFs – 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.646	0.194	0.120	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.310	0.291	0.225	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.582	0.378	0.343	0.005	0.030	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.597	0.056	0.560	0.002	0.052	0.040	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.280	0.031	0.191	0.003	0.033	0.020	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.725	0.189	2.926	0.009	0.137	0.076	0.145
	Gasoline	MC	Motorcycles	22.059	6.961	0.849	0.002	0.020	0.009	0.008
Lassen	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.303	0.144	0.083	0.003	0.018	0.007	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.999	0.231	0.175	0.004	0.020	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.515	0.335	0.311	0.005	0.031	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.518	0.036	0.258	0.002	0.034	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.275	0.030	0.091	0.003	0.029	0.016	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.693	0.195	2.845	0.008	0.137	0.076	0.142
	Gasoline	MC	Motorcycles	20.940	6.087	0.782	0.002	0.020	0.009	0.009
Los Angeles	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.115	0.119	0.067	0.003	0.018	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.445	0.142	0.119	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.664	0.186	0.193	0.005	0.030	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.444	0.040	0.216	0.002	0.042	0.029	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.187	0.021	0.058	0.003	0.026	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.470	0.058	1.932	0.011	0.115	0.051	0.200
	Gasoline	MC	Motorcycles	14.521	4.292	0.569	0.002	0.019	0.008	0.009
Madera	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.011	0.119	0.066	0.003	0.014	0.005	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.502	0.192	0.138	0.004	0.015	0.005	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.752	0.251	0.227	0.005	0.024	0.008	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.289	0.022	0.206	0.002	0.027	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.112	0.012	0.054	0.003	0.019	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.698	0.093	2.380	0.013	0.133	0.063	0.198
	Gasoline	MC	Motorcycles	18.532	5.747	0.736	0.002	0.019	0.008	0.009
Marin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.011	0.119	0.066	0.003	0.014	0.005	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.502	0.192	0.138	0.004	0.015	0.005	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.752	0.251	0.227	0.005	0.024	0.008	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.289	0.022	0.206	0.002	0.027	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.112	0.012	0.054	0.003	0.019	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.698	0.093	2.380	0.013	0.133	0.063	0.198
	Gasoline	MC	Motorcycles	18.532	5.747	0.736	0.002	0.019	0.008	0.009
Mariposa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.575	0.181	0.109	0.003	0.019	0.007	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.664	0.331	0.254	0.004	0.021	0.008	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	3.246	0.448	0.439	0.006	0.034	0.013	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.596	0.050	0.465	0.002	0.044	0.031	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.301	0.036	0.102	0.003	0.035	0.021	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.783	0.224	3.410	0.008	0.143	0.081	0.125
	Gasoline	MC	Motorcycles	23.779	7.029	0.901	0.002	0.020	0.009	0.008
Mendocino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.273	0.151	0.089	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.959	0.241	0.189	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.159	0.302	0.285	0.005	0.029	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.552	0.052	0.523	0.002	0.050	0.038	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.271	0.028	0.227	0.003	0.032	0.020	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.694	0.128	2.548	0.011	0.134	0.067	0.176
	Gasoline	MC	Motorcycles	19.873	6.129	0.783	0.002	0.019	0.008	0.009
Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.117	0.119	0.067	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.768	0.199	0.157	0.003	0.018	0.007	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.954	0.251	0.242	0.005	0.026	0.009	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.300	0.022	0.216	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.152	0.018	0.080	0.003	0.026	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.721	0.080	2.422	0.014	0.136	0.063	0.206
	Gasoline	MC	Motorcycles	17.542	5.492	0.707	0.002	0.019	0.008	0.009

Table 5-39. EMFAC County-Specific On-Road Vehicle EFs – 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.414	0.146	0.090	0.003	0.020	0.007	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.139	0.228	0.190	0.004	0.022	0.009	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.782	0.353	0.348	0.006	0.033	0.012	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.749	0.057	0.337	0.003	0.044	0.030	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.401	0.044	0.101	0.003	0.036	0.022	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.724	0.189	3.147	0.009	0.140	0.077	0.144
	Gasoline	MC	Motorcycles	21.702	5.926	0.780	0.002	0.020	0.009	0.009
Mono	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.221	0.132	0.084	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.766	0.203	0.163	0.004	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.194	0.289	0.289	0.005	0.029	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.471	0.035	0.318	0.002	0.034	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.227	0.022	0.088	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.705	0.115	2.508	0.012	0.137	0.068	0.186
	Gasoline	MC	Motorcycles	20.931	5.590	0.778	0.002	0.019	0.008	0.009
Monterey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.171	0.145	0.083	0.003	0.016	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.632	0.197	0.161	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.852	0.249	0.260	0.005	0.027	0.010	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.374	0.033	0.254	0.002	0.037	0.026	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.150	0.016	0.067	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.555	0.101	2.209	0.011	0.120	0.058	0.184
	Gasoline	MC	Motorcycles	17.494	5.255	0.696	0.002	0.019	0.008	0.009
Napa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.086	0.122	0.071	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.450	0.164	0.123	0.003	0.019	0.007	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.781	0.237	0.228	0.005	0.030	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.383	0.036	0.263	0.002	0.041	0.029	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.155	0.015	0.063	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.582	0.115	2.343	0.011	0.123	0.061	0.180
	Gasoline	MC	Motorcycles	17.902	5.368	0.709	0.002	0.019	0.008	0.009
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.248	0.156	0.084	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.894	0.235	0.177	0.004	0.019	0.007	0.035
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.195	0.313	0.297	0.005	0.030	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.399	0.030	0.299	0.002	0.033	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.234	0.023	0.149	0.003	0.028	0.016	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.724	0.126	2.572	0.012	0.136	0.069	0.178
	Gasoline	MC	Motorcycles	22.490	6.940	0.867	0.002	0.019	0.008	0.008
Orange	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.013	0.110	0.061	0.003	0.018	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.262	0.131	0.098	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.460	0.166	0.162	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.327	0.025	0.140	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.153	0.016	0.045	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.370	0.053	1.655	0.010	0.103	0.045	0.195
	Gasoline	MC	Motorcycles	14.411	4.343	0.571	0.002	0.019	0.008	0.009
Placer	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.152	0.125	0.071	0.003	0.018	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.346	0.143	0.100	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.690	0.206	0.189	0.005	0.029	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.395	0.033	0.258	0.002	0.036	0.024	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.166	0.017	0.059	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.626	0.104	2.253	0.012	0.129	0.062	0.188
	Gasoline	MC	Motorcycles	18.400	5.651	0.718	0.002	0.019	0.008	0.009
Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.504	0.164	0.098	0.003	0.020	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.450	0.273	0.221	0.004	0.023	0.009	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	3.006	0.390	0.374	0.006	0.033	0.012	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.659	0.053	0.337	0.003	0.045	0.031	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.380	0.038	0.160	0.003	0.031	0.017	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.745	0.198	3.189	0.009	0.140	0.078	0.138
	Gasoline	MC	Motorcycles	23.155	6.667	0.834	0.002	0.020	0.009	0.008

Table 5-39. EMFAC County-Specific On-Road Vehicle EFs – 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.028	0.110	0.061	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.390	0.143	0.113	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.567	0.188	0.178	0.005	0.025	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.303	0.023	0.165	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.139	0.015	0.060	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.578	0.060	2.090	0.013	0.125	0.058	0.204
	Gasoline	MC	Motorcycles	15.524	4.942	0.612	0.002	0.019	0.008	0.009
Sacramento	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.206	0.143	0.073	0.003	0.018	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.461	0.168	0.114	0.004	0.019	0.007	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.773	0.231	0.206	0.005	0.030	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.362	0.026	0.216	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.163	0.017	0.055	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.532	0.102	2.787	0.012	0.120	0.059	0.180
	Gasoline	MC	Motorcycles	17.976	5.689	0.703	0.002	0.019	0.008	0.009
San Benito	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.140	0.124	0.073	0.003	0.018	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.516	0.182	0.124	0.003	0.020	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.773	0.242	0.212	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.357	0.027	0.194	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.165	0.017	0.056	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.720	0.083	2.312	0.014	0.135	0.063	0.205
	Gasoline	MC	Motorcycles	18.726	5.951	0.728	0.002	0.019	0.008	0.009
San Bernardino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.027	0.111	0.063	0.003	0.016	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.431	0.160	0.122	0.003	0.017	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.648	0.206	0.199	0.005	0.026	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.318	0.025	0.194	0.002	0.031	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.126	0.014	0.056	0.003	0.022	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.580	0.061	2.126	0.013	0.125	0.058	0.203
	Gasoline	MC	Motorcycles	16.310	5.020	0.645	0.002	0.019	0.008	0.009
San Diego	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.040	0.115	0.064	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.415	0.156	0.119	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.530	0.186	0.177	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.527	0.035	0.163	0.002	0.031	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.281	0.029	0.061	0.003	0.025	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.558	0.102	2.153	0.011	0.121	0.059	0.185
	Gasoline	MC	Motorcycles	16.309	4.849	0.633	0.002	0.020	0.008	0.009
San Francisco	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.162	0.132	0.072	0.003	0.019	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.349	0.143	0.101	0.004	0.022	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.487	0.151	0.157	0.005	0.033	0.012	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.471	0.036	0.177	0.002	0.037	0.024	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.246	0.025	0.055	0.003	0.027	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.342	0.074	1.977	0.012	0.113	0.050	0.195
	Gasoline	MC	Motorcycles	17.823	5.312	0.670	0.002	0.020	0.009	0.009
San Joaquin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.135	0.122	0.067	0.003	0.018	0.007	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.480	0.162	0.118	0.003	0.020	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.784	0.233	0.203	0.005	0.028	0.010	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.389	0.027	0.196	0.002	0.031	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.181	0.019	0.048	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.631	0.086	2.252	0.013	0.127	0.060	0.199
	Gasoline	MC	Motorcycles	17.679	5.610	0.686	0.002	0.019	0.008	0.009
San Luis Obispo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.079	0.134	0.075	0.003	0.016	0.005	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.455	0.184	0.133	0.004	0.017	0.006	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.718	0.238	0.227	0.005	0.027	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.327	0.026	0.202	0.002	0.031	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.167	0.018	0.079	0.003	0.025	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.583	0.137	2.294	0.010	0.124	0.064	0.166
	Gasoline	MC	Motorcycles	20.126	6.132	0.792	0.002	0.019	0.008	0.008

Table 5-39. EMFAC County-Specific On-Road Vehicle EFs – 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.073	0.140	0.071	0.003	0.016	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.156	0.127	0.089	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.316	0.143	0.132	0.005	0.027	0.010	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.292	0.021	0.166	0.002	0.027	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.123	0.013	0.042	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.336	0.076	1.547	0.010	0.102	0.046	0.193
	Gasoline	MC	Motorcycles	13.401	4.465	0.547	0.002	0.019	0.008	0.009
Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.154	0.150	0.082	0.003	0.016	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.586	0.199	0.154	0.003	0.018	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.822	0.251	0.249	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.315	0.025	0.214	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.153	0.016	0.071	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.520	0.106	2.204	0.011	0.116	0.057	0.179
	Gasoline	MC	Motorcycles	17.745	5.555	0.727	0.002	0.019	0.008	0.009
Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.078	0.123	0.069	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.350	0.150	0.112	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.549	0.189	0.178	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.320	0.026	0.188	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.141	0.015	0.052	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.511	0.080	2.024	0.012	0.117	0.054	0.196
	Gasoline	MC	Motorcycles	15.039	4.638	0.602	0.002	0.019	0.008	0.009
Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.359	0.159	0.094	0.003	0.019	0.007	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.840	0.217	0.169	0.004	0.022	0.008	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.018	0.266	0.269	0.005	0.031	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.483	0.046	0.341	0.002	0.047	0.033	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.207	0.023	0.086	0.003	0.031	0.017	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.523	0.119	2.456	0.010	0.117	0.060	0.171
	Gasoline	MC	Motorcycles	20.627	6.386	0.790	0.002	0.020	0.009	0.008
Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.135	0.133	0.072	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.611	0.194	0.138	0.003	0.018	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.928	0.271	0.238	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.349	0.028	0.243	0.002	0.032	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.163	0.017	0.088	0.003	0.024	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.707	0.113	2.492	0.012	0.135	0.067	0.187
	Gasoline	MC	Motorcycles	20.074	6.262	0.786	0.002	0.019	0.008	0.008
Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.354	0.141	0.087	0.003	0.020	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.062	0.221	0.185	0.004	0.022	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.596	0.323	0.319	0.006	0.032	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.705	0.055	0.322	0.003	0.044	0.030	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.345	0.035	0.062	0.003	0.027	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.737	0.196	2.983	0.008	0.141	0.079	0.144
	Gasoline	MC	Motorcycles	21.415	6.058	0.784	0.002	0.020	0.009	0.009
Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.350	0.150	0.088	0.003	0.018	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.057	0.238	0.187	0.004	0.020	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.543	0.335	0.318	0.006	0.030	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.660	0.053	0.428	0.003	0.044	0.031	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.333	0.037	0.134	0.003	0.032	0.019	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.768	0.109	2.576	0.013	0.140	0.069	0.193
	Gasoline	MC	Motorcycles	22.376	6.349	0.817	0.002	0.020	0.009	0.009
Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.027	0.121	0.070	0.003	0.015	0.005	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.288	0.154	0.113	0.003	0.016	0.006	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.545	0.214	0.195	0.005	0.026	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.339	0.028	0.234	0.002	0.032	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.116	0.012	0.046	0.003	0.020	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.653	0.094	2.284	0.013	0.130	0.062	0.197
	Gasoline	MC	Motorcycles	17.775	5.218	0.707	0.002	0.019	0.008	0.009

Table 5-39. EMFAC County-Specific On-Road Vehicle EFs – 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.202	0.139	0.079	0.003	0.018	0.007	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.648	0.193	0.144	0.003	0.020	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.884	0.250	0.237	0.005	0.032	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.393	0.033	0.286	0.002	0.038	0.025	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.181	0.020	0.085	0.003	0.029	0.016	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.538	0.120	2.247	0.010	0.118	0.059	0.178
	Gasoline	MC	Motorcycles	18.809	5.696	0.732	0.002	0.019	0.008	0.009
Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.149	0.125	0.067	0.003	0.019	0.007	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.614	0.184	0.129	0.003	0.020	0.007	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.838	0.247	0.210	0.005	0.029	0.010	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.306	0.023	0.186	0.002	0.031	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.148	0.017	0.060	0.003	0.026	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.632	0.100	2.290	0.012	0.128	0.062	0.192
	Gasoline	MC	Motorcycles	17.816	5.690	0.709	0.002	0.019	0.008	0.009
Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.183	0.133	0.072	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.601	0.181	0.132	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.849	0.253	0.214	0.005	0.028	0.010	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.361	0.027	0.197	0.002	0.031	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.170	0.019	0.058	0.003	0.025	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.654	0.092	2.210	0.012	0.129	0.062	0.197
	Gasoline	MC	Motorcycles	17.626	5.600	0.694	0.002	0.019	0.008	0.009
Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.151	0.128	0.074	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.690	0.195	0.149	0.004	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.945	0.270	0.240	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.438	0.033	0.243	0.002	0.033	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.235	0.027	0.109	0.003	0.028	0.016	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.729	0.106	2.427	0.013	0.137	0.066	0.193
	Gasoline	MC	Motorcycles	19.885	5.990	0.769	0.002	0.020	0.008	0.009
Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.428	0.147	0.090	0.003	0.019	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.256	0.240	0.203	0.004	0.022	0.009	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.448	0.312	0.300	0.006	0.032	0.012	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.821	0.073	0.421	0.003	0.058	0.044	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.436	0.048	0.127	0.004	0.037	0.023	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.744	0.128	2.702	0.012	0.139	0.070	0.179
	Gasoline	MC	Motorcycles	22.179	6.402	0.790	0.002	0.020	0.009	0.009
Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.070	0.117	0.065	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.686	0.191	0.151	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.848	0.245	0.224	0.005	0.025	0.009	0.035
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.298	0.023	0.217	0.002	0.031	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.142	0.017	0.072	0.003	0.026	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.639	0.102	2.344	0.012	0.128	0.062	0.190
	Gasoline	MC	Motorcycles	17.727	5.539	0.701	0.002	0.019	0.008	0.009
Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.476	0.181	0.100	0.003	0.019	0.007	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.335	0.287	0.219	0.004	0.021	0.008	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.963	0.403	0.390	0.006	0.032	0.012	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.553	0.045	0.378	0.002	0.042	0.029	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.297	0.031	0.184	0.003	0.031	0.017	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.724	0.207	2.991	0.008	0.139	0.079	0.138
	Gasoline	MC	Motorcycles	23.259	7.029	0.877	0.002	0.020	0.009	0.008
Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.024	0.122	0.068	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.374	0.157	0.123	0.003	0.018	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.590	0.214	0.202	0.005	0.027	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.323	0.025	0.186	0.002	0.031	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.150	0.016	0.060	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.422	0.068	1.982	0.010	0.109	0.050	0.183
	Gasoline	MC	Motorcycles	16.857	4.964	0.667	0.002	0.019	0.008	0.009

Table 5-39. EMFAC County-Specific On-Road Vehicle EFs – 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.072	0.110	0.063	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.441	0.160	0.112	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.641	0.202	0.183	0.005	0.029	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.366	0.027	0.225	0.002	0.031	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.167	0.017	0.056	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.563	0.096	2.155	0.011	0.118	0.057	0.189
Yuba	Gasoline	MC	Motorcycles	18.432	5.750	0.718	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.128	0.120	0.070	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.693	0.202	0.147	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.047	0.280	0.256	0.005	0.026	0.009	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.349	0.028	0.235	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.164	0.018	0.107	0.003	0.024	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.629	0.162	2.678	0.009	0.132	0.070	0.152
Yuba	Gasoline	MC	Motorcycles	19.493	6.129	0.774	0.002	0.019	0.008	0.008

Table 5-40. EMFAC County-Specific On-Road Vehicle EFs – 2026

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.022	0.126	0.067	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.204	0.139	0.099	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.414	0.175	0.160	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.334	0.027	0.194	0.002	0.032	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.141	0.015	0.053	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.561	0.070	2.035	0.013	0.121	0.054	0.206
	Gasoline	MC	Motorcycles	15.361	4.748	0.616	0.002	0.019	0.008	0.009
Alpine	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.167	0.123	0.075	0.003	0.018	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.597	0.174	0.135	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.941	0.251	0.243	0.005	0.030	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.374	0.028	0.180	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.183	0.019	0.050	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.712	0.098	2.367	0.013	0.138	0.067	0.195
	Gasoline	MC	Motorcycles	18.779	5.263	0.721	0.002	0.019	0.008	0.009
Amador	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.322	0.158	0.091	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.227	0.265	0.220	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.364	0.377	0.305	0.005	0.030	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.369	0.029	0.406	0.002	0.034	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.161	0.017	0.118	0.003	0.026	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.669	0.181	2.895	0.009	0.133	0.074	0.148
	Gasoline	MC	Motorcycles	20.177	6.567	0.822	0.002	0.019	0.008	0.008
Butte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.148	0.137	0.072	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.699	0.209	0.145	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.910	0.281	0.229	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.370	0.028	0.227	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.185	0.021	0.095	0.003	0.028	0.015	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.658	0.112	2.333	0.012	0.132	0.065	0.187
	Gasoline	MC	Motorcycles	18.857	6.190	0.731	0.002	0.019	0.008	0.009
Calaveras	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.379	0.167	0.089	0.003	0.019	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.426	0.272	0.228	0.004	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.485	0.385	0.313	0.005	0.032	0.012	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.497	0.038	0.360	0.002	0.039	0.026	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.267	0.029	0.122	0.003	0.031	0.017	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.740	0.186	2.932	0.009	0.139	0.077	0.148
	Gasoline	MC	Motorcycles	21.323	6.884	0.826	0.002	0.019	0.008	0.008
Colusa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.031	0.118	0.063	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.396	0.163	0.116	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.652	0.226	0.191	0.005	0.026	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.364	0.027	0.222	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.159	0.017	0.055	0.003	0.022	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.673	0.097	2.223	0.012	0.131	0.063	0.195
	Gasoline	MC	Motorcycles	16.063	5.148	0.648	0.002	0.019	0.008	0.009
Contra Costa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.016	0.123	0.065	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.214	0.135	0.098	0.003	0.018	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.474	0.183	0.171	0.005	0.027	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.296	0.021	0.161	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.137	0.014	0.048	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.538	0.093	2.017	0.011	0.121	0.057	0.191
	Gasoline	MC	Motorcycles	16.118	4.948	0.641	0.002	0.019	0.008	0.009
Del Norte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.220	0.148	0.087	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.045	0.259	0.210	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.033	0.296	0.270	0.005	0.029	0.010	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.518	0.039	0.284	0.002	0.035	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.310	0.035	0.140	0.003	0.032	0.020	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.727	0.203	3.063	0.008	0.141	0.079	0.135
	Gasoline	MC	Motorcycles	21.125	6.331	0.809	0.002	0.019	0.008	0.008

Table 5-40. EMFAC County-Specific On-Road Vehicle EFs – 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.102	0.120	0.069	0.003	0.018	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.565	0.193	0.127	0.003	0.020	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.896	0.272	0.223	0.005	0.029	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.375	0.028	0.240	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.168	0.016	0.048	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.569	0.149	2.359	0.009	0.123	0.065	0.161
	Gasoline	MC	Motorcycles	20.343	6.595	0.781	0.002	0.019	0.008	0.009
Fresno	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.005	0.116	0.061	0.003	0.015	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.358	0.162	0.109	0.003	0.017	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.592	0.221	0.178	0.005	0.024	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.282	0.022	0.176	0.002	0.028	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.131	0.014	0.063	0.003	0.022	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.645	0.078	2.212	0.013	0.129	0.059	0.204
	Gasoline	MC	Motorcycles	16.519	5.492	0.663	0.002	0.019	0.008	0.009
Glenn	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.095	0.123	0.064	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.471	0.175	0.114	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.808	0.252	0.203	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.398	0.028	0.161	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.202	0.022	0.062	0.003	0.025	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.673	0.108	2.299	0.012	0.131	0.064	0.190
	Gasoline	MC	Motorcycles	17.297	5.586	0.675	0.002	0.019	0.008	0.009
Humboldt	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.234	0.151	0.088	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.905	0.245	0.191	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.994	0.287	0.261	0.005	0.029	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.522	0.044	0.458	0.002	0.042	0.030	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.243	0.028	0.167	0.003	0.031	0.019	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.690	0.147	2.594	0.010	0.132	0.069	0.163
	Gasoline	MC	Motorcycles	21.132	6.478	0.829	0.002	0.019	0.008	0.008
Imperial	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.122	0.128	0.064	0.003	0.015	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.682	0.182	0.140	0.004	0.016	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.768	0.218	0.188	0.005	0.025	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.365	0.031	0.238	0.002	0.034	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.124	0.014	0.058	0.003	0.021	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.610	0.061	2.083	0.013	0.130	0.060	0.206
	Gasoline	MC	Motorcycles	14.937	5.225	0.592	0.002	0.019	0.008	0.009
Inyo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.136	0.128	0.070	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.595	0.190	0.133	0.004	0.018	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.958	0.264	0.231	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.478	0.037	0.304	0.002	0.036	0.025	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.199	0.021	0.056	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.678	0.122	2.321	0.011	0.136	0.068	0.183
	Gasoline	MC	Motorcycles	17.827	5.723	0.694	0.002	0.019	0.008	0.009
Kern	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.021	0.116	0.062	0.003	0.015	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.328	0.151	0.107	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.591	0.210	0.180	0.005	0.025	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.292	0.022	0.180	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.120	0.013	0.051	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.686	0.075	2.226	0.014	0.133	0.061	0.208
	Gasoline	MC	Motorcycles	16.167	5.263	0.651	0.002	0.019	0.008	0.009
Kings	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.945	0.108	0.059	0.003	0.014	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.349	0.158	0.118	0.003	0.015	0.005	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.512	0.214	0.171	0.005	0.023	0.008	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.323	0.024	0.188	0.002	0.027	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.157	0.018	0.066	0.003	0.022	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.703	0.078	2.292	0.014	0.135	0.063	0.208
	Gasoline	MC	Motorcycles	16.119	5.244	0.653	0.002	0.019	0.008	0.009

Table 5-40. EMFAC County-Specific On-Road Vehicle EFs – 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.533	0.183	0.110	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.126	0.274	0.203	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.435	0.365	0.316	0.005	0.030	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.576	0.051	0.510	0.002	0.048	0.036	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.265	0.028	0.166	0.003	0.031	0.018	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.711	0.182	2.817	0.009	0.135	0.074	0.149
	Gasoline	MC	Motorcycles	21.700	7.011	0.834	0.002	0.020	0.009	0.008
Lassen	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.231	0.137	0.077	0.003	0.018	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.863	0.220	0.160	0.004	0.020	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.402	0.326	0.289	0.005	0.031	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.513	0.035	0.231	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.270	0.028	0.078	0.003	0.027	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.674	0.187	2.706	0.008	0.135	0.075	0.147
	Gasoline	MC	Motorcycles	20.517	6.119	0.767	0.002	0.020	0.009	0.009
Los Angeles	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.061	0.115	0.063	0.003	0.018	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.356	0.134	0.109	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.558	0.174	0.173	0.005	0.030	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.428	0.036	0.188	0.002	0.039	0.026	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.184	0.020	0.052	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.463	0.056	1.840	0.011	0.115	0.050	0.201
	Gasoline	MC	Motorcycles	14.246	4.262	0.558	0.002	0.019	0.008	0.009
Madera	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.957	0.113	0.061	0.003	0.014	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.390	0.180	0.124	0.003	0.015	0.005	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.649	0.241	0.206	0.005	0.024	0.008	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.273	0.020	0.178	0.002	0.025	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.108	0.011	0.048	0.003	0.019	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.698	0.091	2.322	0.013	0.133	0.063	0.200
	Gasoline	MC	Motorcycles	17.956	5.722	0.716	0.002	0.019	0.008	0.009
Marin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.957	0.113	0.061	0.003	0.014	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.390	0.180	0.124	0.003	0.015	0.005	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.649	0.241	0.206	0.005	0.024	0.008	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.273	0.020	0.178	0.002	0.025	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.108	0.011	0.048	0.003	0.019	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.698	0.091	2.322	0.013	0.133	0.063	0.200
	Gasoline	MC	Motorcycles	17.956	5.722	0.716	0.002	0.019	0.008	0.009
Mariposa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.460	0.168	0.099	0.003	0.019	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.468	0.313	0.232	0.004	0.021	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	3.089	0.434	0.412	0.006	0.033	0.012	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.587	0.047	0.425	0.002	0.042	0.029	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.295	0.034	0.093	0.003	0.033	0.020	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.762	0.217	3.273	0.008	0.141	0.080	0.129
	Gasoline	MC	Motorcycles	23.431	7.060	0.886	0.002	0.020	0.009	0.008
Mendocino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.194	0.143	0.082	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.825	0.229	0.173	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.041	0.292	0.261	0.005	0.029	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.529	0.047	0.469	0.002	0.046	0.034	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.259	0.027	0.203	0.003	0.031	0.018	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.686	0.122	2.459	0.011	0.133	0.066	0.180
	Gasoline	MC	Motorcycles	19.504	6.176	0.767	0.002	0.019	0.008	0.009
Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.055	0.113	0.062	0.003	0.017	0.006	0.035
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.621	0.184	0.140	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.827	0.238	0.219	0.005	0.026	0.009	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.287	0.020	0.187	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.144	0.017	0.069	0.003	0.025	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.721	0.078	2.368	0.014	0.136	0.063	0.207
	Gasoline	MC	Motorcycles	17.061	5.420	0.687	0.002	0.019	0.008	0.009

Table 5-40. EMFAC County-Specific On-Road Vehicle EFs – 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.334	0.138	0.083	0.003	0.020	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.985	0.214	0.173	0.004	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.616	0.337	0.320	0.006	0.033	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.748	0.055	0.308	0.003	0.042	0.029	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.398	0.043	0.092	0.003	0.034	0.020	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.703	0.181	2.987	0.009	0.138	0.075	0.149
	Gasoline	MC	Motorcycles	21.194	5.892	0.764	0.002	0.020	0.009	0.009
Mono	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.150	0.124	0.078	0.003	0.016	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.655	0.193	0.149	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.076	0.278	0.266	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.461	0.033	0.289	0.002	0.033	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.224	0.021	0.080	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.698	0.110	2.418	0.012	0.137	0.067	0.188
	Gasoline	MC	Motorcycles	20.379	5.577	0.759	0.002	0.019	0.008	0.009
Monterey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.103	0.138	0.077	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.522	0.188	0.146	0.003	0.018	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.754	0.240	0.239	0.005	0.027	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.358	0.029	0.223	0.002	0.034	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.146	0.015	0.060	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.547	0.097	2.121	0.011	0.119	0.057	0.187
	Gasoline	MC	Motorcycles	17.046	5.242	0.679	0.002	0.019	0.008	0.009
Napa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.025	0.116	0.066	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.364	0.157	0.113	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.689	0.228	0.209	0.005	0.030	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.369	0.033	0.232	0.002	0.038	0.026	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.153	0.015	0.056	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.573	0.110	2.255	0.011	0.122	0.060	0.183
	Gasoline	MC	Motorcycles	17.466	5.337	0.691	0.002	0.019	0.008	0.009
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.163	0.146	0.077	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.786	0.228	0.163	0.004	0.019	0.007	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.092	0.306	0.276	0.005	0.029	0.011	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.384	0.027	0.264	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.230	0.022	0.137	0.003	0.027	0.015	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.715	0.120	2.478	0.012	0.135	0.068	0.182
	Gasoline	MC	Motorcycles	22.202	7.058	0.854	0.002	0.019	0.008	0.008
Orange	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.963	0.106	0.057	0.003	0.018	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.195	0.125	0.091	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.383	0.158	0.147	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.321	0.023	0.124	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.154	0.016	0.042	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.365	0.051	1.578	0.010	0.102	0.045	0.197
	Gasoline	MC	Motorcycles	14.128	4.310	0.559	0.002	0.019	0.008	0.009
Placer	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.091	0.119	0.066	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.271	0.136	0.092	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.604	0.197	0.173	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.385	0.031	0.233	0.002	0.034	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.164	0.016	0.053	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.618	0.100	2.168	0.012	0.128	0.062	0.191
	Gasoline	MC	Motorcycles	17.978	5.626	0.701	0.002	0.019	0.008	0.009
Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.405	0.153	0.089	0.003	0.020	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.268	0.258	0.201	0.004	0.023	0.009	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.861	0.378	0.348	0.006	0.033	0.012	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.659	0.051	0.312	0.002	0.043	0.030	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.376	0.037	0.145	0.003	0.031	0.016	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.725	0.189	3.044	0.009	0.138	0.076	0.142
	Gasoline	MC	Motorcycles	22.767	6.726	0.820	0.002	0.020	0.009	0.009

Table 5-40. EMFAC County-Specific On-Road Vehicle EFs – 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.983	0.106	0.058	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.303	0.135	0.103	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.480	0.180	0.162	0.005	0.025	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.292	0.021	0.144	0.002	0.028	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.133	0.014	0.053	0.003	0.022	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.576	0.059	2.027	0.013	0.125	0.058	0.206
	Gasoline	MC	Motorcycles	15.126	4.929	0.598	0.002	0.019	0.008	0.009
Sacramento	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.145	0.137	0.069	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.375	0.161	0.104	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.672	0.221	0.187	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.351	0.024	0.191	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.161	0.016	0.051	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.523	0.097	2.636	0.011	0.119	0.057	0.183
	Gasoline	MC	Motorcycles	17.577	5.685	0.686	0.002	0.019	0.008	0.009
San Benito	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.083	0.119	0.068	0.003	0.018	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.405	0.170	0.111	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.676	0.234	0.193	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.358	0.027	0.182	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.164	0.017	0.051	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.719	0.081	2.260	0.013	0.135	0.063	0.206
	Gasoline	MC	Motorcycles	18.500	6.039	0.716	0.002	0.019	0.008	0.009
San Bernardino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.978	0.106	0.059	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.335	0.151	0.111	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.549	0.195	0.180	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.304	0.023	0.170	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.121	0.013	0.049	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.577	0.060	2.057	0.013	0.125	0.058	0.204
	Gasoline	MC	Motorcycles	15.861	4.997	0.629	0.002	0.019	0.008	0.009
San Diego	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.986	0.110	0.060	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.329	0.148	0.109	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.436	0.176	0.160	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.520	0.033	0.146	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.277	0.028	0.056	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.545	0.098	2.045	0.011	0.120	0.057	0.188
	Gasoline	MC	Motorcycles	15.960	4.822	0.620	0.002	0.020	0.008	0.009
San Francisco	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.103	0.126	0.067	0.003	0.019	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.289	0.139	0.094	0.004	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.408	0.142	0.143	0.005	0.033	0.012	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.470	0.035	0.163	0.002	0.036	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.246	0.024	0.053	0.003	0.027	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.337	0.072	1.863	0.012	0.112	0.049	0.197
	Gasoline	MC	Motorcycles	17.580	5.338	0.660	0.002	0.020	0.009	0.009
San Joaquin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.077	0.117	0.063	0.003	0.018	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.378	0.152	0.106	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.679	0.222	0.184	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.380	0.025	0.171	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.179	0.019	0.044	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.628	0.083	2.188	0.013	0.127	0.059	0.201
	Gasoline	MC	Motorcycles	17.260	5.584	0.668	0.002	0.019	0.008	0.009
San Luis Obispo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.019	0.127	0.070	0.003	0.016	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.368	0.177	0.122	0.003	0.017	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.631	0.230	0.209	0.005	0.027	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.322	0.025	0.185	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.162	0.017	0.071	0.003	0.024	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.572	0.131	2.201	0.010	0.123	0.063	0.169
	Gasoline	MC	Motorcycles	19.635	6.150	0.774	0.002	0.019	0.008	0.009

Table 5-40. EMFAC County-Specific On-Road Vehicle EFs – 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.032	0.137	0.068	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.109	0.122	0.084	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.273	0.137	0.122	0.005	0.027	0.009	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.280	0.019	0.145	0.002	0.025	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.121	0.013	0.039	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.326	0.073	1.444	0.010	0.101	0.045	0.195
	Gasoline	MC	Motorcycles	13.168	4.496	0.535	0.002	0.019	0.008	0.009
Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.068	0.142	0.075	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.460	0.188	0.140	0.003	0.017	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.695	0.239	0.225	0.005	0.027	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.289	0.021	0.186	0.002	0.028	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.141	0.015	0.065	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.510	0.101	2.113	0.011	0.115	0.056	0.182
	Gasoline	MC	Motorcycles	17.293	5.544	0.710	0.002	0.019	0.008	0.009
Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.023	0.118	0.065	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.278	0.144	0.104	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.464	0.178	0.161	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.307	0.023	0.163	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.139	0.015	0.047	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.504	0.078	1.933	0.012	0.116	0.053	0.198
	Gasoline	MC	Motorcycles	14.727	4.618	0.588	0.002	0.019	0.008	0.009
Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.278	0.151	0.087	0.003	0.019	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.725	0.208	0.154	0.003	0.022	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.907	0.255	0.246	0.005	0.031	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.470	0.042	0.305	0.002	0.043	0.030	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.202	0.022	0.077	0.003	0.029	0.015	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.508	0.113	2.334	0.010	0.116	0.058	0.174
	Gasoline	MC	Motorcycles	20.340	6.451	0.777	0.002	0.020	0.009	0.009
Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.068	0.125	0.066	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.503	0.183	0.125	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.823	0.261	0.218	0.005	0.027	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.331	0.024	0.207	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.157	0.017	0.077	0.003	0.023	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.701	0.109	2.412	0.012	0.135	0.066	0.190
	Gasoline	MC	Motorcycles	19.635	6.301	0.769	0.002	0.019	0.008	0.009
Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.282	0.134	0.081	0.003	0.019	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.921	0.210	0.169	0.004	0.022	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.464	0.310	0.294	0.005	0.032	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.704	0.053	0.296	0.003	0.042	0.029	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.346	0.034	0.058	0.003	0.027	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.711	0.186	2.798	0.008	0.139	0.076	0.150
	Gasoline	MC	Motorcycles	20.955	6.073	0.768	0.002	0.020	0.009	0.009
Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.270	0.142	0.082	0.003	0.018	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.917	0.225	0.171	0.004	0.020	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.403	0.321	0.293	0.005	0.030	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.650	0.050	0.387	0.003	0.041	0.029	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.322	0.034	0.116	0.003	0.029	0.017	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.761	0.104	2.485	0.013	0.140	0.068	0.195
	Gasoline	MC	Motorcycles	21.825	6.355	0.799	0.002	0.020	0.009	0.009
Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.973	0.116	0.065	0.003	0.015	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.206	0.146	0.103	0.003	0.016	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.457	0.203	0.177	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.323	0.025	0.206	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.114	0.012	0.042	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.648	0.091	2.214	0.012	0.130	0.062	0.199
	Gasoline	MC	Motorcycles	17.265	5.183	0.689	0.002	0.019	0.008	0.009

Table 5-40. EMFAC County-Specific On-Road Vehicle EFs – 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.132	0.131	0.073	0.003	0.018	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.546	0.183	0.132	0.003	0.020	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.787	0.241	0.218	0.005	0.032	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.382	0.031	0.258	0.002	0.036	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.177	0.019	0.077	0.003	0.028	0.015	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.527	0.114	2.157	0.010	0.117	0.058	0.181
	Gasoline	MC	Motorcycles	18.395	5.695	0.715	0.002	0.019	0.008	0.009
Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.089	0.119	0.062	0.003	0.019	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.499	0.172	0.117	0.003	0.020	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.735	0.237	0.192	0.005	0.029	0.010	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.295	0.021	0.160	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.145	0.016	0.052	0.003	0.026	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.628	0.096	2.222	0.012	0.127	0.061	0.194
	Gasoline	MC	Motorcycles	17.435	5.674	0.691	0.002	0.019	0.008	0.009
Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.117	0.126	0.067	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.485	0.169	0.119	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.752	0.244	0.196	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.354	0.026	0.176	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.168	0.019	0.053	0.003	0.025	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.651	0.088	2.151	0.012	0.129	0.061	0.199
	Gasoline	MC	Motorcycles	17.235	5.584	0.678	0.002	0.019	0.008	0.009
Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.085	0.121	0.068	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.569	0.182	0.135	0.003	0.018	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.840	0.259	0.220	0.005	0.027	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.425	0.030	0.210	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.224	0.024	0.091	0.003	0.026	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.726	0.103	2.363	0.013	0.136	0.066	0.195
	Gasoline	MC	Motorcycles	19.389	5.977	0.750	0.002	0.019	0.008	0.009
Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.346	0.139	0.083	0.003	0.019	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.091	0.226	0.185	0.004	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.310	0.299	0.274	0.006	0.032	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.813	0.068	0.380	0.003	0.053	0.039	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.430	0.046	0.115	0.003	0.035	0.021	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.733	0.121	2.590	0.012	0.138	0.069	0.183
	Gasoline	MC	Motorcycles	21.685	6.399	0.775	0.002	0.020	0.009	0.009
Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.016	0.112	0.060	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.554	0.177	0.136	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.743	0.235	0.204	0.005	0.025	0.009	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.277	0.020	0.182	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.133	0.015	0.062	0.003	0.025	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.635	0.098	2.267	0.012	0.128	0.062	0.192
	Gasoline	MC	Motorcycles	17.213	5.509	0.682	0.002	0.019	0.008	0.009
Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.369	0.169	0.091	0.003	0.019	0.007	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.173	0.275	0.200	0.004	0.021	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.826	0.392	0.365	0.005	0.032	0.012	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.546	0.044	0.343	0.002	0.041	0.028	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.284	0.028	0.158	0.003	0.029	0.015	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.707	0.200	2.875	0.008	0.138	0.077	0.141
	Gasoline	MC	Motorcycles	22.874	7.064	0.862	0.002	0.020	0.009	0.008
Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.970	0.117	0.063	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.290	0.149	0.113	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.499	0.204	0.184	0.005	0.027	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.313	0.023	0.165	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.146	0.015	0.053	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.414	0.065	1.885	0.010	0.109	0.049	0.186
	Gasoline	MC	Motorcycles	16.431	4.935	0.651	0.002	0.019	0.008	0.009

Table 5-40. EMFAC County-Specific On-Road Vehicle EFs – 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.015	0.105	0.059	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.352	0.152	0.102	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.560	0.195	0.168	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.360	0.026	0.204	0.002	0.031	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.167	0.017	0.052	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.558	0.093	2.086	0.011	0.118	0.056	0.191
Yuba	Gasoline	MC	Motorcycles	18.066	5.740	0.702	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.059	0.114	0.064	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.554	0.188	0.131	0.003	0.018	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.928	0.269	0.234	0.005	0.026	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.336	0.025	0.202	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.157	0.017	0.090	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.613	0.155	2.553	0.009	0.131	0.069	0.156
	Gasoline	MC	Motorcycles	19.160	6.178	0.759	0.002	0.019	0.008	0.009

Table 5-41. EMFAC County-Specific On-Road Vehicle EFs – 2027

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.972	0.121	0.063	0.003	0.016	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.143	0.133	0.092	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.338	0.165	0.146	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.319	0.024	0.166	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.132	0.013	0.041	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.558	0.068	1.971	0.013	0.121	0.054	0.207
	Gasoline	MC	Motorcycles	14.981	4.702	0.601	0.002	0.019	0.008	0.009
Alpine	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.114	0.119	0.071	0.003	0.018	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.508	0.167	0.124	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.858	0.243	0.224	0.005	0.030	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.364	0.025	0.155	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.180	0.018	0.042	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.707	0.094	2.292	0.013	0.138	0.066	0.198
	Gasoline	MC	Motorcycles	18.371	5.256	0.704	0.002	0.019	0.008	0.009
Amador	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.235	0.149	0.084	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.073	0.252	0.203	0.003	0.018	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.256	0.367	0.285	0.005	0.030	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.360	0.028	0.381	0.002	0.033	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.149	0.014	0.098	0.003	0.024	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.652	0.174	2.787	0.009	0.131	0.072	0.152
	Gasoline	MC	Motorcycles	19.870	6.611	0.807	0.002	0.019	0.008	0.008
Butte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.081	0.129	0.066	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.584	0.198	0.132	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.813	0.270	0.210	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.355	0.024	0.194	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.166	0.017	0.068	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.651	0.106	2.254	0.012	0.131	0.064	0.190
	Gasoline	MC	Motorcycles	18.484	6.215	0.715	0.002	0.019	0.008	0.009
Calaveras	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.291	0.157	0.082	0.003	0.019	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.263	0.259	0.211	0.004	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.359	0.375	0.290	0.005	0.032	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.489	0.035	0.332	0.002	0.036	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.251	0.025	0.094	0.003	0.027	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.725	0.179	2.829	0.009	0.137	0.075	0.152
	Gasoline	MC	Motorcycles	21.089	6.957	0.813	0.002	0.019	0.008	0.008
Colusa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.981	0.113	0.059	0.003	0.016	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.307	0.153	0.106	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.574	0.219	0.176	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.350	0.024	0.192	0.002	0.028	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.151	0.015	0.043	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.670	0.094	2.163	0.012	0.131	0.062	0.197
	Gasoline	MC	Motorcycles	15.674	5.117	0.633	0.002	0.019	0.008	0.009
Contra Costa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.965	0.118	0.061	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.151	0.129	0.090	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.399	0.175	0.156	0.005	0.027	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.286	0.019	0.141	0.002	0.027	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.133	0.013	0.041	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.530	0.089	1.934	0.011	0.120	0.056	0.193
	Gasoline	MC	Motorcycles	15.708	4.899	0.625	0.002	0.019	0.008	0.009
Del Norte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.148	0.141	0.080	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.903	0.245	0.192	0.004	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.934	0.289	0.250	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.507	0.036	0.249	0.002	0.032	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.285	0.030	0.109	0.003	0.028	0.016	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.707	0.195	2.932	0.008	0.139	0.077	0.139
	Gasoline	MC	Motorcycles	20.756	6.377	0.794	0.002	0.019	0.008	0.009

Table 5-41. EMFAC County-Specific On-Road Vehicle EFs – 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.045	0.114	0.064	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.487	0.188	0.118	0.003	0.020	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.818	0.264	0.207	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.364	0.025	0.211	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.166	0.016	0.043	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.552	0.142	2.248	0.009	0.121	0.063	0.165
	Gasoline	MC	Motorcycles	19.968	6.613	0.764	0.002	0.019	0.008	0.009
Fresno	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.959	0.112	0.057	0.003	0.015	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.273	0.153	0.100	0.003	0.016	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.510	0.213	0.162	0.005	0.024	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.266	0.019	0.149	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.121	0.013	0.050	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.643	0.075	2.155	0.013	0.128	0.059	0.205
	Gasoline	MC	Motorcycles	16.041	5.468	0.644	0.002	0.019	0.008	0.009
Glenn	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.040	0.118	0.060	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.377	0.165	0.104	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.710	0.243	0.186	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.392	0.026	0.142	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.193	0.020	0.050	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.668	0.104	2.230	0.012	0.131	0.063	0.193
	Gasoline	MC	Motorcycles	16.938	5.578	0.660	0.002	0.019	0.008	0.009
Humboldt	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.161	0.144	0.082	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.784	0.234	0.176	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.899	0.280	0.241	0.005	0.029	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.501	0.040	0.404	0.002	0.039	0.027	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.208	0.020	0.113	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.680	0.141	2.503	0.010	0.131	0.067	0.167
	Gasoline	MC	Motorcycles	20.754	6.528	0.813	0.002	0.019	0.008	0.009
Imperial	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.055	0.123	0.060	0.003	0.015	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.545	0.170	0.127	0.003	0.016	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.657	0.208	0.172	0.005	0.024	0.008	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.342	0.026	0.201	0.002	0.030	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.110	0.011	0.041	0.003	0.019	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.606	0.060	2.024	0.013	0.130	0.061	0.207
	Gasoline	MC	Motorcycles	14.506	5.194	0.580	0.002	0.019	0.008	0.009
Inyo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.080	0.124	0.066	0.003	0.016	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.499	0.182	0.122	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.864	0.255	0.213	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.463	0.034	0.270	0.002	0.033	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.192	0.019	0.045	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.666	0.116	2.229	0.011	0.135	0.067	0.186
	Gasoline	MC	Motorcycles	17.414	5.729	0.679	0.002	0.019	0.008	0.009
Kern	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.974	0.111	0.059	0.003	0.015	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.248	0.142	0.097	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.512	0.203	0.164	0.005	0.025	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.279	0.020	0.155	0.002	0.026	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.114	0.012	0.041	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.684	0.073	2.176	0.013	0.133	0.061	0.210
	Gasoline	MC	Motorcycles	15.716	5.227	0.634	0.002	0.019	0.008	0.009
Kings	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.902	0.104	0.056	0.003	0.014	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.262	0.148	0.107	0.003	0.015	0.005	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.436	0.207	0.157	0.005	0.023	0.008	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.302	0.021	0.156	0.002	0.025	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.142	0.015	0.048	0.003	0.020	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.701	0.075	2.242	0.013	0.135	0.062	0.209
	Gasoline	MC	Motorcycles	15.623	5.212	0.635	0.002	0.019	0.008	0.009

Table 5-41. EMFAC County-Specific On-Road Vehicle EFs – 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.432	0.173	0.101	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.962	0.257	0.184	0.004	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.304	0.354	0.292	0.005	0.030	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.555	0.046	0.458	0.002	0.044	0.032	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.243	0.023	0.130	0.003	0.027	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.696	0.174	2.712	0.009	0.133	0.073	0.153
	Gasoline	MC	Motorcycles	21.326	7.038	0.818	0.002	0.019	0.008	0.008
Lassen	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.167	0.132	0.072	0.003	0.018	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.747	0.210	0.147	0.004	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.303	0.319	0.271	0.005	0.031	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.508	0.033	0.206	0.002	0.031	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.262	0.026	0.063	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.655	0.179	2.580	0.008	0.134	0.073	0.151
	Gasoline	MC	Motorcycles	20.139	6.161	0.753	0.002	0.020	0.009	0.009
Los Angeles	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.013	0.112	0.060	0.003	0.018	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.279	0.126	0.100	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.470	0.164	0.157	0.005	0.029	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.409	0.032	0.157	0.002	0.035	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.177	0.018	0.043	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.457	0.054	1.761	0.011	0.115	0.050	0.203
	Gasoline	MC	Motorcycles	14.016	4.241	0.548	0.002	0.019	0.008	0.009
Madera	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.909	0.108	0.057	0.003	0.014	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.294	0.169	0.112	0.003	0.015	0.005	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.558	0.232	0.188	0.005	0.024	0.008	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.256	0.017	0.151	0.002	0.024	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.099	0.010	0.037	0.003	0.018	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.695	0.088	2.266	0.013	0.133	0.062	0.201
	Gasoline	MC	Motorcycles	17.397	5.698	0.696	0.002	0.019	0.008	0.009
Marin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.909	0.108	0.057	0.003	0.014	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.294	0.169	0.112	0.003	0.015	0.005	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.558	0.232	0.188	0.005	0.024	0.008	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.256	0.017	0.151	0.002	0.024	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.099	0.010	0.037	0.003	0.018	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.695	0.088	2.266	0.013	0.133	0.062	0.201
	Gasoline	MC	Motorcycles	17.397	5.698	0.696	0.002	0.019	0.008	0.009
Mariposa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.358	0.157	0.090	0.003	0.019	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.296	0.298	0.213	0.004	0.021	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.949	0.421	0.387	0.006	0.033	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.579	0.044	0.387	0.002	0.040	0.027	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.272	0.027	0.058	0.003	0.028	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.744	0.209	3.156	0.008	0.139	0.078	0.133
	Gasoline	MC	Motorcycles	23.117	7.141	0.873	0.002	0.020	0.009	0.008
Mendocino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.127	0.137	0.076	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.706	0.218	0.159	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.941	0.284	0.241	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.506	0.042	0.416	0.002	0.042	0.030	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.235	0.022	0.163	0.003	0.026	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.679	0.116	2.376	0.011	0.132	0.065	0.183
	Gasoline	MC	Motorcycles	19.162	6.239	0.751	0.002	0.019	0.008	0.009
Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.004	0.108	0.058	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.501	0.170	0.124	0.003	0.018	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.719	0.228	0.198	0.005	0.026	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.276	0.019	0.163	0.002	0.027	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.128	0.013	0.045	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.720	0.076	2.316	0.014	0.136	0.063	0.209
	Gasoline	MC	Motorcycles	16.545	5.332	0.666	0.002	0.019	0.008	0.009

Table 5-41. EMFAC County-Specific On-Road Vehicle EFs – 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.263	0.132	0.077	0.003	0.019	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.850	0.201	0.157	0.004	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.502	0.327	0.298	0.006	0.033	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.744	0.052	0.278	0.003	0.040	0.027	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.386	0.039	0.073	0.003	0.030	0.016	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.684	0.173	2.844	0.009	0.136	0.073	0.153
	Gasoline	MC	Motorcycles	20.657	5.818	0.748	0.002	0.020	0.009	0.009
Mono	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.090	0.119	0.073	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.556	0.185	0.137	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.977	0.268	0.246	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.450	0.031	0.261	0.002	0.031	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.220	0.020	0.071	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.692	0.106	2.341	0.012	0.136	0.066	0.191
	Gasoline	MC	Motorcycles	19.860	5.565	0.742	0.002	0.019	0.008	0.009
Monterey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.045	0.133	0.072	0.003	0.016	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.427	0.179	0.133	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.667	0.234	0.220	0.005	0.027	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.345	0.026	0.196	0.002	0.032	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.137	0.013	0.048	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.540	0.092	2.040	0.011	0.118	0.056	0.189
	Gasoline	MC	Motorcycles	16.652	5.240	0.664	0.002	0.019	0.008	0.009
Napa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.972	0.111	0.062	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.288	0.150	0.104	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.610	0.220	0.192	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.352	0.028	0.197	0.002	0.034	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.148	0.014	0.048	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.565	0.105	2.173	0.011	0.121	0.059	0.185
	Gasoline	MC	Motorcycles	17.028	5.274	0.673	0.002	0.019	0.008	0.009
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.091	0.137	0.071	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.688	0.223	0.151	0.003	0.019	0.007	0.036
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.003	0.298	0.257	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.371	0.025	0.235	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.217	0.020	0.115	0.003	0.025	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.706	0.114	2.391	0.012	0.135	0.067	0.185
	Gasoline	MC	Motorcycles	21.895	7.163	0.840	0.002	0.019	0.008	0.008
Orange	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.919	0.102	0.054	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.139	0.120	0.084	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.320	0.151	0.135	0.005	0.029	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.313	0.021	0.106	0.002	0.027	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.153	0.015	0.036	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.359	0.049	1.510	0.010	0.102	0.044	0.199
	Gasoline	MC	Motorcycles	13.893	4.284	0.549	0.002	0.019	0.008	0.009
Placer	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.040	0.114	0.062	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.209	0.130	0.085	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.532	0.189	0.159	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.375	0.028	0.206	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.161	0.015	0.047	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.611	0.095	2.092	0.012	0.128	0.061	0.193
	Gasoline	MC	Motorcycles	17.609	5.600	0.685	0.002	0.019	0.008	0.009
Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.321	0.145	0.083	0.003	0.020	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.112	0.245	0.184	0.004	0.023	0.009	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.749	0.371	0.327	0.005	0.033	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.650	0.045	0.273	0.002	0.038	0.025	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.371	0.036	0.130	0.003	0.030	0.015	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.705	0.181	2.897	0.009	0.136	0.074	0.147
	Gasoline	MC	Motorcycles	22.388	6.780	0.806	0.002	0.020	0.009	0.009

Table 5-41. EMFAC County-Specific On-Road Vehicle EFs – 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.940	0.103	0.055	0.003	0.016	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.227	0.127	0.094	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.405	0.172	0.147	0.005	0.025	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.283	0.019	0.125	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.126	0.013	0.042	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.574	0.058	1.961	0.013	0.125	0.058	0.207
	Gasoline	MC	Motorcycles	14.755	4.915	0.584	0.002	0.019	0.008	0.009
Sacramento	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.096	0.133	0.065	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.305	0.154	0.096	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.589	0.212	0.171	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.340	0.022	0.167	0.002	0.027	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.157	0.015	0.042	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.515	0.092	2.502	0.011	0.118	0.056	0.186
	Gasoline	MC	Motorcycles	17.235	5.673	0.670	0.002	0.019	0.008	0.009
San Benito	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.034	0.115	0.064	0.003	0.018	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.312	0.160	0.100	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.587	0.227	0.176	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.346	0.023	0.153	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.159	0.015	0.041	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.718	0.079	2.214	0.013	0.135	0.063	0.207
	Gasoline	MC	Motorcycles	18.264	6.107	0.704	0.002	0.019	0.008	0.009
San Bernardino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.935	0.103	0.056	0.003	0.016	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.254	0.142	0.101	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.465	0.185	0.163	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.289	0.020	0.143	0.002	0.027	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.115	0.012	0.039	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.574	0.058	1.997	0.012	0.125	0.057	0.206
	Gasoline	MC	Motorcycles	15.460	4.974	0.614	0.002	0.019	0.008	0.009
San Diego	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.945	0.106	0.057	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.264	0.141	0.101	0.004	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.365	0.167	0.145	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.525	0.032	0.130	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.277	0.027	0.048	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.535	0.094	1.949	0.011	0.119	0.056	0.190
	Gasoline	MC	Motorcycles	15.721	4.813	0.610	0.002	0.020	0.009	0.009
San Francisco	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.051	0.122	0.064	0.003	0.019	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.237	0.134	0.088	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.345	0.135	0.130	0.005	0.032	0.011	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.463	0.033	0.145	0.002	0.034	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.242	0.023	0.045	0.003	0.026	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.332	0.070	1.759	0.011	0.111	0.048	0.198
	Gasoline	MC	Motorcycles	17.352	5.368	0.650	0.002	0.020	0.009	0.009
San Joaquin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.033	0.113	0.059	0.003	0.018	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.299	0.143	0.097	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.592	0.213	0.167	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.381	0.023	0.145	0.002	0.028	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.185	0.019	0.040	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.625	0.079	2.126	0.013	0.126	0.059	0.202
	Gasoline	MC	Motorcycles	16.951	5.571	0.653	0.002	0.019	0.008	0.009
San Luis Obispo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.965	0.122	0.065	0.003	0.015	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.291	0.170	0.112	0.003	0.017	0.006	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.553	0.222	0.192	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.311	0.022	0.160	0.002	0.028	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.149	0.014	0.054	0.003	0.022	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.561	0.125	2.114	0.010	0.122	0.062	0.173
	Gasoline	MC	Motorcycles	19.154	6.147	0.755	0.002	0.019	0.008	0.009

Table 5-41. EMFAC County-Specific On-Road Vehicle EFs – 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.996	0.135	0.065	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.073	0.119	0.080	0.003	0.017	0.006	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.240	0.132	0.115	0.005	0.027	0.009	0.041
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.268	0.017	0.125	0.002	0.024	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.117	0.012	0.033	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.319	0.070	1.355	0.010	0.101	0.044	0.197
	Gasoline	MC	Motorcycles	13.006	4.533	0.526	0.002	0.019	0.008	0.009
Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.007	0.136	0.070	0.003	0.016	0.005	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.369	0.179	0.128	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.600	0.229	0.205	0.005	0.027	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.279	0.019	0.162	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.132	0.012	0.050	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.501	0.096	2.026	0.011	0.114	0.055	0.184
	Gasoline	MC	Motorcycles	16.925	5.539	0.694	0.002	0.019	0.008	0.009
Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.975	0.113	0.061	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.215	0.138	0.096	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.391	0.169	0.147	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.296	0.021	0.141	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.132	0.013	0.037	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.497	0.075	1.851	0.012	0.116	0.052	0.200
	Gasoline	MC	Motorcycles	14.449	4.598	0.576	0.002	0.019	0.008	0.009
Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.207	0.145	0.081	0.003	0.019	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.624	0.200	0.142	0.003	0.022	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.810	0.245	0.225	0.005	0.031	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.458	0.038	0.272	0.002	0.041	0.027	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.189	0.018	0.055	0.003	0.026	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.493	0.107	2.215	0.010	0.114	0.056	0.177
	Gasoline	MC	Motorcycles	20.067	6.512	0.764	0.002	0.020	0.009	0.009
Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.012	0.120	0.062	0.003	0.016	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.409	0.173	0.114	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.730	0.251	0.200	0.005	0.027	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.317	0.021	0.178	0.002	0.027	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.147	0.015	0.062	0.003	0.022	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.696	0.104	2.339	0.012	0.135	0.065	0.193
	Gasoline	MC	Motorcycles	19.208	6.325	0.752	0.002	0.019	0.008	0.009
Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.220	0.130	0.076	0.003	0.019	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.797	0.200	0.154	0.004	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.339	0.299	0.271	0.005	0.032	0.012	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.701	0.051	0.269	0.003	0.040	0.027	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.345	0.033	0.052	0.003	0.026	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.689	0.178	2.650	0.009	0.137	0.074	0.154
	Gasoline	MC	Motorcycles	20.528	6.098	0.753	0.002	0.020	0.009	0.009
Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.203	0.136	0.076	0.003	0.018	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.792	0.214	0.156	0.004	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.290	0.310	0.271	0.005	0.030	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.634	0.045	0.339	0.002	0.037	0.025	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.306	0.030	0.090	0.003	0.026	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.755	0.100	2.408	0.013	0.140	0.068	0.198
	Gasoline	MC	Motorcycles	21.299	6.342	0.782	0.002	0.020	0.009	0.009
Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.924	0.112	0.061	0.003	0.015	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.136	0.138	0.095	0.003	0.016	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.381	0.194	0.161	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.309	0.023	0.181	0.002	0.028	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.108	0.011	0.035	0.003	0.019	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.644	0.088	2.149	0.012	0.130	0.061	0.200
	Gasoline	MC	Motorcycles	16.780	5.142	0.672	0.002	0.019	0.008	0.009

Table 5-41. EMFAC County-Specific On-Road Vehicle EFs – 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.073	0.126	0.068	0.003	0.018	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.456	0.175	0.122	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.699	0.231	0.200	0.005	0.031	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.366	0.027	0.224	0.002	0.033	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.160	0.015	0.053	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.516	0.109	2.072	0.010	0.116	0.057	0.184
	Gasoline	MC	Motorcycles	18.003	5.681	0.698	0.002	0.019	0.008	0.009
Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.017	0.114	0.058	0.003	0.018	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.376	0.162	0.105	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.622	0.230	0.175	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.267	0.018	0.136	0.002	0.027	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.128	0.013	0.041	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.621	0.092	2.154	0.012	0.127	0.060	0.197
	Gasoline	MC	Motorcycles	16.953	5.620	0.674	0.002	0.019	0.008	0.009
Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.063	0.121	0.062	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.391	0.158	0.108	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.672	0.236	0.181	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.347	0.024	0.155	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.161	0.017	0.043	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.648	0.085	2.098	0.012	0.129	0.061	0.201
	Gasoline	MC	Motorcycles	16.898	5.563	0.662	0.002	0.019	0.008	0.009
Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.028	0.116	0.063	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.465	0.172	0.122	0.003	0.018	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.745	0.249	0.201	0.005	0.027	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.416	0.027	0.186	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.211	0.022	0.072	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.724	0.099	2.305	0.013	0.137	0.065	0.198
	Gasoline	MC	Motorcycles	18.909	5.957	0.732	0.002	0.019	0.008	0.009
Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.275	0.133	0.078	0.003	0.019	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.950	0.214	0.169	0.004	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.195	0.288	0.252	0.006	0.031	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.796	0.059	0.329	0.003	0.045	0.031	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.416	0.042	0.094	0.003	0.031	0.017	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.724	0.115	2.495	0.012	0.138	0.068	0.186
	Gasoline	MC	Motorcycles	21.226	6.404	0.760	0.002	0.020	0.009	0.009
Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.967	0.108	0.057	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.441	0.165	0.122	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.648	0.228	0.187	0.005	0.025	0.009	0.036
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.256	0.017	0.151	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.118	0.012	0.045	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.628	0.093	2.194	0.012	0.127	0.061	0.195
	Gasoline	MC	Motorcycles	16.685	5.459	0.662	0.002	0.019	0.008	0.009
Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.279	0.159	0.083	0.003	0.018	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.027	0.262	0.184	0.004	0.021	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.697	0.383	0.342	0.005	0.032	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.532	0.040	0.301	0.002	0.038	0.025	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.276	0.027	0.140	0.003	0.028	0.015	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.689	0.193	2.764	0.008	0.136	0.076	0.145
	Gasoline	MC	Motorcycles	22.511	7.118	0.846	0.002	0.020	0.009	0.008
Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.920	0.113	0.059	0.003	0.016	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.216	0.141	0.104	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.418	0.194	0.168	0.005	0.027	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.302	0.021	0.144	0.002	0.027	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.140	0.014	0.045	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.407	0.061	1.797	0.010	0.108	0.049	0.189
	Gasoline	MC	Motorcycles	16.063	4.903	0.637	0.002	0.019	0.008	0.009

Table 5-41. EMFAC County-Specific On-Road Vehicle EFs – 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.969	0.101	0.055	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.280	0.144	0.093	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.495	0.189	0.155	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.350	0.023	0.175	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.162	0.016	0.042	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.555	0.089	2.026	0.011	0.117	0.055	0.193
Yuba	Gasoline	MC	Motorcycles	17.736	5.714	0.687	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.001	0.108	0.059	0.003	0.017	0.006	0.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.435	0.174	0.116	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.822	0.258	0.215	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.319	0.022	0.168	0.002	0.027	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.146	0.014	0.069	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.598	0.148	2.435	0.010	0.129	0.067	0.160
Yuba	Gasoline	MC	Motorcycles	18.820	6.193	0.744	0.002	0.019	0.008	0.009

Table 5-42. EMFAC County-Specific On-Road Vehicle EFs – 2028

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.928	0.117	0.060	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.092	0.127	0.085	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.276	0.156	0.133	0.005	0.027	0.009	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.301	0.021	0.137	0.002	0.027	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.129	0.013	0.037	0.003	0.021	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.555	0.066	1.912	0.012	0.121	0.054	0.208
	Gasoline	MC	Motorcycles	14.644	4.651	0.587	0.002	0.019	0.008	0.009
Alpine	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.065	0.115	0.067	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.435	0.160	0.116	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.786	0.234	0.208	0.005	0.030	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.353	0.023	0.132	0.002	0.028	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.178	0.017	0.039	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.702	0.091	2.218	0.012	0.138	0.066	0.200
Amador	Gasoline	MC	Motorcycles	18.024	5.241	0.689	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.156	0.139	0.077	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.938	0.239	0.186	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.157	0.357	0.266	0.005	0.030	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.342	0.025	0.345	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.136	0.013	0.078	0.003	0.022	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.635	0.166	2.672	0.009	0.130	0.070	0.156
Butte	Gasoline	MC	Motorcycles	19.537	6.621	0.790	0.002	0.019	0.008	0.008
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.026	0.122	0.062	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.487	0.187	0.120	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.728	0.259	0.194	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.344	0.023	0.170	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.155	0.015	0.053	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.646	0.101	2.182	0.012	0.131	0.063	0.193
Calaveras	Gasoline	MC	Motorcycles	18.110	6.211	0.699	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.218	0.149	0.076	0.003	0.019	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.115	0.246	0.193	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.258	0.365	0.272	0.005	0.031	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.481	0.033	0.305	0.002	0.033	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.250	0.024	0.089	0.003	0.027	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.710	0.172	2.730	0.009	0.136	0.074	0.156
Colusa	Gasoline	MC	Motorcycles	20.858	7.029	0.801	0.002	0.019	0.008	0.008
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.938	0.109	0.056	0.003	0.016	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.233	0.144	0.097	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.505	0.211	0.163	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.336	0.023	0.165	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.147	0.015	0.038	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.668	0.090	2.107	0.012	0.131	0.062	0.199
Contra Costa	Gasoline	MC	Motorcycles	15.324	5.082	0.619	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.922	0.113	0.058	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.098	0.124	0.084	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.337	0.166	0.143	0.005	0.027	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.275	0.018	0.123	0.002	0.025	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.130	0.012	0.037	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.524	0.086	1.858	0.011	0.119	0.055	0.195
Del Norte	Gasoline	MC	Motorcycles	15.339	4.845	0.610	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.086	0.134	0.074	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.776	0.232	0.176	0.004	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.849	0.282	0.233	0.005	0.028	0.010	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.502	0.035	0.226	0.002	0.031	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.277	0.029	0.098	0.003	0.027	0.015	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.687	0.187	2.805	0.008	0.137	0.076	0.143

Table 5-42. EMFAC County-Specific On-Road Vehicle EFs – 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.997	0.108	0.060	0.003	0.018	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.418	0.182	0.110	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.753	0.257	0.193	0.005	0.029	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.355	0.024	0.190	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.164	0.015	0.040	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.536	0.135	2.141	0.009	0.119	0.061	0.168
	Gasoline	MC	Motorcycles	19.564	6.615	0.747	0.002	0.019	0.008	0.009
Fresno	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.920	0.107	0.054	0.003	0.015	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.204	0.144	0.091	0.003	0.016	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.438	0.205	0.148	0.005	0.024	0.008	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.248	0.017	0.123	0.002	0.023	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.113	0.012	0.040	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.642	0.073	2.101	0.013	0.128	0.059	0.207
Glenn	Gasoline	MC	Motorcycles	15.619	5.429	0.627	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.994	0.113	0.057	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.299	0.155	0.095	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.625	0.233	0.171	0.005	0.027	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.384	0.025	0.122	0.002	0.027	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.187	0.019	0.042	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.664	0.100	2.165	0.012	0.130	0.063	0.195
Humboldt	Gasoline	MC	Motorcycles	16.606	5.564	0.646	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.098	0.137	0.076	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.677	0.224	0.162	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.820	0.273	0.225	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.483	0.037	0.361	0.002	0.036	0.024	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.203	0.019	0.102	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.671	0.134	2.414	0.010	0.130	0.066	0.170
Imperial	Gasoline	MC	Motorcycles	20.399	6.563	0.797	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.011	0.119	0.057	0.003	0.014	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.451	0.160	0.116	0.003	0.016	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.575	0.198	0.157	0.005	0.024	0.008	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.324	0.024	0.174	0.002	0.028	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.105	0.010	0.035	0.003	0.018	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.604	0.058	1.965	0.013	0.131	0.061	0.208
Inyo	Gasoline	MC	Motorcycles	14.127	5.157	0.567	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.031	0.119	0.062	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.418	0.174	0.113	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.776	0.245	0.197	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.443	0.031	0.236	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.188	0.018	0.040	0.003	0.021	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.657	0.111	2.142	0.011	0.135	0.066	0.189
Kern	Gasoline	MC	Motorcycles	17.040	5.733	0.664	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.932	0.107	0.056	0.003	0.015	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.180	0.134	0.089	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.442	0.195	0.151	0.005	0.025	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.266	0.018	0.133	0.002	0.025	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.111	0.011	0.036	0.003	0.019	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.682	0.071	2.128	0.013	0.133	0.061	0.211
Kings	Gasoline	MC	Motorcycles	15.314	5.179	0.618	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.864	0.100	0.053	0.003	0.013	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.191	0.139	0.098	0.003	0.015	0.005	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.373	0.200	0.144	0.005	0.022	0.008	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.279	0.018	0.126	0.002	0.022	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.132	0.014	0.038	0.003	0.018	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.700	0.074	2.196	0.013	0.135	0.062	0.210

Table 5-42. EMFAC County-Specific On-Road Vehicle EFs – 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.347	0.164	0.093	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.818	0.241	0.166	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.196	0.341	0.271	0.005	0.029	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.529	0.041	0.407	0.002	0.038	0.026	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.230	0.022	0.109	0.003	0.025	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.681	0.167	2.609	0.009	0.132	0.071	0.157
	Gasoline	MC	Motorcycles	20.991	7.077	0.804	0.002	0.019	0.008	0.008
Lassen	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.114	0.126	0.068	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.646	0.201	0.135	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.203	0.311	0.253	0.005	0.030	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.502	0.031	0.183	0.002	0.029	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.259	0.025	0.055	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.636	0.171	2.459	0.008	0.132	0.071	0.155
	Gasoline	MC	Motorcycles	19.775	6.175	0.739	0.002	0.020	0.009	0.009
Los Angeles	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.972	0.109	0.057	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.218	0.120	0.093	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.398	0.154	0.143	0.005	0.029	0.010	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.389	0.028	0.128	0.002	0.031	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.175	0.018	0.039	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.453	0.053	1.690	0.011	0.115	0.049	0.204
	Gasoline	MC	Motorcycles	13.832	4.221	0.540	0.002	0.019	0.008	0.009
Madera	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.869	0.104	0.054	0.003	0.014	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.214	0.159	0.102	0.003	0.015	0.005	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.478	0.222	0.172	0.005	0.024	0.008	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.238	0.015	0.124	0.002	0.021	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.096	0.009	0.032	0.003	0.017	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.694	0.085	2.214	0.013	0.133	0.062	0.203
	Gasoline	MC	Motorcycles	16.851	5.641	0.676	0.002	0.019	0.008	0.009
Marin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.869	0.104	0.054	0.003	0.014	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.214	0.159	0.102	0.003	0.015	0.005	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.478	0.222	0.172	0.005	0.024	0.008	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.238	0.015	0.124	0.002	0.021	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.096	0.009	0.032	0.003	0.017	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.694	0.085	2.214	0.013	0.133	0.062	0.203
	Gasoline	MC	Motorcycles	16.851	5.641	0.676	0.002	0.019	0.008	0.009
Mariposa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.272	0.146	0.083	0.003	0.019	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	2.138	0.284	0.195	0.004	0.021	0.008	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.819	0.409	0.364	0.005	0.033	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.572	0.042	0.355	0.002	0.038	0.025	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.264	0.026	0.047	0.003	0.026	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.726	0.202	3.051	0.008	0.137	0.076	0.136
	Gasoline	MC	Motorcycles	22.750	7.137	0.858	0.002	0.020	0.009	0.008
Mendocino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.070	0.130	0.071	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.602	0.208	0.146	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.850	0.275	0.223	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.482	0.038	0.366	0.002	0.037	0.025	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.223	0.020	0.142	0.003	0.025	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.672	0.111	2.297	0.011	0.132	0.064	0.186
	Gasoline	MC	Motorcycles	18.831	6.271	0.736	0.002	0.019	0.008	0.009
Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.957	0.103	0.054	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.394	0.158	0.112	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.626	0.216	0.181	0.005	0.026	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.262	0.017	0.136	0.002	0.025	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.125	0.013	0.041	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.719	0.075	2.265	0.013	0.136	0.062	0.210
	Gasoline	MC	Motorcycles	16.110	5.239	0.647	0.002	0.019	0.008	0.009

Table 5-42. EMFAC County-Specific On-Road Vehicle EFs – 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.203	0.126	0.073	0.003	0.019	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.738	0.191	0.144	0.004	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.372	0.315	0.277	0.005	0.033	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.738	0.050	0.250	0.003	0.038	0.024	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.370	0.036	0.051	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.665	0.165	2.721	0.009	0.134	0.071	0.157
	Gasoline	MC	Motorcycles	20.168	5.754	0.733	0.002	0.020	0.009	0.009
Mono	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.038	0.113	0.069	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.473	0.177	0.127	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.889	0.257	0.228	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.430	0.028	0.226	0.002	0.027	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.217	0.020	0.064	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.686	0.102	2.271	0.012	0.136	0.066	0.193
	Gasoline	MC	Motorcycles	19.382	5.548	0.726	0.002	0.019	0.008	0.009
Monterey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.995	0.128	0.068	0.003	0.016	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.345	0.170	0.121	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.590	0.225	0.204	0.005	0.027	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.324	0.024	0.162	0.002	0.028	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.134	0.012	0.042	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.534	0.088	1.965	0.011	0.117	0.055	0.192
	Gasoline	MC	Motorcycles	16.285	5.223	0.649	0.002	0.019	0.008	0.009
Napa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.927	0.106	0.058	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.222	0.143	0.096	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.533	0.211	0.177	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.332	0.025	0.164	0.002	0.030	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.145	0.013	0.042	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.558	0.101	2.094	0.011	0.120	0.058	0.188
	Gasoline	MC	Motorcycles	16.645	5.230	0.658	0.002	0.019	0.008	0.009
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.032	0.130	0.066	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.600	0.217	0.140	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.924	0.290	0.240	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.358	0.023	0.209	0.002	0.027	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.212	0.019	0.104	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.699	0.108	2.312	0.012	0.134	0.066	0.188
	Gasoline	MC	Motorcycles	21.570	7.230	0.825	0.002	0.019	0.008	0.009
Orange	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.881	0.098	0.051	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.091	0.115	0.079	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.266	0.144	0.124	0.004	0.029	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.302	0.019	0.090	0.002	0.025	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.151	0.015	0.034	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.355	0.048	1.445	0.010	0.102	0.044	0.200
	Gasoline	MC	Motorcycles	13.675	4.253	0.540	0.002	0.019	0.008	0.009
Placer	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.995	0.109	0.059	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.157	0.124	0.079	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.468	0.181	0.146	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.363	0.026	0.184	0.002	0.030	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.159	0.015	0.043	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.605	0.091	2.022	0.012	0.128	0.060	0.195
	Gasoline	MC	Motorcycles	17.220	5.552	0.669	0.002	0.019	0.008	0.009
Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.251	0.137	0.077	0.003	0.020	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.979	0.235	0.168	0.004	0.023	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.641	0.362	0.308	0.005	0.032	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.644	0.042	0.248	0.002	0.035	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.368	0.035	0.118	0.003	0.029	0.015	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.685	0.172	2.760	0.009	0.134	0.072	0.151
	Gasoline	MC	Motorcycles	22.010	6.791	0.792	0.002	0.020	0.009	0.009

Table 5-42. EMFAC County-Specific On-Road Vehicle EFs – 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.905	0.100	0.052	0.003	0.016	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.165	0.120	0.087	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.340	0.163	0.135	0.004	0.025	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.271	0.018	0.107	0.002	0.024	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.122	0.012	0.038	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.573	0.057	1.910	0.012	0.125	0.057	0.208
	Gasoline	MC	Motorcycles	14.426	4.892	0.572	0.002	0.019	0.008	0.009
Sacramento	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.053	0.129	0.061	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.245	0.147	0.088	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.518	0.202	0.157	0.005	0.029	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.327	0.020	0.146	0.002	0.026	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.156	0.015	0.039	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.508	0.088	2.375	0.011	0.117	0.055	0.189
San Benito	Gasoline	MC	Motorcycles	16.874	5.638	0.655	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.991	0.112	0.061	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.237	0.151	0.091	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.521	0.219	0.163	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.342	0.023	0.138	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.159	0.015	0.039	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.718	0.077	2.171	0.013	0.136	0.063	0.209
San Bernardino	Gasoline	MC	Motorcycles	18.029	6.154	0.691	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.897	0.100	0.053	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.185	0.134	0.093	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.392	0.175	0.149	0.004	0.025	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.274	0.018	0.122	0.002	0.025	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.113	0.011	0.035	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.573	0.057	1.941	0.012	0.125	0.057	0.207
San Diego	Gasoline	MC	Motorcycles	15.072	4.935	0.600	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.905	0.102	0.054	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.204	0.135	0.094	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.301	0.158	0.133	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.518	0.030	0.114	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.275	0.027	0.044	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.526	0.090	1.861	0.011	0.119	0.056	0.193
San Francisco	Gasoline	MC	Motorcycles	15.458	4.791	0.600	0.002	0.020	0.009	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.004	0.117	0.061	0.003	0.019	0.007	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.193	0.131	0.084	0.003	0.021	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.295	0.129	0.121	0.005	0.032	0.011	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.451	0.030	0.123	0.002	0.031	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.241	0.023	0.043	0.003	0.026	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.331	0.067	1.676	0.011	0.109	0.047	0.200
San Joaquin	Gasoline	MC	Motorcycles	17.122	5.370	0.639	0.002	0.020	0.009	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.990	0.109	0.056	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.229	0.135	0.088	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.514	0.203	0.152	0.005	0.027	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.370	0.022	0.123	0.002	0.026	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.184	0.019	0.037	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.623	0.077	2.070	0.012	0.126	0.058	0.204
San Luis Obispo	Gasoline	MC	Motorcycles	16.585	5.533	0.637	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.919	0.116	0.061	0.003	0.015	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.224	0.164	0.103	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.486	0.214	0.178	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.302	0.021	0.141	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.143	0.014	0.047	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.551	0.119	2.031	0.010	0.121	0.061	0.176

Table 5-42. EMFAC County-Specific On-Road Vehicle EFs – 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.965	0.133	0.063	0.003	0.016	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.045	0.116	0.076	0.003	0.017	0.006	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.213	0.128	0.108	0.004	0.026	0.009	0.041
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.256	0.016	0.109	0.002	0.023	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.117	0.012	0.031	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.314	0.068	1.280	0.010	0.100	0.043	0.198
	Gasoline	MC	Motorcycles	12.900	4.578	0.518	0.002	0.019	0.008	0.009
Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.956	0.130	0.065	0.003	0.016	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.291	0.171	0.117	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.520	0.219	0.188	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.268	0.018	0.139	0.002	0.024	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.129	0.012	0.044	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.493	0.092	1.945	0.011	0.113	0.054	0.187
	Gasoline	MC	Motorcycles	16.574	5.527	0.678	0.002	0.019	0.008	0.009
Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.934	0.109	0.058	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.162	0.133	0.090	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.332	0.161	0.135	0.005	0.027	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.281	0.019	0.118	0.002	0.026	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.129	0.013	0.033	0.003	0.022	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.492	0.073	1.776	0.011	0.116	0.052	0.201
	Gasoline	MC	Motorcycles	14.210	4.579	0.565	0.002	0.019	0.008	0.009
Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.146	0.138	0.076	0.003	0.019	0.007	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.535	0.191	0.131	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.724	0.234	0.207	0.005	0.030	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.445	0.036	0.240	0.002	0.037	0.024	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.185	0.017	0.048	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.480	0.102	2.102	0.010	0.113	0.055	0.180
	Gasoline	MC	Motorcycles	19.778	6.549	0.751	0.002	0.020	0.009	0.009
Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.964	0.114	0.058	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.329	0.164	0.105	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.650	0.240	0.185	0.005	0.027	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.308	0.020	0.157	0.002	0.025	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.141	0.014	0.053	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.691	0.100	2.271	0.012	0.134	0.064	0.195
	Gasoline	MC	Motorcycles	18.784	6.327	0.735	0.002	0.019	0.008	0.009
Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.166	0.125	0.072	0.003	0.019	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.692	0.191	0.141	0.004	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.239	0.288	0.252	0.005	0.031	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.697	0.049	0.249	0.002	0.038	0.025	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.345	0.033	0.049	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.666	0.169	2.519	0.009	0.135	0.072	0.159
	Gasoline	MC	Motorcycles	20.139	6.085	0.739	0.002	0.020	0.009	0.009
Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.147	0.131	0.072	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.685	0.204	0.143	0.004	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.180	0.299	0.252	0.005	0.030	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.624	0.043	0.305	0.002	0.035	0.023	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.299	0.029	0.079	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.749	0.096	2.337	0.013	0.140	0.067	0.200
	Gasoline	MC	Motorcycles	20.819	6.320	0.765	0.002	0.020	0.009	0.009
Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.883	0.107	0.058	0.003	0.015	0.005	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.076	0.131	0.087	0.003	0.016	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.314	0.185	0.148	0.005	0.025	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.295	0.021	0.158	0.002	0.026	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.107	0.010	0.032	0.003	0.019	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.641	0.085	2.087	0.012	0.130	0.060	0.202
	Gasoline	MC	Motorcycles	16.327	5.091	0.656	0.002	0.019	0.008	0.009

Table 5-42. EMFAC County-Specific On-Road Vehicle EFs – 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.022	0.120	0.064	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.379	0.167	0.113	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.623	0.222	0.185	0.005	0.031	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.354	0.025	0.199	0.002	0.031	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.156	0.015	0.047	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.507	0.104	1.991	0.010	0.114	0.056	0.186
	Gasoline	MC	Motorcycles	17.626	5.649	0.683	0.002	0.019	0.008	0.009
Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.973	0.110	0.055	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.296	0.152	0.096	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.548	0.221	0.161	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.257	0.016	0.116	0.002	0.026	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.124	0.012	0.034	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.616	0.088	2.092	0.012	0.126	0.059	0.199
	Gasoline	MC	Motorcycles	16.580	5.575	0.657	0.002	0.019	0.008	0.009
Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.018	0.115	0.059	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.312	0.148	0.098	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.601	0.228	0.167	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.337	0.023	0.135	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.158	0.016	0.038	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.647	0.082	2.048	0.012	0.129	0.060	0.203
	Gasoline	MC	Motorcycles	16.555	5.523	0.647	0.002	0.019	0.008	0.009
Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.979	0.110	0.060	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.377	0.162	0.112	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.666	0.239	0.186	0.005	0.027	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.406	0.026	0.162	0.002	0.027	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.204	0.020	0.061	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.722	0.095	2.249	0.012	0.137	0.065	0.200
	Gasoline	MC	Motorcycles	18.452	5.921	0.715	0.002	0.019	0.008	0.009
Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.214	0.128	0.073	0.003	0.019	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.829	0.202	0.155	0.004	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.093	0.276	0.233	0.005	0.031	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.787	0.056	0.294	0.003	0.041	0.028	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.400	0.039	0.074	0.003	0.027	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.716	0.110	2.407	0.012	0.137	0.067	0.189
	Gasoline	MC	Motorcycles	20.786	6.381	0.746	0.002	0.020	0.009	0.009
Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.927	0.103	0.054	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.348	0.154	0.111	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.569	0.219	0.172	0.005	0.025	0.009	0.037
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.238	0.015	0.125	0.002	0.024	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.110	0.011	0.035	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.624	0.090	2.129	0.012	0.127	0.060	0.197
	Gasoline	MC	Motorcycles	16.214	5.398	0.644	0.002	0.019	0.008	0.009
Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.203	0.149	0.077	0.003	0.018	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.898	0.251	0.169	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.573	0.371	0.320	0.005	0.032	0.012	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.519	0.037	0.264	0.002	0.034	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.266	0.026	0.121	0.003	0.026	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.671	0.186	2.656	0.008	0.134	0.074	0.149
	Gasoline	MC	Motorcycles	22.150	7.161	0.831	0.002	0.020	0.009	0.008
Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.879	0.108	0.056	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.154	0.135	0.097	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.349	0.184	0.154	0.004	0.027	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.289	0.019	0.124	0.002	0.025	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.135	0.013	0.038	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.402	0.059	1.715	0.009	0.108	0.048	0.191
	Gasoline	MC	Motorcycles	15.704	4.868	0.623	0.002	0.019	0.008	0.009

Table 5-42. EMFAC County-Specific On-Road Vehicle EFs – 2028 (cont.)

County	Fuel Type	Vehicle Type	Emission Factors (g/mi)							
			Criteria Pollutants and Ozone Precursors							
			CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃	
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.930	0.096	0.052	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.219	0.137	0.086	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.436	0.183	0.144	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.338	0.022	0.150	0.002	0.027	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.160	0.015	0.038	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.551	0.086	1.965	0.011	0.117	0.054	0.195
Yuba	Gasoline	MC	Motorcycles	17.385	5.682	0.673	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.958	0.103	0.056	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.343	0.162	0.105	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.731	0.246	0.197	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.318	0.021	0.144	0.002	0.026	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.147	0.014	0.059	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.584	0.141	2.316	0.010	0.128	0.065	0.164
	Gasoline	MC	Motorcycles	18.491	6.200	0.728	0.002	0.019	0.008	0.009

Table 5-43. EMFAC County-Specific On-Road Vehicle EFs – 2029

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.890	0.111	0.057	0.003	0.016	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.047	0.121	0.080	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.218	0.146	0.123	0.005	0.027	0.009	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.276	0.018	0.115	0.002	0.024	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.126	0.012	0.034	0.003	0.021	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.554	0.065	1.860	0.012	0.121	0.053	0.209
	Gasoline	MC	Motorcycles	14.348	4.611	0.575	0.002	0.019	0.008	0.009
Alpine	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.025	0.110	0.064	0.002	0.018	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.365	0.152	0.107	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.717	0.224	0.194	0.005	0.029	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.336	0.020	0.113	0.002	0.026	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.177	0.017	0.036	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.698	0.087	2.156	0.012	0.138	0.065	0.202
	Gasoline	MC	Motorcycles	17.661	5.212	0.673	0.002	0.019	0.008	0.009
Amador	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.088	0.130	0.072	0.003	0.016	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.809	0.224	0.171	0.003	0.018	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.043	0.342	0.248	0.005	0.030	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.329	0.023	0.324	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.125	0.011	0.067	0.002	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.618	0.158	2.572	0.009	0.128	0.068	0.159
	Gasoline	MC	Motorcycles	19.219	6.642	0.774	0.002	0.019	0.008	0.009
Butte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.979	0.115	0.058	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.401	0.175	0.110	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.646	0.246	0.180	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.327	0.021	0.149	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.151	0.015	0.048	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.642	0.096	2.120	0.012	0.131	0.062	0.196
	Gasoline	MC	Motorcycles	17.739	6.203	0.684	0.002	0.019	0.008	0.009
Calaveras	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.154	0.140	0.071	0.003	0.019	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.978	0.233	0.178	0.003	0.021	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.141	0.352	0.254	0.005	0.031	0.011	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.474	0.032	0.286	0.002	0.032	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.238	0.022	0.077	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.696	0.164	2.638	0.009	0.134	0.072	0.160
	Gasoline	MC	Motorcycles	20.594	7.075	0.788	0.002	0.019	0.008	0.008
Colusa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.902	0.104	0.054	0.003	0.016	0.005	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.170	0.135	0.089	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.432	0.201	0.151	0.005	0.026	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.315	0.020	0.142	0.002	0.024	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.144	0.014	0.035	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.665	0.087	2.059	0.012	0.131	0.062	0.201
	Gasoline	MC	Motorcycles	15.000	5.047	0.605	0.002	0.019	0.008	0.009
Contra Costa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.884	0.108	0.055	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.052	0.118	0.079	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.278	0.157	0.132	0.005	0.027	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.259	0.016	0.107	0.002	0.024	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.127	0.012	0.035	0.003	0.021	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.519	0.083	1.792	0.011	0.119	0.054	0.197
	Gasoline	MC	Motorcycles	15.007	4.799	0.597	0.002	0.019	0.008	0.009
Del Norte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.034	0.126	0.070	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.665	0.218	0.162	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.785	0.275	0.219	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.485	0.032	0.201	0.002	0.029	0.018	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.270	0.028	0.090	0.003	0.026	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.667	0.179	2.668	0.008	0.135	0.074	0.147
	Gasoline	MC	Motorcycles	20.053	6.460	0.767	0.002	0.019	0.008	0.009

Table 5-43. EMFAC County-Specific On-Road Vehicle EFs – 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.955	0.102	0.057	0.003	0.018	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.355	0.176	0.103	0.003	0.020	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.683	0.247	0.181	0.005	0.029	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.346	0.022	0.174	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.163	0.015	0.038	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.521	0.128	2.045	0.009	0.117	0.060	0.172
	Gasoline	MC	Motorcycles	19.219	6.636	0.731	0.002	0.019	0.008	0.009
Fresno	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.886	0.103	0.052	0.003	0.015	0.005	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.144	0.136	0.084	0.003	0.016	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.372	0.194	0.137	0.005	0.024	0.008	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.229	0.015	0.104	0.002	0.022	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.108	0.011	0.034	0.003	0.019	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.641	0.071	2.054	0.013	0.129	0.058	0.208
	Gasoline	MC	Motorcycles	15.218	5.381	0.611	0.002	0.019	0.008	0.009
Glenn	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.955	0.108	0.054	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.231	0.145	0.088	0.003	0.018	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.537	0.221	0.158	0.005	0.027	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.365	0.022	0.103	0.002	0.025	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.181	0.018	0.037	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.661	0.096	2.103	0.011	0.130	0.062	0.197
	Gasoline	MC	Motorcycles	16.306	5.561	0.633	0.002	0.019	0.008	0.009
Humboldt	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.043	0.129	0.071	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.578	0.213	0.149	0.003	0.018	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.735	0.264	0.210	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.448	0.032	0.320	0.002	0.032	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.194	0.018	0.090	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.662	0.128	2.334	0.010	0.130	0.065	0.173
	Gasoline	MC	Motorcycles	20.051	6.609	0.782	0.002	0.019	0.008	0.009
Imperial	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.972	0.113	0.055	0.003	0.014	0.005	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.364	0.149	0.106	0.003	0.016	0.005	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.482	0.186	0.144	0.005	0.024	0.008	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.287	0.020	0.146	0.002	0.025	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.103	0.010	0.033	0.003	0.018	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.603	0.057	1.916	0.012	0.131	0.061	0.210
	Gasoline	MC	Motorcycles	13.785	5.124	0.556	0.002	0.019	0.008	0.009
Inyo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.990	0.114	0.059	0.003	0.016	0.005	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.345	0.165	0.104	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.681	0.233	0.183	0.005	0.027	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.425	0.028	0.214	0.002	0.028	0.017	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.186	0.018	0.037	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.649	0.106	2.059	0.011	0.134	0.065	0.192
	Gasoline	MC	Motorcycles	16.684	5.732	0.651	0.002	0.019	0.008	0.009
Kern	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.896	0.102	0.053	0.003	0.015	0.005	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.123	0.126	0.083	0.003	0.016	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.376	0.186	0.140	0.005	0.025	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.243	0.015	0.112	0.002	0.023	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.107	0.011	0.033	0.003	0.019	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.681	0.069	2.087	0.013	0.134	0.061	0.211
	Gasoline	MC	Motorcycles	14.935	5.128	0.603	0.002	0.019	0.008	0.009
Kings	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.831	0.095	0.051	0.003	0.013	0.005	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.129	0.130	0.090	0.003	0.014	0.005	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.311	0.190	0.134	0.005	0.022	0.008	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.262	0.016	0.109	0.002	0.020	0.011	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.123	0.012	0.031	0.003	0.017	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.699	0.072	2.155	0.013	0.136	0.062	0.211
	Gasoline	MC	Motorcycles	14.760	5.120	0.604	0.002	0.019	0.008	0.009

Table 5-43. EMFAC County-Specific On-Road Vehicle EFs – 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.269	0.154	0.086	0.003	0.017	0.006	0.037
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.690	0.225	0.151	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.074	0.327	0.252	0.005	0.029	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.510	0.038	0.377	0.002	0.036	0.024	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.217	0.020	0.093	0.003	0.023	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.667	0.160	2.517	0.009	0.130	0.069	0.160
	Gasoline	MC	Motorcycles	20.647	7.118	0.789	0.002	0.019	0.008	0.009
Lassen	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.068	0.121	0.065	0.003	0.018	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.557	0.191	0.125	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.074	0.300	0.237	0.005	0.030	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.487	0.029	0.162	0.002	0.028	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.258	0.025	0.052	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.617	0.163	2.340	0.008	0.130	0.069	0.159
	Gasoline	MC	Motorcycles	19.436	6.202	0.725	0.002	0.020	0.009	0.009
Los Angeles	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.937	0.105	0.054	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.165	0.114	0.087	0.003	0.020	0.007	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.329	0.144	0.131	0.004	0.029	0.010	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.359	0.024	0.105	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.173	0.017	0.037	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.449	0.052	1.627	0.011	0.115	0.049	0.205
	Gasoline	MC	Motorcycles	13.685	4.213	0.533	0.002	0.019	0.008	0.009
Madera	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.834	0.099	0.051	0.003	0.014	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.145	0.148	0.093	0.003	0.015	0.005	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.406	0.211	0.158	0.005	0.023	0.008	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.213	0.013	0.102	0.002	0.020	0.010	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.095	0.009	0.030	0.003	0.017	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.692	0.082	2.169	0.012	0.133	0.062	0.204
	Gasoline	MC	Motorcycles	16.334	5.581	0.658	0.002	0.019	0.008	0.009
Marin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.834	0.099	0.051	0.003	0.014	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.145	0.148	0.093	0.003	0.015	0.005	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.406	0.211	0.158	0.005	0.023	0.008	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.213	0.013	0.102	0.002	0.020	0.010	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.095	0.009	0.030	0.003	0.017	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.692	0.082	2.169	0.012	0.133	0.062	0.204
	Gasoline	MC	Motorcycles	16.334	5.581	0.658	0.002	0.019	0.008	0.009
Mariposa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.199	0.137	0.077	0.003	0.018	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.998	0.268	0.179	0.004	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.681	0.395	0.344	0.005	0.033	0.012	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.547	0.037	0.326	0.002	0.034	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.263	0.025	0.045	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.708	0.195	2.944	0.009	0.136	0.074	0.140
	Gasoline	MC	Motorcycles	22.406	7.159	0.844	0.002	0.019	0.008	0.008
Mendocino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.020	0.124	0.067	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.508	0.197	0.134	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.761	0.263	0.207	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.453	0.034	0.329	0.002	0.034	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.215	0.019	0.128	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.666	0.106	2.229	0.011	0.131	0.064	0.188
	Gasoline	MC	Motorcycles	18.508	6.296	0.722	0.002	0.019	0.008	0.009
Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.917	0.098	0.051	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.302	0.145	0.101	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.534	0.203	0.165	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.244	0.014	0.113	0.002	0.023	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.119	0.012	0.035	0.002	0.021	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.718	0.073	2.220	0.013	0.136	0.062	0.210
	Gasoline	MC	Motorcycles	15.702	5.154	0.630	0.002	0.019	0.008	0.009

Table 5-43. EMFAC County-Specific On-Road Vehicle EFs – 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.151	0.120	0.069	0.003	0.019	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.637	0.179	0.132	0.004	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.220	0.298	0.257	0.005	0.032	0.012	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.714	0.045	0.220	0.003	0.034	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.369	0.035	0.049	0.003	0.025	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.648	0.157	2.610	0.009	0.133	0.070	0.161
	Gasoline	MC	Motorcycles	19.762	5.716	0.721	0.002	0.020	0.009	0.009
Mono	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.992	0.107	0.065	0.003	0.016	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.398	0.168	0.117	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.802	0.245	0.212	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.414	0.025	0.205	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.214	0.020	0.059	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.681	0.098	2.207	0.012	0.136	0.065	0.196
	Gasoline	MC	Motorcycles	18.909	5.517	0.709	0.002	0.019	0.008	0.009
Monterey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.951	0.122	0.064	0.003	0.016	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.272	0.160	0.112	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.515	0.214	0.188	0.005	0.026	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.295	0.020	0.137	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.131	0.012	0.039	0.003	0.021	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.529	0.085	1.896	0.011	0.117	0.055	0.194
	Gasoline	MC	Motorcycles	15.956	5.210	0.636	0.002	0.019	0.008	0.009
Napa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.888	0.100	0.055	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.165	0.136	0.089	0.003	0.019	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.458	0.200	0.164	0.005	0.029	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.303	0.021	0.139	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.144	0.013	0.040	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.552	0.097	2.023	0.011	0.119	0.057	0.190
	Gasoline	MC	Motorcycles	16.263	5.169	0.642	0.002	0.019	0.008	0.009
Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.982	0.121	0.062	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.520	0.210	0.130	0.003	0.019	0.007	0.037
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.851	0.280	0.226	0.005	0.029	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.344	0.021	0.187	0.002	0.026	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.206	0.018	0.095	0.003	0.024	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.692	0.103	2.243	0.012	0.134	0.065	0.191
	Gasoline	MC	Motorcycles	21.248	7.298	0.810	0.002	0.019	0.008	0.009
Orange	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.848	0.094	0.049	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.049	0.110	0.074	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.217	0.136	0.115	0.004	0.028	0.010	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.286	0.017	0.077	0.002	0.024	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.150	0.015	0.032	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.352	0.047	1.388	0.010	0.102	0.044	0.202
	Gasoline	MC	Motorcycles	13.491	4.233	0.532	0.002	0.019	0.008	0.009
Placer	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.953	0.103	0.056	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.110	0.118	0.074	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.401	0.171	0.136	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.343	0.023	0.163	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.158	0.015	0.040	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.601	0.088	1.961	0.012	0.128	0.060	0.198
	Gasoline	MC	Motorcycles	16.847	5.494	0.654	0.002	0.019	0.008	0.009
Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.189	0.129	0.072	0.003	0.020	0.007	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.854	0.222	0.154	0.004	0.022	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.506	0.349	0.289	0.005	0.032	0.012	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.635	0.040	0.227	0.002	0.033	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.364	0.034	0.109	0.003	0.028	0.014	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.667	0.164	2.647	0.009	0.133	0.070	0.155
	Gasoline	MC	Motorcycles	21.654	6.812	0.778	0.002	0.020	0.009	0.009

Table 5-43. EMFAC County-Specific On-Road Vehicle EFs – 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.873	0.097	0.050	0.003	0.016	0.005	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.111	0.113	0.081	0.003	0.017	0.006	0.040
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.283	0.154	0.125	0.004	0.025	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.254	0.016	0.093	0.002	0.023	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.117	0.012	0.034	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.573	0.056	1.865	0.012	0.126	0.057	0.209
	Gasoline	MC	Motorcycles	14.126	4.870	0.561	0.002	0.019	0.008	0.009
Sacramento	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.014	0.124	0.059	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.190	0.140	0.082	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.446	0.191	0.145	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.313	0.019	0.129	0.002	0.025	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.156	0.015	0.037	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.502	0.084	2.263	0.011	0.116	0.054	0.191
	Gasoline	MC	Motorcycles	16.542	5.603	0.640	0.002	0.019	0.008	0.009
San Benito	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.956	0.108	0.058	0.003	0.018	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.175	0.141	0.084	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.457	0.210	0.151	0.005	0.027	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.337	0.022	0.127	0.002	0.028	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.159	0.015	0.037	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.718	0.075	2.135	0.013	0.136	0.063	0.210
	Gasoline	MC	Motorcycles	17.799	6.192	0.679	0.002	0.019	0.008	0.009
San Bernardino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.864	0.096	0.051	0.003	0.016	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.126	0.125	0.086	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.323	0.164	0.137	0.004	0.025	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.254	0.016	0.105	0.002	0.023	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.110	0.011	0.032	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.572	0.056	1.891	0.012	0.125	0.057	0.208
	Gasoline	MC	Motorcycles	14.722	4.903	0.588	0.002	0.019	0.008	0.009
San Diego	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.870	0.097	0.052	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.150	0.128	0.088	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.243	0.148	0.122	0.005	0.027	0.010	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.506	0.028	0.102	0.002	0.025	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.273	0.026	0.042	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.519	0.087	1.781	0.011	0.118	0.055	0.195
	Gasoline	MC	Motorcycles	15.218	4.775	0.590	0.002	0.020	0.009	0.009
San Francisco	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.964	0.111	0.058	0.003	0.019	0.007	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.154	0.126	0.080	0.003	0.021	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.244	0.121	0.112	0.005	0.031	0.011	0.041
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.430	0.026	0.106	0.002	0.028	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.240	0.023	0.042	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.324	0.064	1.570	0.011	0.108	0.046	0.201
	Gasoline	MC	Motorcycles	16.902	5.388	0.630	0.002	0.020	0.009	0.009
San Joaquin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.953	0.104	0.053	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.170	0.126	0.081	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.443	0.191	0.140	0.005	0.027	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.357	0.020	0.106	0.002	0.025	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.185	0.018	0.036	0.003	0.023	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.622	0.074	2.021	0.012	0.126	0.058	0.205
	Gasoline	MC	Motorcycles	16.233	5.484	0.623	0.002	0.019	0.008	0.009
San Luis Obispo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.878	0.110	0.058	0.003	0.015	0.005	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.166	0.156	0.096	0.003	0.017	0.006	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.417	0.204	0.165	0.005	0.026	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.292	0.019	0.129	0.002	0.025	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.137	0.013	0.041	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.542	0.113	1.954	0.010	0.120	0.059	0.179
	Gasoline	MC	Motorcycles	18.276	6.124	0.721	0.002	0.019	0.008	0.009

Table 5-43. EMFAC County-Specific On-Road Vehicle EFs – 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.938	0.130	0.061	0.003	0.016	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.022	0.113	0.074	0.003	0.017	0.006	0.041
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.190	0.123	0.104	0.004	0.026	0.009	0.041
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.242	0.014	0.094	0.002	0.022	0.011	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.116	0.012	0.030	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.311	0.066	1.216	0.009	0.099	0.043	0.199
	Gasoline	MC	Motorcycles	12.827	4.624	0.512	0.002	0.020	0.008	0.009
Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.911	0.123	0.061	0.003	0.016	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.223	0.161	0.108	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.439	0.206	0.173	0.005	0.026	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.251	0.015	0.119	0.002	0.023	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.125	0.011	0.039	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.487	0.088	1.874	0.011	0.113	0.053	0.189
	Gasoline	MC	Motorcycles	16.250	5.515	0.663	0.002	0.019	0.008	0.009
Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.898	0.104	0.055	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.117	0.127	0.085	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.278	0.151	0.125	0.005	0.027	0.009	0.040
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.264	0.017	0.101	0.002	0.024	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.128	0.012	0.032	0.003	0.021	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.490	0.071	1.715	0.011	0.115	0.051	0.203
	Gasoline	MC	Motorcycles	13.998	4.559	0.555	0.002	0.019	0.008	0.009
Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.093	0.131	0.071	0.003	0.019	0.007	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.455	0.182	0.120	0.003	0.021	0.008	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.637	0.221	0.191	0.005	0.030	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.420	0.031	0.213	0.002	0.034	0.021	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.182	0.017	0.044	0.003	0.025	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.469	0.097	2.007	0.010	0.111	0.054	0.183
	Gasoline	MC	Motorcycles	19.510	6.589	0.738	0.002	0.020	0.009	0.009
Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.923	0.108	0.055	0.003	0.016	0.005	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.260	0.154	0.097	0.003	0.017	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.571	0.229	0.171	0.005	0.027	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.294	0.018	0.139	0.002	0.024	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.133	0.013	0.045	0.003	0.020	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.688	0.096	2.212	0.012	0.134	0.064	0.197
	Gasoline	MC	Motorcycles	18.366	6.320	0.718	0.002	0.019	0.008	0.009
Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.123	0.120	0.068	0.003	0.019	0.007	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.599	0.180	0.130	0.004	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.140	0.276	0.235	0.005	0.031	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.688	0.047	0.232	0.002	0.037	0.024	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.345	0.033	0.047	0.003	0.025	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.645	0.160	2.400	0.009	0.133	0.070	0.163
	Gasoline	MC	Motorcycles	19.773	6.085	0.726	0.002	0.020	0.009	0.009
Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.097	0.124	0.068	0.003	0.018	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.591	0.193	0.132	0.004	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.069	0.286	0.235	0.005	0.029	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.605	0.039	0.274	0.002	0.032	0.020	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.294	0.028	0.071	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.744	0.092	2.274	0.013	0.140	0.066	0.202
	Gasoline	MC	Motorcycles	20.364	6.307	0.750	0.002	0.020	0.009	0.009
Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.846	0.102	0.055	0.003	0.015	0.005	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.025	0.124	0.081	0.003	0.016	0.005	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.255	0.174	0.137	0.005	0.025	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.276	0.019	0.140	0.002	0.025	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.104	0.010	0.030	0.003	0.018	0.008	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.638	0.082	2.033	0.012	0.130	0.060	0.203
	Gasoline	MC	Motorcycles	15.904	5.043	0.641	0.002	0.019	0.008	0.009

Table 5-43. EMFAC County-Specific On-Road Vehicle EFs – 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.978	0.114	0.061	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.309	0.158	0.104	0.003	0.020	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.545	0.210	0.172	0.005	0.031	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.331	0.022	0.175	0.002	0.029	0.016	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.150	0.014	0.042	0.003	0.024	0.011	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.498	0.099	1.919	0.010	0.114	0.054	0.189
	Gasoline	MC	Motorcycles	17.272	5.619	0.668	0.002	0.019	0.008	0.009
Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.935	0.105	0.053	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.228	0.142	0.088	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.477	0.210	0.149	0.005	0.028	0.010	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.242	0.014	0.099	0.002	0.024	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.122	0.012	0.031	0.002	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.613	0.085	2.039	0.012	0.126	0.059	0.200
	Gasoline	MC	Motorcycles	16.218	5.521	0.640	0.002	0.019	0.008	0.009
Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.976	0.109	0.056	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.242	0.138	0.090	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.524	0.216	0.154	0.005	0.027	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.318	0.020	0.114	0.002	0.026	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.153	0.015	0.034	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.646	0.079	2.004	0.012	0.129	0.060	0.204
	Gasoline	MC	Motorcycles	16.206	5.470	0.632	0.002	0.019	0.008	0.009
Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.938	0.105	0.057	0.003	0.016	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.300	0.151	0.103	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.590	0.227	0.173	0.005	0.027	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.394	0.024	0.145	0.002	0.026	0.015	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.194	0.019	0.051	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.720	0.092	2.202	0.012	0.137	0.064	0.202
	Gasoline	MC	Motorcycles	18.009	5.878	0.698	0.002	0.019	0.008	0.009
Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.160	0.121	0.069	0.003	0.019	0.007	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.720	0.190	0.142	0.004	0.022	0.008	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.971	0.262	0.215	0.005	0.031	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.751	0.048	0.256	0.003	0.035	0.022	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.398	0.039	0.070	0.003	0.026	0.013	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.709	0.105	2.331	0.012	0.137	0.066	0.192
	Gasoline	MC	Motorcycles	20.372	6.364	0.733	0.002	0.020	0.009	0.009
Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.892	0.099	0.051	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.267	0.143	0.101	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.492	0.208	0.159	0.005	0.025	0.009	0.038
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.221	0.013	0.106	0.002	0.023	0.012	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.102	0.010	0.030	0.003	0.021	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.620	0.086	2.070	0.012	0.127	0.059	0.198
	Gasoline	MC	Motorcycles	15.763	5.327	0.627	0.002	0.019	0.008	0.009
Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	1.134	0.139	0.071	0.003	0.018	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.781	0.238	0.155	0.003	0.021	0.007	0.038
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	2.399	0.354	0.298	0.005	0.032	0.011	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.496	0.033	0.233	0.002	0.032	0.019	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.259	0.025	0.108	0.003	0.025	0.012	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.654	0.179	2.555	0.008	0.132	0.072	0.152
	Gasoline	MC	Motorcycles	21.783	7.185	0.815	0.002	0.019	0.008	0.008
Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.843	0.103	0.053	0.003	0.016	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.100	0.127	0.090	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.284	0.173	0.142	0.004	0.027	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.272	0.017	0.108	0.002	0.024	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.133	0.013	0.036	0.003	0.021	0.009	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.399	0.057	1.647	0.009	0.107	0.047	0.193
	Gasoline	MC	Motorcycles	15.372	4.833	0.611	0.002	0.019	0.008	0.009

Table 5-43. EMFAC County-Specific On-Road Vehicle EFs – 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)						
				Criteria Pollutants and Ozone Precursors						
				CO	ROG	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.892	0.091	0.049	0.003	0.017	0.006	0.039
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.164	0.130	0.080	0.003	0.019	0.007	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.381	0.175	0.134	0.005	0.028	0.010	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.325	0.020	0.132	0.002	0.025	0.014	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.158	0.015	0.036	0.003	0.022	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.549	0.082	1.913	0.011	0.117	0.054	0.197
Yuba	Gasoline	MC	Motorcycles	17.045	5.660	0.658	0.002	0.019	0.008	0.009
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.918	0.097	0.052	0.003	0.017	0.006	0.038
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	1.258	0.150	0.094	0.003	0.018	0.006	0.039
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	1.645	0.233	0.183	0.005	0.026	0.009	0.039
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.304	0.019	0.124	0.002	0.025	0.013	0.003
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.146	0.014	0.053	0.003	0.021	0.010	0.003
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.569	0.135	2.204	0.010	0.127	0.064	0.168
	Gasoline	MC	Motorcycles	18.126	6.181	0.712	0.002	0.019	0.008	0.009

Notes for Table 5-39 through Table 5-43.

The values in the NH₃ column reflect statewide values as calculated by MOVES5 for the state of California due to EMFAC lacking NH₃ as a pollutant output.

Table 5-44. EMFAC County-Specific On-Road Vehicle GHG EFs - 2025

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	280.297	282.906
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	342.034	345.173
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	506.574	510.837
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	235.802	245.685
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	306.707	319.533
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.214	1359.516	1416.369
Alpine	Gasoline	MC	Motorcycles	0.231	0.043	206.637	224.486
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	272.503	275.305
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.013	338.065	341.906
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.019	518.225	523.853
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	222.315	231.636
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	292.300	304.528
Amador	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.212	1344.156	1400.409
	Gasoline	MC	Motorcycles	0.286	0.048	211.004	231.654
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	276.178	279.222
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.021	0.017	352.063	357.261
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.028	0.022	542.421	548.943
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	216.764	225.852
Butte	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	287.229	299.250
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.148	939.019	978.469
	Gasoline	MC	Motorcycles	0.292	0.052	209.278	231.266
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	287.487	290.200
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	357.180	361.176
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.018	522.918	528.276
Calaveras	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	237.643	247.605
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	310.321	323.309
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.192	1220.879	1272.004
	Gasoline	MC	Motorcycles	0.282	0.048	214.969	235.623
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	289.030	292.057
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.023	0.018	370.115	375.472
Colusa	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.029	0.022	549.391	556.002
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	238.100	248.094
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	312.665	325.758
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.151	958.902	999.189
	Gasoline	MC	Motorcycles	0.330	0.052	221.085	244.202
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	287.596	290.069
Contra Costa	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	352.741	356.182
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	518.202	522.984
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.986	242.752
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.784	313.365
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.202	1284.013	1337.752
	Gasoline	MC	Motorcycles	0.241	0.044	208.866	227.383
Del Norte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	279.823	282.373
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	342.899	346.007
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	497.918	502.353
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.491	243.269
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	311.237	324.250
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.189	1200.868	1251.131
	Gasoline	MC	Motorcycles	0.241	0.044	207.418	225.844
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	299.644	302.682
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.023	0.017	377.594	382.698
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.020	548.795	554.818
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.040	252.014	262.592
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.052	329.964	343.789
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.010	0.135	856.982	893.035
	Gasoline	MC	Motorcycles	0.328	0.052	228.469	251.332

Table 5-44. EMFAC County-Specific On-Road Vehicle GHG EFs - 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	283.567	286.175
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.012	355.145	358.819
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.017	523.181	528.438
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	236.100	245.996
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	311.684	324.719
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.151	959.720	999.993
	Gasoline	MC	Motorcycles	0.311	0.050	220.801	242.885
Fresno	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	284.996	287.427
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	350.757	354.096
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.015	504.339	508.925
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	225.903	235.368
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	291.106	303.280
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.220	1393.269	1451.543
	Gasoline	MC	Motorcycles	0.243	0.045	207.964	226.727
Glenn	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	292.956	295.476
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.011	357.613	361.027
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.016	522.085	527.032
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	235.598	245.473
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	306.380	319.202
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.194	1229.985	1281.485
	Gasoline	MC	Motorcycles	0.266	0.046	214.387	233.947
Humboldt	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	287.512	290.592
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.021	0.016	361.067	365.857
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.020	532.451	538.334
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	245.179	255.479
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	313.723	326.860
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.171	1085.729	1131.259
	Gasoline	MC	Motorcycles	0.320	0.052	221.446	244.303
Imperial	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	301.852	304.324
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.013	369.166	372.969
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.016	496.604	501.275
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	245.361	255.651
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	308.295	321.186
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.215	1366.244	1423.368
	Gasoline	MC	Motorcycles	0.218	0.042	205.984	223.151
Inyo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	298.555	301.195
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	368.831	372.569
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.018	544.114	549.487
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	245.656	255.965
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	315.230	328.419
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.185	1175.259	1224.493
	Gasoline	MC	Motorcycles	0.273	0.047	218.342	238.324
Kern	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	285.672	288.135
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	348.236	351.506
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	514.121	518.721
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.526	238.100
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.438	306.749
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.228	1449.854	1510.487
	Gasoline	MC	Motorcycles	0.237	0.045	206.805	225.260
Kings	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	294.061	296.442
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.012	361.165	364.616
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	514.934	519.380
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	237.297	247.240
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	306.494	319.315
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.229	1452.065	1512.793
	Gasoline	MC	Motorcycles	0.240	0.045	212.415	230.954

Table 5-44. EMFAC County-Specific On-Road Vehicle GHG EFs - 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.015	0.011	299.530	303.004
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.022	0.017	373.099	378.114
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.029	0.022	548.763	555.500
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.003	0.039	250.191	260.710
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	319.409	332.785
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.148	937.344	976.725
Lassen	Gasoline	MC	Motorcycles	0.332	0.053	224.649	247.912
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.009	298.959	301.793
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.014	373.989	378.241
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.028	0.021	554.151	560.426
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	249.606	260.074
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.052	329.619	343.420
Los Angeles	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.137	869.313	905.861
	Gasoline	MC	Motorcycles	0.325	0.050	228.293	250.614
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	290.479	292.951
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	352.298	355.551
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	489.490	493.968
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	249.083	259.535
Madera	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	316.254	329.485
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.188	1192.952	1242.834
	Gasoline	MC	Motorcycles	0.221	0.040	207.987	224.824
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	288.899	291.328
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	357.030	360.623
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	525.266	530.309
Marin	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.669	242.412
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.217	312.767
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.215	1366.829	1424.016
	Gasoline	MC	Motorcycles	0.260	0.047	213.313	233.153
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	288.899	291.328
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	357.030	360.623
Mariposa	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	525.266	530.309
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.669	242.412
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.217	312.767
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.215	1366.829	1424.016
	Gasoline	MC	Motorcycles	0.260	0.047	213.313	233.153
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.015	0.011	297.746	300.982
Mendocino	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.025	0.018	382.068	387.533
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.036	0.027	578.573	586.716
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	250.581	261.107
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.051	326.699	340.386
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.010	0.137	870.329	906.958
	Gasoline	MC	Motorcycles	0.371	0.055	231.191	256.195
Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	283.272	286.193
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.015	355.541	360.010
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.020	529.483	535.377
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	244.020	254.276
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	316.497	329.748
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.189	1201.722	1252.061
Merced	Gasoline	MC	Motorcycles	0.297	0.050	216.811	238.291
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	282.235	284.686
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.013	351.920	355.833
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.018	507.283	512.545
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	221.247	230.513
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	286.859	298.860
Merced	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.232	1473.030	1534.635
	Gasoline	MC	Motorcycles	0.251	0.046	206.032	225.343

Table 5-44. EMFAC County-Specific On-Road Vehicle GHG EFs - 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.014	0.010	320.126	323.102	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.021	0.015	398.955	403.434	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.031	0.022	589.729	596.541	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.003	0.044	279.990	291.753	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.058	365.071	380.371	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.148	940.747	980.270	
	Gasoline	MC	Motorcycles	0.356	0.050	242.616	265.836	
	Mono	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.009	286.599	289.463
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.013	359.676	363.772
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.026	0.020	537.504	543.489
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	243.278	253.481
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.051	323.651	337.192
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.201	1274.459	1327.818	
	Gasoline	MC	Motorcycles	0.312	0.049	224.435	246.286	
	Monterey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	283.654	286.468
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	353.975	357.997
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.019	522.804	528.325
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	242.216	252.371
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	318.579	331.900
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.186	1178.083	1227.400	
	Gasoline	MC	Motorcycles	0.254	0.046	210.981	230.238	
	Napa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	275.273	277.807
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	343.805	347.215
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	525.733	530.801
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	234.645	244.489
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	311.968	325.013
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.184	1167.870	1216.779	
	Gasoline	MC	Motorcycles	0.260	0.046	208.608	228.175	
	Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.009	280.348	283.180
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.014	360.277	364.620
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.020	533.682	539.809
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.597	240.263
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	315.877	329.096
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.194	1230.187	1281.713	
	Gasoline	MC	Motorcycles	0.333	0.053	222.366	245.861	
	Orange	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	280.315	282.649
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	342.361	345.294
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.014	484.214	488.253
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	235.159	245.009
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	310.340	323.317
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.002	0.166	1054.637	1098.738	
	Gasoline	MC	Motorcycles	0.213	0.040	203.176	219.807	
	Placer	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	285.766	288.341
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	348.519	351.532
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	513.893	518.381
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	236.971	246.908
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	308.539	321.442
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.196	1242.330	1294.333	
	Gasoline	MC	Motorcycles	0.274	0.047	214.798	234.901	
	Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.014	0.010	305.113	308.200
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.024	0.016	390.361	395.354
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.033	0.024	569.447	576.625
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.042	264.407	275.515
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.055	350.300	364.975
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.146	924.887	963.759	
	Gasoline	MC	Motorcycles	0.376	0.052	238.606	262.991	

Table 5-44. EMFAC County-Specific On-Road Vehicle GHG EFs - 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	286.877	289.207	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.011	349.274	352.423	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	477.454	481.711	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	236.470	246.373	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	305.129	317.888	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.213	1348.841	1405.235	
	Gasoline	MC	Motorcycles	0.223	0.042	205.030	222.415	
	Sacramento	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	291.987	294.621
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	357.233	360.507
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	534.238	538.995
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	234.526	244.351
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	307.298	320.150
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.192	1218.858	1269.879	
	Gasoline	MC	Motorcycles	0.269	0.046	214.664	234.436	
	San Benito	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	276.147	278.737
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.011	340.092	343.516
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	498.241	503.077
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	229.254	238.861
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	301.577	314.190
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.226	1436.127	1496.195	
	Gasoline	MC	Motorcycles	0.279	0.047	213.005	233.382	
	San Bernardino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	285.388	287.757
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	348.183	351.499
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	479.202	483.763
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	238.691	248.689
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	304.968	317.719
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.211	1337.527	1393.450	
	Gasoline	MC	Motorcycles	0.233	0.043	206.601	224.649	
	San Diego	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	298.955	301.385
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	370.110	373.428
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	531.652	535.884
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.040	252.993	263.601
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.053	334.136	348.124
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.183	1161.953	1210.598	
	Gasoline	MC	Motorcycles	0.260	0.043	219.914	238.648	
	San Francisco	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	294.584	297.196
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.010	362.788	365.909
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	546.984	550.972
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.040	256.030	266.767
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.054	343.012	357.365
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.196	1241.373	1293.297	
	Gasoline	MC	Motorcycles	0.278	0.045	223.607	243.340	
	San Joaquin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	288.314	290.802
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	351.008	354.294
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	504.806	509.516
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.871	243.670
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	301.068	313.663
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.212	1348.278	1404.681	
	Gasoline	MC	Motorcycles	0.267	0.045	212.840	232.367	
	San Luis Obispo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	283.872	286.512
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	354.128	357.700
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	523.367	528.419
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	239.455	249.486
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.051	320.934	334.357
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.161	1020.633	1063.423	
	Gasoline	MC	Motorcycles	0.292	0.050	219.449	240.892	

Table 5-44. EMFAC County-Specific On-Road Vehicle GHG EFs - 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	275.569	278.205	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	329.500	332.395	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	481.708	485.311	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	229.732	239.351	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	296.371	308.762	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.165	1046.349	1090.133	
	Gasoline	MC	Motorcycles	0.200	0.039	202.304	218.222	
	Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	275.343	278.137
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	342.026	345.940
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.018	518.625	523.992
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.579	232.945
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	298.825	311.322
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.178	1128.459	1175.711	
	Gasoline	MC	Motorcycles	0.258	0.047	207.945	227.670	
	Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	278.775	281.316
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	341.872	345.112
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	496.082	500.388
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	229.948	239.582
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	301.891	314.515
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.196	1246.227	1298.363	
	Gasoline	MC	Motorcycles	0.219	0.042	203.463	220.622	
	Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	287.567	290.628
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.014	357.850	362.022
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.023	0.019	526.479	532.153
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	250.367	260.880
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.052	327.360	341.058
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.171	1086.355	1131.866	
	Gasoline	MC	Motorcycles	0.314	0.050	221.872	243.990	
	Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	286.033	288.594
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	352.908	356.515
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.017	524.348	529.532
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.752	243.548
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.340	312.902
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.203	1288.288	1342.223	
	Gasoline	MC	Motorcycles	0.290	0.050	216.882	238.212	
	Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	310.096	313.015
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.021	0.015	388.485	392.910
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.029	0.021	564.353	570.729
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.003	0.043	271.076	282.465
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.055	347.700	362.262
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.141	892.480	929.997	
	Gasoline	MC	Motorcycles	0.352	0.050	238.367	261.479	
	Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	306.698	309.642
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.021	0.015	383.212	387.660
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.029	0.021	558.772	565.130
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.042	267.108	278.329
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.054	342.459	356.804
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.215	1366.685	1423.888	
	Gasoline	MC	Motorcycles	0.354	0.051	236.975	260.519	
	Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	285.428	287.952
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	349.525	352.742
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	516.433	520.960
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	238.957	248.969
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	310.364	323.338
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.209	1327.522	1383.069	
	Gasoline	MC	Motorcycles	0.253	0.046	211.496	230.834	

Table 5-44. EMFAC County-Specific On-Road Vehicle GHG EFs - 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	280.029	282.769	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	346.555	350.309	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.018	536.134	541.366	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	239.356	249.393	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	316.970	330.231	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.171	1084.828	1130.276	
	Gasoline	MC	Motorcycles	0.276	0.048	212.306	232.637	
	Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	276.140	278.616
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	340.614	344.107
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	501.553	506.401
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	218.898	228.067
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	285.300	297.233
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.201	1272.715	1325.982	
	Gasoline	MC	Motorcycles	0.258	0.046	204.486	224.020	
	Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	291.589	294.187
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	355.788	359.307
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	515.772	520.669
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	234.666	244.498
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	303.941	316.656
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.206	1305.893	1360.535	
	Gasoline	MC	Motorcycles	0.263	0.046	213.721	233.230	
	Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	291.592	294.206
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	359.864	363.653
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.017	525.339	530.567
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	241.579	251.707
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	313.608	326.736
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.210	1335.167	1391.049	
	Gasoline	MC	Motorcycles	0.300	0.049	221.146	242.546	
	Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.014	0.010	326.095	329.069
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.022	0.015	407.355	412.030
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.027	0.020	583.711	589.852
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.003	0.046	290.050	302.255
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.059	372.463	388.076
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.198	1259.732	1312.493	
	Gasoline	MC	Motorcycles	0.368	0.050	246.904	270.580	
	Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	279.968	282.385
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.013	345.173	348.951
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	495.350	500.359
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.890	238.476
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	295.510	307.869
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.201	1277.330	1330.792	
	Gasoline	MC	Motorcycles	0.248	0.046	204.843	223.973	
	Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.014	0.010	296.605	299.737
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.023	0.016	374.573	379.493
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.033	0.025	562.946	570.371
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	247.619	258.016
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.051	321.762	335.236
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.010	0.137	867.708	904.205	
	Gasoline	MC	Motorcycles	0.362	0.054	230.281	254.752	
	Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	278.545	281.021
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	342.934	346.271
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.016	476.111	480.766
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	237.414	247.358
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	315.163	328.342
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.160	1013.050	1055.434	
	Gasoline	MC	Motorcycles	0.245	0.045	208.385	227.039	

Table 5-44. EMFAC County-Specific On-Road Vehicle GHG EFs - 2025 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	287.890	290.246
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	354.603	357.805
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	515.826	520.209
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	235.777	245.656
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	309.513	322.458
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.191	1212.981	1263.749
Yuba	Gasoline	MC	Motorcycles	0.274	0.047	215.268	235.373
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	286.621	289.138
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	352.865	356.613
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.018	508.764	514.218
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.619	238.200
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	291.453	303.645
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.157	993.767	1035.468
	Gasoline	MC	Motorcycles	0.286	0.049	214.795	235.891

Table 5-45. EMFAC County-Specific On-Road Vehicle GHG EFs - 2026

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	274.428	276.933
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	334.434	337.428
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	493.842	497.830
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.273	243.047
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.246	312.801
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.211	1342.000	1398.120
Alpine	Gasoline	MC	Motorcycles	0.225	0.042	205.675	223.151
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	266.765	269.459
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	330.637	334.281
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.018	506.430	511.742
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	219.685	228.894
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	286.733	298.729
Amador	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.210	1333.011	1388.793
	Gasoline	MC	Motorcycles	0.279	0.047	210.276	230.537
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.010	269.934	272.797
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.016	345.408	350.297
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.026	0.020	532.324	538.480
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	215.655	224.696
Butte	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	279.605	291.301
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.149	947.913	987.724
	Gasoline	MC	Motorcycles	0.287	0.051	208.726	230.393
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	281.014	283.586
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	349.044	352.791
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.017	511.171	516.217
Calaveras	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	235.199	245.056
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	302.611	315.272
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.193	1222.911	1274.113
	Gasoline	MC	Motorcycles	0.277	0.047	214.321	234.635
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	282.576	285.437
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.022	0.017	363.230	368.276
Colusa	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.027	0.021	539.421	545.687
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	236.057	245.963
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	307.890	320.782
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.152	967.334	1007.963
	Gasoline	MC	Motorcycles	0.327	0.052	220.950	243.847
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	281.503	283.874
Contra Costa	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	344.457	347.689
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	507.970	512.477
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.491	240.149
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.626	306.949
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.201	1276.019	1329.420
	Gasoline	MC	Motorcycles	0.235	0.044	208.020	226.181
Del Norte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	273.857	276.301
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	335.356	338.315
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	487.470	491.636
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	231.314	240.998
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	305.374	318.141
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.188	1190.638	1240.468
Del Norte	Gasoline	MC	Motorcycles	0.234	0.043	206.440	224.480
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.010	293.186	296.061
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.021	0.016	370.015	374.798
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.019	538.590	544.283
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	248.934	259.377
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.051	323.693	337.253
Del Norte	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.136	862.856	899.145
	Gasoline	MC	Motorcycles	0.322	0.051	227.854	250.393

Table 5-45. EMFAC County-Specific On-Road Vehicle GHG EFs - 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	276.957	279.446	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	348.179	351.684	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.017	512.710	517.699	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.766	243.562	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	306.276	319.085	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.152	966.992	1007.559	
	Gasoline	MC	Motorcycles	0.305	0.050	220.154	241.868	
	Fresno	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	279.079	281.422
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	342.579	345.719
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	494.114	498.418
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	222.164	231.467
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	284.872	296.784
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.218	1380.937	1438.693	
	Gasoline	MC	Motorcycles	0.237	0.044	206.976	225.327	
	Glenn	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	286.710	289.119
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	349.179	352.384
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	511.200	515.858
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.392	243.173
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	299.976	312.529
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.193	1227.287	1278.668	
	Gasoline	MC	Motorcycles	0.260	0.045	213.606	232.808	
	Humboldt	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.010	281.518	284.435
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.015	354.270	358.787
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.023	0.019	522.323	527.880
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	241.956	252.115
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	307.867	320.756
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.172	1092.345	1138.142	
	Gasoline	MC	Motorcycles	0.315	0.052	220.908	243.439	
	Imperial	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	296.029	298.405
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.012	360.771	364.327
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.015	486.420	490.798
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	241.794	251.929
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	301.730	314.345
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.213	1352.246	1408.783	
	Gasoline	MC	Motorcycles	0.213	0.041	205.294	222.153	
	Inyo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	292.304	294.835
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	360.788	364.322
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.017	532.377	537.443
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	242.801	252.986
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	308.747	321.664
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.185	1171.963	1221.052	
	Gasoline	MC	Motorcycles	0.267	0.046	217.582	237.210	
	Kern	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	279.577	281.944
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	340.157	343.236
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	503.453	507.781
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.053	235.520
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	288.412	300.470
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.226	1434.366	1494.349	
	Gasoline	MC	Motorcycles	0.231	0.044	205.857	223.926	
	Kings	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	287.954	290.245
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	352.698	355.936
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	504.802	508.991
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	234.064	243.867
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.175	312.730
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.226	1437.378	1497.491	
	Gasoline	MC	Motorcycles	0.234	0.044	211.398	229.555	

Table 5-45. EMFAC County-Specific On-Road Vehicle GHG EFs - 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.014	0.011	293.472	296.745	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.015	365.319	369.982	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.027	0.021	537.771	544.100	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	246.994	257.372	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	313.262	326.377	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.149	944.525	984.196	
	Gasoline	MC	Motorcycles	0.326	0.052	224.100	247.041	
	Lassen	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	292.537	295.246
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.013	366.217	370.230
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.026	0.020	543.117	549.079
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	247.492	257.870
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.051	323.577	337.124
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.138	875.751	912.558	
	Gasoline	MC	Motorcycles	0.318	0.049	227.595	249.556	
	Los Angeles	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	284.575	286.957
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	344.089	347.170
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	477.504	481.677
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	245.422	255.716
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	309.548	322.498
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.185	1175.176	1224.314	
	Gasoline	MC	Motorcycles	0.216	0.040	207.358	223.935	
	Madera	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	282.887	285.214
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	348.645	352.001
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	515.094	519.816
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.081	239.712
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.060	306.353
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.214	1357.583	1414.381	
	Gasoline	MC	Motorcycles	0.253	0.047	212.222	231.639	
	Marin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	282.887	285.214
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	348.645	352.001
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	515.094	519.816
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.081	239.712
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.060	306.353
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.214	1357.583	1414.381	
	Gasoline	MC	Motorcycles	0.253	0.047	212.222	231.639	
	Mariposa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	290.953	293.985
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.024	0.017	374.844	379.967
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.034	0.026	568.214	575.946
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	248.262	258.688
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.051	321.100	334.551
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.010	0.138	877.497	914.415	
	Gasoline	MC	Motorcycles	0.365	0.055	230.607	255.288	
	Mendocino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	277.290	280.066
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.014	348.411	352.621
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.023	0.018	518.451	523.996
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	240.645	250.754
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	310.877	323.891
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.190	1204.173	1254.607	
	Gasoline	MC	Motorcycles	0.291	0.049	216.229	237.364	
	Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	276.556	278.895
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	343.336	346.953
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	497.764	502.663
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	218.825	227.988
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	280.784	292.529
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.230	1457.512	1518.466	
	Gasoline	MC	Motorcycles	0.244	0.045	204.912	223.779	

Table 5-45. EMFAC County-Specific On-Road Vehicle GHG EFs - 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.009	313.278	316.116	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.014	390.302	394.507	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.029	0.021	577.632	584.040	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.003	0.044	277.407	289.060	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.056	357.826	372.822	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.149	946.688	986.449	
	Gasoline	MC	Motorcycles	0.348	0.049	241.628	264.449	
	Mono	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	280.282	283.017
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.013	351.967	355.843
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.019	525.729	531.371
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	240.907	251.007
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	318.070	331.378
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.200	1267.555	1320.620	
	Gasoline	MC	Motorcycles	0.305	0.049	223.408	244.835	
	Monterey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	277.842	280.527
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.013	346.387	350.163
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	512.543	517.743
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	239.750	249.798
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	313.107	326.199
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.185	1175.151	1224.340	
	Gasoline	MC	Motorcycles	0.248	0.045	210.103	228.989	
	Napa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	269.339	271.762
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	336.683	339.919
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	514.641	519.418
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	231.967	241.694
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	307.374	320.226
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.184	1165.343	1214.140	
	Gasoline	MC	Motorcycles	0.253	0.046	207.724	226.906	
	Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	273.761	276.435
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.014	354.078	358.210
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.019	522.869	528.671
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.245	237.810
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	311.880	324.930
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.194	1231.720	1283.302	
	Gasoline	MC	Motorcycles	0.329	0.053	222.137	245.368	
	Orange	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	274.419	276.664
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	334.831	337.633
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	473.038	476.843
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.915	242.669
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	304.919	317.670
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.002	0.164	1043.471	1087.103	
	Gasoline	MC	Motorcycles	0.209	0.040	202.669	219.042	
	Placer	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	279.443	281.912
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	340.818	343.689
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	502.448	506.686
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	234.380	244.205
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	302.576	315.230
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.195	1237.240	1289.026	
	Gasoline	MC	Motorcycles	0.268	0.046	213.922	233.640	
	Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	298.220	301.141
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.022	0.015	382.631	387.317
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.031	0.022	558.441	565.246
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.041	262.296	273.313
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.054	344.094	358.509
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.147	932.641	971.826	
	Gasoline	MC	Motorcycles	0.369	0.052	238.070	262.110	

Table 5-45. EMFAC County-Specific On-Road Vehicle GHG EFs - 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	280.763	283.015	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	340.789	343.766	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.014	466.190	470.183	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.710	243.496	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	298.419	310.897	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.210	1335.983	1391.839	
	Gasoline	MC	Motorcycles	0.218	0.041	204.102	221.172	
	Sacramento	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	285.918	288.448
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	349.292	352.399
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	520.848	525.312
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.022	241.740
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.950	313.537
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.191	1211.160	1261.853	
	Gasoline	MC	Motorcycles	0.263	0.045	213.878	233.281	
	San Benito	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	270.363	272.855
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	332.022	335.226
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.015	488.425	492.981
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.098	237.657
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	295.796	308.168
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.224	1423.419	1482.953	
	Gasoline	MC	Motorcycles	0.275	0.047	212.803	232.932	
	San Bernardino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	279.664	281.946
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	339.994	343.116
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	468.041	472.303
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	236.003	245.886
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	298.589	311.072
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.209	1323.961	1379.315	
	Gasoline	MC	Motorcycles	0.228	0.043	205.786	223.495	
	San Diego	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	292.206	294.542
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	361.373	364.524
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	519.277	523.236
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	250.171	260.660
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.052	326.983	340.671
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.181	1150.284	1198.436	
	Gasoline	MC	Motorcycles	0.254	0.043	218.946	237.376	
	San Francisco	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	288.013	290.527
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	355.320	358.331
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	530.619	534.374
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.040	253.735	264.374
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.053	337.121	351.227
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.193	1222.116	1273.234	
	Gasoline	MC	Motorcycles	0.273	0.045	223.177	242.660	
	San Joaquin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	282.448	284.838
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	342.568	345.653
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	494.112	498.515
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	231.235	240.921
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.683	307.010
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.211	1339.051	1395.065	
	Gasoline	MC	Motorcycles	0.260	0.045	211.960	231.094	
	San Luis Obispo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	277.723	280.246
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	346.835	350.219
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	512.019	516.786
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	238.050	248.021
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	316.232	329.457
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.162	1025.495	1068.481	
	Gasoline	MC	Motorcycles	0.286	0.049	218.581	239.630	

Table 5-45. EMFAC County-Specific On-Road Vehicle GHG EFs - 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	270.163	272.733	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.009	322.461	325.275	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	471.157	474.621	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	227.071	236.576	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	289.767	301.882	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.162	1031.060	1074.202	
	Gasoline	MC	Motorcycles	0.196	0.038	201.901	217.585	
	Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	269.040	271.690
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	334.102	337.778
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	505.695	510.709
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	220.638	229.877
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	293.496	305.769
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.177	1125.646	1172.774	
	Gasoline	MC	Motorcycles	0.249	0.046	206.707	225.983	
	Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	272.916	275.359
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	334.372	337.468
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	484.963	489.004
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	227.110	236.622
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	295.792	308.161
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.194	1230.179	1281.641	
	Gasoline	MC	Motorcycles	0.214	0.041	202.806	219.667	
	Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	281.687	284.600
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	350.657	354.596
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.018	514.142	519.469
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	247.711	258.108
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.051	321.807	335.271
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.171	1086.559	1132.071	
	Gasoline	MC	Motorcycles	0.309	0.050	221.499	243.328	
	Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	279.801	282.244
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	344.927	348.324
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	512.693	517.572
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.821	240.490
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.161	306.464
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.203	1285.435	1339.244	
	Gasoline	MC	Motorcycles	0.284	0.049	216.170	237.132	
	Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	303.527	306.323
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.014	380.148	384.314
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.027	0.020	552.028	558.028
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.042	268.535	279.815
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.054	341.486	355.788
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.141	895.936	933.585	
	Gasoline	MC	Motorcycles	0.344	0.049	237.549	260.269	
	Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.009	300.047	302.853
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.014	375.150	379.342
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.027	0.020	546.825	552.812
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.042	264.385	275.488
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.053	334.848	348.873
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.214	1358.124	1414.962	
	Gasoline	MC	Motorcycles	0.346	0.051	235.998	259.105	
	Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	279.590	282.008
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	341.573	344.612
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	505.318	509.565
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	236.330	246.230
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	304.309	317.029
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.207	1315.733	1370.784	
	Gasoline	MC	Motorcycles	0.246	0.045	210.455	229.405	

Table 5-45. EMFAC County-Specific On-Road Vehicle GHG EFs - 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	274.207	276.821	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	339.213	342.771	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	524.354	529.287	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	237.379	247.330	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	311.330	324.353	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.171	1087.020	1132.553	
	Gasoline	MC	Motorcycles	0.270	0.047	211.526	231.481	
	Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	270.401	272.776
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	332.568	335.840
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	491.526	496.081
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	216.215	225.270
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	279.601	291.295
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.200	1269.341	1322.462	
	Gasoline	MC	Motorcycles	0.251	0.046	203.684	222.830	
	Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	285.269	287.752
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	347.144	350.437
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.015	505.331	509.949
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.499	242.240
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	297.900	310.361
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.205	1299.846	1354.231	
	Gasoline	MC	Motorcycles	0.257	0.045	212.935	232.081	
	Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	285.292	287.785
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	351.513	355.065
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.016	514.176	519.096
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	238.788	248.796
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	307.111	319.965
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.210	1329.961	1385.621	
	Gasoline	MC	Motorcycles	0.293	0.048	220.228	241.217	
	Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.009	319.185	322.021
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.014	398.497	402.883
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.019	571.157	576.912
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.003	0.045	286.145	298.180
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.057	364.755	380.044
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.198	1258.620	1311.325	
	Gasoline	MC	Motorcycles	0.360	0.050	246.025	269.309	
	Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	274.339	276.661
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.012	336.878	340.396
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.016	486.467	491.169
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	225.551	234.995
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	288.914	300.996
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.200	1271.914	1325.145	
	Gasoline	MC	Motorcycles	0.241	0.045	203.782	222.499	
	Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	289.759	292.698
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.021	0.015	367.325	371.954
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.031	0.023	552.582	559.631
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	245.513	255.820
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	314.454	327.620
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.138	874.499	911.271	
	Gasoline	MC	Motorcycles	0.356	0.053	229.680	253.797	
	Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	272.580	274.955
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	335.080	338.241
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	465.440	469.808
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	235.222	245.072
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	309.773	322.725
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.159	1008.389	1050.575	
	Gasoline	MC	Motorcycles	0.239	0.044	207.498	225.803	

Table 5-45. EMFAC County-Specific On-Road Vehicle GHG EFs - 2026 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	281.597	283.853
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	346.715	349.746
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	504.989	509.143
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	234.025	243.830
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	303.998	316.712
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.190	1209.135	1259.738
Yuba	Gasoline	MC	Motorcycles	0.268	0.046	214.558	234.326
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	280.495	282.886
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	344.127	347.594
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.017	498.301	503.423
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.148	235.623
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	285.203	297.133
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.157	999.259	1041.180
	Gasoline	MC	Motorcycles	0.281	0.049	214.234	235.017

Table 5-46. EMFAC County-Specific On-Road Vehicle GHG EFs - 2027

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	268.882	271.295
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	327.406	330.272
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	481.855	485.606
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.212	239.854
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	293.555	305.828
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.209	1323.521	1378.868
Alpine	Gasoline	MC	Motorcycles	0.219	0.042	204.794	221.935
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	261.433	264.036
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.011	323.809	327.285
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.017	495.054	500.090
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	216.719	225.800
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	281.205	292.969
Amador	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.208	1320.196	1375.438
	Gasoline	MC	Motorcycles	0.271	0.046	209.425	229.274
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	264.026	266.732
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.015	338.940	343.544
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.019	522.294	528.124
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	214.033	223.005
Butte	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.043	274.059	285.520
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.151	956.453	996.611
	Gasoline	MC	Motorcycles	0.282	0.051	208.204	229.557
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	274.982	277.439
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	341.382	344.908
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	499.623	504.385
Calaveras	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.330	242.062
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.737	307.064
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.193	1222.633	1273.817
	Gasoline	MC	Motorcycles	0.271	0.047	213.654	233.633
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	276.525	279.237
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.016	356.546	361.305
Colusa	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.026	0.020	528.835	534.757
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	233.723	243.527
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	301.780	314.412
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.154	975.195	1016.143
	Gasoline	MC	Motorcycles	0.322	0.051	220.643	243.276
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	275.788	278.072
Contra Costa	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	336.872	339.923
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	497.916	502.182
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	227.758	237.299
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	288.466	300.530
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.200	1266.644	1319.649
	Gasoline	MC	Motorcycles	0.230	0.043	207.179	225.001
Del Norte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	268.196	270.548
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	328.326	331.155
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	477.369	481.297
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.889	238.470
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	299.497	312.018
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.186	1179.691	1229.060
	Gasoline	MC	Motorcycles	0.228	0.043	205.507	223.190
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	286.986	289.722
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.015	362.778	367.274
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.018	528.307	533.696
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	246.456	256.792
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	316.390	329.639
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.137	868.635	905.154
	Gasoline	MC	Motorcycles	0.317	0.050	227.247	249.472

Table 5-46. EMFAC County-Specific On-Road Vehicle GHG EFs - 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	271.161	273.548	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.011	341.901	345.256	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	502.792	507.537	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	231.454	241.150	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	301.436	314.041	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.153	973.444	1014.271	
	Gasoline	MC	Motorcycles	0.299	0.049	219.629	240.973	
	Fresno	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	273.279	275.544
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	334.830	337.800
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	483.785	487.842
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	218.511	227.659
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	278.514	290.158
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.215	1365.660	1422.775	
	Gasoline	MC	Motorcycles	0.230	0.043	205.848	223.788	
	Glenn	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	280.826	283.140
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	341.442	344.469
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	500.441	504.834
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	231.148	240.833
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	293.527	305.808
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.193	1222.864	1274.055	
	Gasoline	MC	Motorcycles	0.254	0.044	212.857	231.725	
	Humboldt	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	275.730	278.508
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.014	347.703	351.975
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.018	512.172	517.434
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	238.883	248.908
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	299.721	312.259
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.173	1097.660	1143.671	
	Gasoline	MC	Motorcycles	0.309	0.051	220.220	242.399	
	Imperial	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	290.997	293.288
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	353.669	357.014
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.014	477.121	481.240
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	239.657	249.697
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	297.175	309.597
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.211	1337.867	1393.802	
	Gasoline	MC	Motorcycles	0.209	0.041	204.890	221.473	
	Inyo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	286.449	288.885
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	353.316	356.670
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	521.001	525.793
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	239.650	249.700
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	302.375	315.024
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.184	1167.089	1215.967	
	Gasoline	MC	Motorcycles	0.262	0.045	216.820	236.106	
	Kern	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	273.893	276.174
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	332.849	335.765
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	493.024	497.111
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	222.883	232.214
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	282.221	294.018
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.223	1415.903	1475.113	
	Gasoline	MC	Motorcycles	0.225	0.043	204.917	222.609	
	Kings	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	282.142	284.354
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	344.962	348.020
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.013	494.729	498.688
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.212	239.851
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	293.363	305.630
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.224	1419.637	1479.006	
	Gasoline	MC	Motorcycles	0.228	0.043	210.333	228.113	

Table 5-46. EMFAC County-Specific On-Road Vehicle GHG EFs - 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.013	0.010	287.614	290.708	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.014	357.814	362.161	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.020	526.787	532.746	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	243.609	253.839	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	306.171	318.984	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.150	951.089	991.025	
	Gasoline	MC	Motorcycles	0.320	0.051	223.392	245.979	
	Lassen	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	286.524	289.126
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	358.937	362.742
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.019	532.363	538.049
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	245.206	255.486
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	317.386	330.670
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.139	882.018	919.076	
	Gasoline	MC	Motorcycles	0.313	0.049	226.979	248.610	
	Los Angeles	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	279.166	281.469
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	336.841	339.776
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	466.449	470.362
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	241.494	251.617
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	303.598	316.297
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.183	1159.154	1207.621	
	Gasoline	MC	Motorcycles	0.213	0.039	206.825	223.181	
	Madera	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	277.231	279.470
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	340.945	344.097
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	505.040	509.475
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	227.274	236.785
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.045	288.047	300.086
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.212	1344.812	1401.073	
	Gasoline	MC	Motorcycles	0.246	0.046	211.156	230.153	
	Marin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	277.231	279.470
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	340.945	344.097
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	505.040	509.475
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	227.274	236.785
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.045	288.047	300.086
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.212	1344.812	1401.073	
	Gasoline	MC	Motorcycles	0.246	0.046	211.156	230.153	
	Mariposa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	284.550	287.404
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.022	0.016	367.750	372.565
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.032	0.024	557.712	565.065
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	245.909	256.233
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	312.247	325.319
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.010	0.139	884.834	922.049	
	Gasoline	MC	Motorcycles	0.360	0.054	230.159	254.546	
	Mendocino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	271.658	274.311
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	341.643	345.622
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.017	507.552	512.786
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	237.122	247.077
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	304.058	316.781
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.190	1204.522	1254.963	
	Gasoline	MC	Motorcycles	0.286	0.048	215.673	236.483	
	Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.008	269.620	271.861
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	333.538	336.896
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	486.169	490.742
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	215.074	224.078
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.043	272.173	283.554
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.227	1438.916	1499.091	
	Gasoline	MC	Motorcycles	0.236	0.044	202.804	221.185	

Table 5-46. EMFAC County-Specific On-Road Vehicle GHG EFs - 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	306.838	309.557
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.013	382.226	386.190
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.027	0.020	565.975	572.056
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.043	274.514	286.043
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.055	349.782	364.436
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.150	952.600	992.597
Mono	Gasoline	MC	Motorcycles	0.338	0.049	240.372	262.739
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	274.471	277.098
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.012	344.757	348.440
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.023	0.018	514.324	519.661
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	238.286	248.275
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	312.359	325.427
Monterey	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.198	1258.865	1311.561
	Gasoline	MC	Motorcycles	0.297	0.048	222.388	243.403
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	272.288	274.862
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	339.212	342.774
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.017	502.389	507.302
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	237.351	247.295
Napa	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	307.265	320.110
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.185	1171.090	1220.104
	Gasoline	MC	Motorcycles	0.242	0.044	209.308	227.863
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	263.763	266.091
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	329.893	332.974
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	503.618	508.133
Nevada	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.691	238.276
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	302.504	315.151
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.183	1161.674	1210.312
	Gasoline	MC	Motorcycles	0.246	0.045	206.712	225.494
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	267.666	270.209
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	347.990	351.929
Orange	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.023	0.018	512.109	517.623
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.063	235.534
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	306.920	319.760
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.194	1230.828	1282.364
	Gasoline	MC	Motorcycles	0.325	0.052	221.756	244.691
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	269.332	271.501
Placer	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	328.505	331.196
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.012	462.737	466.340
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.612	240.267
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	299.997	312.542
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.002	0.163	1033.187	1076.387
	Gasoline	MC	Motorcycles	0.206	0.039	202.479	218.640
Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	273.894	276.269
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	334.056	336.805
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.013	491.823	495.838
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	231.892	241.610
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	297.280	309.712
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.194	1230.435	1281.931
Plumas	Gasoline	MC	Motorcycles	0.262	0.045	213.315	232.686
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	291.867	294.650
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.021	0.014	375.260	379.675
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.030	0.021	547.739	554.230
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.041	258.340	269.184
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.053	337.978	352.136
Plumas	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.148	939.489	978.949
	Gasoline	MC	Motorcycles	0.363	0.051	237.487	261.180

Table 5-46. EMFAC County-Specific On-Road Vehicle GHG EFs - 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	275.472	277.655
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.010	333.660	336.488
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	456.169	459.931
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	231.060	240.732
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	292.100	304.312
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.208	1320.411	1375.614
Sacramento	Gasoline	MC	Motorcycles	0.213	0.041	203.483	220.265
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	280.456	282.896
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	342.271	345.233
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	508.382	512.589
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	229.808	239.432
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	295.337	307.688
San Benito	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.190	1202.950	1253.294
	Gasoline	MC	Motorcycles	0.257	0.045	213.377	232.450
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	264.918	267.323
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	324.632	327.654
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.014	478.448	482.745
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	225.160	234.591
San Bernardino	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	289.664	301.778
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.222	1408.422	1467.327
	Gasoline	MC	Motorcycles	0.271	0.046	212.490	232.356
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	274.407	276.612
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	332.811	335.767
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.014	457.668	461.667
San Diego	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.143	242.903
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	292.872	305.115
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.206	1309.967	1364.735
	Gasoline	MC	Motorcycles	0.223	0.042	205.157	222.558
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	286.681	288.938
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	354.339	357.348
San Francisco	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	508.636	512.363
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.039	248.305	258.713
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.051	321.349	334.800
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.179	1138.554	1186.212
	Gasoline	MC	Motorcycles	0.251	0.042	218.714	236.933
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	281.895	284.321
San Joaquin	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	348.386	351.300
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.012	515.858	519.420
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.040	250.717	261.227
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.052	330.805	344.646
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.190	1204.825	1255.218
	Gasoline	MC	Motorcycles	0.269	0.044	222.740	241.984
San Luis Obispo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	278.117	280.427
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	336.421	339.342
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	485.290	489.428
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	229.816	239.441
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	290.912	303.082
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.209	1326.562	1382.051
San Luis Obispo	Gasoline	MC	Motorcycles	0.256	0.044	212.091	230.938
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	271.893	274.314
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	339.899	343.118
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	500.887	505.397
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	235.864	245.741
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	310.657	323.646
San Luis Obispo	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.162	1029.266	1072.401
	Gasoline	MC	Motorcycles	0.279	0.048	217.605	238.255

Table 5-46. EMFAC County-Specific On-Road Vehicle GHG EFs - 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	265.425	267.939	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.009	316.408	319.159	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.011	461.779	465.137	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	224.260	233.645	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	283.617	295.474	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.160	1017.250	1059.812	
San Mateo	Gasoline	MC	Motorcycles	0.193	0.038	201.613	217.110	
	Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	263.534	266.066
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.012	327.237	330.710
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.016	493.681	498.387
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	218.734	227.891
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	288.641	300.708
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.177	1122.407	1169.393	
Santa Barbara	Gasoline	MC	Motorcycles	0.243	0.046	205.911	224.834	
	Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	267.396	269.754
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	327.469	330.439
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	474.494	478.306
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	224.156	233.542
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	289.458	301.560
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.191	1214.360	1265.158	
Santa Clara	Gasoline	MC	Motorcycles	0.209	0.040	202.173	218.761	
	Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	276.060	278.847
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	343.766	347.501
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	502.144	507.160
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	245.126	255.410
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	315.232	328.416
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.171	1086.076	1131.560	
Santa Cruz	Gasoline	MC	Motorcycles	0.304	0.049	221.092	242.635	
	Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	273.960	276.304
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	337.477	340.691
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.015	501.225	505.827
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.092	237.643
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	287.893	299.932
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.202	1280.195	1333.779	
Shasta	Gasoline	MC	Motorcycles	0.279	0.048	215.419	236.016	
	Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	297.398	300.088
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.013	372.360	376.296
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.019	539.992	545.652
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.042	265.672	276.830
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.053	335.245	349.285
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.142	899.532	937.319	
Sierra	Gasoline	MC	Motorcycles	0.336	0.049	236.751	259.094	
	Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	293.824	296.514
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.013	367.576	371.539
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.019	535.342	541.011
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.041	260.487	271.420
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.051	326.807	340.491
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.212	1347.062	1403.432	
Siskiyou	Gasoline	MC	Motorcycles	0.338	0.050	234.965	257.636	
	Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	273.954	276.278
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	334.164	337.047
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	494.457	498.454
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.632	243.416
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.047	298.216	310.681
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.205	1302.154	1356.634	
Solano	Gasoline	MC	Motorcycles	0.240	0.045	209.423	227.999	

Table 5-46. EMFAC County-Specific On-Road Vehicle GHG EFs - 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	268.703	271.211	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	332.287	335.671	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.016	512.629	517.289	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	234.538	244.366	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	304.436	317.166	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.171	1088.154	1133.727	
	Gasoline	MC	Motorcycles	0.264	0.046	210.721	230.311	
	Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	264.690	266.971
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	324.833	327.908
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	481.175	485.461
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.033	212.465	221.358
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.043	272.796	284.203
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.199	1261.611	1314.404	
	Gasoline	MC	Motorcycles	0.242	0.045	202.464	221.123	
	Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	279.676	282.063
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	339.664	342.765
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	495.478	499.847
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.509	240.165
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	292.263	304.487
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.203	1291.605	1345.641	
	Gasoline	MC	Motorcycles	0.252	0.044	212.426	231.247	
	Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	279.370	281.760
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	343.784	347.130
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.015	503.128	507.768
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	236.414	246.320
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.534	313.109
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.208	1322.274	1377.609	
	Gasoline	MC	Motorcycles	0.286	0.047	219.259	239.840	
	Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	312.716	315.435
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.014	390.236	394.369
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.018	559.011	564.431
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.003	0.044	280.657	292.451
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.056	356.335	371.268
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.198	1255.463	1308.030	
	Gasoline	MC	Motorcycles	0.353	0.049	245.164	268.074	
	Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.008	269.066	271.305
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	329.376	332.669
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	477.666	482.093
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	221.832	231.116
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	281.935	293.722
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.199	1262.962	1315.813	
	Gasoline	MC	Motorcycles	0.234	0.044	202.680	220.967	
	Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	283.338	286.118
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.014	360.283	364.647
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.029	0.022	541.999	548.694
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	242.281	252.448
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	308.231	321.136
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.139	881.226	918.269	
	Gasoline	MC	Motorcycles	0.350	0.053	229.114	252.887	
	Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	267.443	269.729
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	328.473	331.484
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	455.849	459.963
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.750	243.536
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	305.639	318.417
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.158	1003.584	1045.564	
	Gasoline	MC	Motorcycles	0.234	0.043	206.978	224.973	

Table 5-46. EMFAC County-Specific On-Road Vehicle GHG EFs - 2027 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	276.007	278.179
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	339.770	342.654
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	494.821	498.770
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	231.750	241.456
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	298.786	311.281
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.190	1204.756	1255.171
Yuba	Gasoline	MC	Motorcycles	0.263	0.046	214.069	233.520
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	274.634	276.920
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	335.944	339.169
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	487.840	492.657
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.141	232.485
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	278.829	290.489
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.158	1003.405	1045.490
Yuba	Gasoline	MC	Motorcycles	0.276	0.048	213.602	234.060

Table 5-47. EMFAC County-Specific On-Road Vehicle GHG EFs - 2028

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	263.759	266.093
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	320.996	323.753
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.012	470.877	474.431
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.585	236.072
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	287.896	299.932
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.206	1304.828	1359.392
Alpine	Gasoline	MC	Motorcycles	0.214	0.041	204.006	220.849
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	256.532	259.053
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.011	317.582	320.915
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	484.315	489.106
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	213.479	222.422
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	276.218	287.772
Amador	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.206	1305.365	1359.983
	Gasoline	MC	Motorcycles	0.265	0.046	208.775	228.284
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.009	258.581	261.147
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.015	332.742	337.081
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.018	512.149	517.683
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.033	211.188	220.038
Butte	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.042	268.001	279.207
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.152	964.396	1004.876
	Gasoline	MC	Motorcycles	0.277	0.050	207.552	228.559
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	269.516	271.879
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	334.311	337.647
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	488.610	493.121
Calaveras	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	229.740	239.362
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	288.230	300.284
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.192	1220.828	1271.930
	Gasoline	MC	Motorcycles	0.265	0.046	212.929	232.565
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	271.050	273.637
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.015	350.127	354.612
Colusa	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.019	519.109	524.742
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.036	231.243	240.941
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	297.370	309.817
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.155	982.740	1023.993
	Gasoline	MC	Motorcycles	0.318	0.051	220.363	242.736
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	270.561	272.772
Contra Costa	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	330.016	332.914
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	488.237	492.291
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	224.762	234.175
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	283.050	294.886
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.198	1256.080	1308.640
	Gasoline	MC	Motorcycles	0.225	0.042	206.440	223.958
Del Norte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	262.974	265.247
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	321.868	324.586
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	467.904	471.630
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.130	235.594
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	293.925	306.213
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.184	1167.744	1216.610
	Gasoline	MC	Motorcycles	0.222	0.042	204.671	222.033
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	281.211	283.830
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.014	355.911	360.146
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.017	518.398	523.523
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.039	244.764	255.028
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	310.916	323.935
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.138	874.463	911.215
	Gasoline	MC	Motorcycles	0.312	0.050	226.690	248.616

Table 5-47. EMFAC County-Specific On-Road Vehicle GHG EFs - 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	265.150	267.451
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	335.012	338.230
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.015	492.591	497.123
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.368	237.934
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	295.655	308.018
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.154	979.068	1020.120
	Gasoline	MC	Motorcycles	0.292	0.048	218.513	239.464
Fresno	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	268.083	270.283
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	328.016	330.846
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	474.106	477.951
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	214.626	223.609
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.043	273.110	284.528
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.213	1350.095	1406.558
	Gasoline	MC	Motorcycles	0.224	0.043	204.951	222.529
Glenn	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	275.434	277.670
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	334.446	337.323
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	490.159	494.320
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.516	238.089
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	287.775	299.814
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.192	1217.110	1268.055
	Gasoline	MC	Motorcycles	0.249	0.044	212.178	230.736
Humboldt	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	270.293	272.955
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	341.446	345.496
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	502.374	507.383
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	236.023	245.926
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.784	307.116
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.174	1102.026	1148.210
	Gasoline	MC	Motorcycles	0.303	0.050	219.620	241.469
Imperial	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.008	285.688	287.909
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.011	346.464	349.630
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	467.514	471.409
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	236.120	246.010
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.046	291.788	303.984
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.208	1321.292	1376.533
	Gasoline	MC	Motorcycles	0.205	0.040	204.118	220.439
Inyo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	281.094	283.449
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	346.466	349.665
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	510.213	514.758
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	235.778	245.662
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	296.754	309.167
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.183	1160.951	1209.565
	Gasoline	MC	Motorcycles	0.256	0.045	216.147	235.122
Kern	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	268.634	270.844
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	326.226	329.006
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	482.954	486.832
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	219.820	229.022
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	277.286	288.877
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.220	1396.969	1455.386
	Gasoline	MC	Motorcycles	0.219	0.042	204.041	221.391
Kings	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	276.789	278.934
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.010	338.047	340.954
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	485.144	488.907
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.075	235.537
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	287.549	299.572
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.221	1401.297	1459.898
	Gasoline	MC	Motorcycles	0.222	0.042	209.373	226.809

Table 5-47. EMFAC County-Specific On-Road Vehicle GHG EFs - 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.010	282.120	285.064
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	350.696	354.761
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.019	516.219	521.861
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	239.312	249.358
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.380	312.949
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.151	957.241	997.424
Lassen	Gasoline	MC	Motorcycles	0.315	0.051	222.881	245.160
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	281.049	283.562
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	352.188	355.810
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.018	521.871	527.299
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	242.783	252.960
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	312.055	325.116
Los Angeles	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.140	887.881	925.174
	Gasoline	MC	Motorcycles	0.307	0.048	226.350	247.657
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	274.227	276.464
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	330.474	333.287
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.013	456.533	460.227
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	236.928	246.856
Madera	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	298.330	310.808
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.002	0.180	1143.752	1191.573
	Gasoline	MC	Motorcycles	0.209	0.039	206.408	222.579
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	271.917	274.084
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	333.841	336.820
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	495.154	499.342
Marin	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.843	233.209
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.045	282.960	294.786
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.210	1331.829	1387.545
	Gasoline	MC	Motorcycles	0.239	0.045	210.005	228.585
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	271.917	274.084
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	333.841	336.820
Mariposa	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	495.154	499.342
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.843	233.209
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.045	282.960	294.786
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.210	1331.829	1387.545
	Gasoline	MC	Motorcycles	0.239	0.045	210.005	228.585
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	278.691	281.398
Mendocino	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.020	0.015	360.831	365.354
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.030	0.023	547.478	554.482
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	243.581	253.806
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	306.711	319.550
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.141	892.612	930.142
	Gasoline	MC	Motorcycles	0.353	0.053	229.451	253.480
Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.009	266.476	269.026
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.013	335.302	339.074
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.017	497.130	502.092
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	233.083	242.864
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	298.410	310.895
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.190	1203.322	1253.707
Merced	Gasoline	MC	Motorcycles	0.280	0.048	215.114	235.604
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	264.436	266.597
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.011	326.162	329.300
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	476.822	481.119
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.033	211.983	220.856
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.042	267.515	278.701
Merced	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.224	1419.760	1479.134
	Gasoline	MC	Motorcycles	0.229	0.044	201.737	219.705

Table 5-47. EMFAC County-Specific On-Road Vehicle GHG EFs - 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	300.919	303.536
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.012	374.795	378.551
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.025	0.019	554.537	560.298
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.043	271.341	282.735
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.054	340.903	355.182
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.151	958.687	998.928
Mono	Gasoline	MC	Motorcycles	0.330	0.048	239.248	261.202
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	269.236	271.772
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	338.122	341.639
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.017	503.545	508.612
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	234.427	244.250
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	307.042	319.887
Monterey	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.197	1249.089	1301.371
	Gasoline	MC	Motorcycles	0.290	0.047	221.459	242.094
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	267.123	269.604
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	332.531	335.907
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.016	492.455	497.114
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.874	243.669
Napa	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	302.053	314.680
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.184	1166.289	1215.097
	Gasoline	MC	Motorcycles	0.237	0.044	208.571	226.815
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	258.665	260.912
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	323.519	326.466
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	493.015	497.294
Nevada	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	224.931	234.355
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	297.661	310.106
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.182	1156.353	1204.763
	Gasoline	MC	Motorcycles	0.240	0.044	205.887	224.325
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	262.178	264.613
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	342.112	345.876
Orange	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.018	501.764	507.024
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.681	233.050
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	302.705	315.368
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.193	1228.040	1279.453
	Gasoline	MC	Motorcycles	0.319	0.052	221.258	243.873
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	264.229	266.332
Placer	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.009	322.239	324.834
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.012	0.012	452.560	455.987
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	227.336	236.852
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.710	307.033
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.002	0.161	1022.403	1065.151
	Gasoline	MC	Motorcycles	0.202	0.039	201.969	217.922
Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	267.969	270.262
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	326.809	329.453
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	480.598	484.414
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.118	237.677
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	291.018	303.188
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.193	1222.492	1273.651
Plumas	Gasoline	MC	Motorcycles	0.255	0.045	212.093	231.096
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.012	0.009	286.154	288.825
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.014	368.324	372.499
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.028	0.020	537.373	543.576
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.040	255.232	265.943
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.052	332.226	346.142
Plumas	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.149	945.911	985.628
	Gasoline	MC	Motorcycles	0.356	0.050	236.837	260.175

Table 5-47. EMFAC County-Specific On-Road Vehicle GHG EFs - 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	270.399	272.522	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.009	327.086	329.789	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.012	446.302	449.862	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.111	237.658	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	287.022	299.022	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.206	1305.881	1360.476	
	Gasoline	MC	Motorcycles	0.209	0.040	202.802	219.320	
	Sacramento	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	274.441	276.804
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.009	334.663	337.499
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.013	495.476	499.459
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.305	235.780
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	289.070	301.158
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.188	1194.271	1244.247	
	Gasoline	MC	Motorcycles	0.251	0.044	212.224	230.944	
	San Benito	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	259.954	262.289
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	317.982	320.855
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	469.188	473.276
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.046	232.388
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	284.518	296.416
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.219	1392.052	1450.271	
	Gasoline	MC	Motorcycles	0.267	0.046	212.148	231.751	
	San Bernardino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	269.290	271.430
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	326.076	328.892
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	447.645	451.416
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	229.886	239.508
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	287.784	299.814
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.204	1294.608	1348.733	
	Gasoline	MC	Motorcycles	0.218	0.042	204.330	221.428	
	San Diego	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	281.175	283.360
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	347.411	350.295
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.012	498.197	501.723
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.039	245.476	255.764
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	315.586	328.797
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.178	1126.820	1173.983	
	Gasoline	MC	Motorcycles	0.247	0.042	218.149	236.134	
	San Francisco	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	276.356	278.705
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.009	342.019	344.849
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.012	0.012	502.648	506.053
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.039	246.629	256.965
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.051	324.932	338.528
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.186	1183.107	1232.590	
	Gasoline	MC	Motorcycles	0.264	0.044	222.256	241.258	
	San Joaquin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	272.871	275.109
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	329.488	332.268
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.013	474.920	478.827
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.622	236.112
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	285.657	297.608
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.207	1314.153	1369.120	
	Gasoline	MC	Motorcycles	0.250	0.043	211.287	229.784	
	San Luis Obispo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	266.516	268.850
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	333.399	336.474
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	490.242	494.528
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.659	243.442
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	305.766	318.550
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.163	1031.782	1075.015	
	Gasoline	MC	Motorcycles	0.273	0.048	216.716	236.989	

Table 5-47. EMFAC County-Specific On-Road Vehicle GHG EFs - 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	261.175	263.641	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	311.212	313.918	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.011	453.431	456.706	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	221.386	230.649	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	278.474	290.116	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.158	1004.715	1046.751	
San Mateo	Gasoline	MC	Motorcycles	0.191	0.038	201.462	216.821	
	Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	258.419	260.854
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	320.839	324.137
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	482.200	486.640
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	216.620	225.687
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	284.288	296.173
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.176	1117.871	1164.663	
Santa Barbara	Gasoline	MC	Motorcycles	0.238	0.045	205.167	223.754	
	Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	262.322	264.609
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	321.195	324.058
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	464.802	468.425
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	220.695	229.934
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	284.009	295.883
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.189	1198.715	1248.857	
Santa Clara	Gasoline	MC	Motorcycles	0.205	0.040	201.634	217.986	
	Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	270.797	273.475
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	337.237	340.790
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	490.745	495.488
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	242.060	252.212
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	309.805	322.762
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.171	1084.481	1129.891	
Santa Cruz	Gasoline	MC	Motorcycles	0.299	0.049	220.601	241.842	
	Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	268.643	270.904
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	330.654	333.710
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	490.289	494.649
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	225.661	235.109
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	282.353	294.160
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.201	1273.452	1326.749	
Shasta	Gasoline	MC	Motorcycles	0.273	0.048	214.636	234.867	
	Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	291.812	294.415
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.012	365.221	368.960
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.018	528.693	534.071
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.041	262.751	273.785
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.052	329.618	343.423
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.142	903.560	941.504	
Sierra	Gasoline	MC	Motorcycles	0.330	0.048	236.043	258.039	
	Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	288.154	290.748
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.012	360.575	364.338
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.018	524.306	529.687
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.041	257.678	268.491
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	320.395	333.809
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.210	1334.113	1389.937	
Siskiyou	Gasoline	MC	Motorcycles	0.330	0.049	234.063	256.339	
	Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.008	268.683	270.925
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	327.353	330.104
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	484.134	487.913
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	230.685	240.344
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.046	292.766	305.002
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.203	1287.879	1341.759	
Solano	Gasoline	MC	Motorcycles	0.234	0.044	208.464	226.691	

Table 5-47. EMFAC County-Specific On-Road Vehicle GHG EFs - 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	263.620	266.040	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	325.833	329.064	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	501.468	505.894	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.002	241.722	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	298.745	311.237	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.171	1088.243	1133.813	
	Gasoline	MC	Motorcycles	0.258	0.045	209.921	229.157	
	Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	259.569	261.777
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	318.043	320.959
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	471.444	475.508
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.033	209.577	218.348
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.042	267.741	278.936
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.198	1253.951	1306.419	
	Gasoline	MC	Motorcycles	0.236	0.044	201.620	219.905	
	Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	273.642	275.948
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	331.823	334.762
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	484.741	488.889
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	227.042	236.551
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	286.026	297.989
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.202	1281.943	1335.572	
	Gasoline	MC	Motorcycles	0.246	0.044	211.313	229.797	
	Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	273.950	276.255
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	336.733	339.903
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	492.667	497.065
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	233.706	243.497
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	294.769	307.102
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.207	1313.026	1367.970	
	Gasoline	MC	Motorcycles	0.279	0.047	218.333	238.524	
	Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	306.795	309.415
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.013	382.621	386.530
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.017	547.499	552.628
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.003	0.044	276.714	288.340
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.055	348.097	362.681
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.197	1250.653	1303.012	
	Gasoline	MC	Motorcycles	0.345	0.049	244.312	266.857	
	Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	264.030	266.201
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	322.466	325.568
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	468.884	473.075
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	218.243	227.375
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	276.276	287.825
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.198	1254.106	1306.583	
	Gasoline	MC	Motorcycles	0.228	0.043	201.627	219.525	
	Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	277.471	280.120
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.014	353.559	357.682
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.028	0.021	531.906	538.274
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	238.962	248.988
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	302.132	314.780
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.140	887.777	925.084	
	Gasoline	MC	Motorcycles	0.344	0.052	228.547	251.974	
	Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	262.342	264.551
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.010	322.000	324.879
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	446.354	450.242
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	231.023	240.693
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	300.384	312.942
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.157	998.027	1039.773	
	Gasoline	MC	Motorcycles	0.229	0.043	206.220	223.918	

Table 5-47. EMFAC County-Specific On-Road Vehicle GHG EFs - 2028 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	269.963	272.062
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	332.259	335.017
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.013	483.831	487.593
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.104	237.656
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	292.750	304.992
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.189	1199.041	1249.214
	Gasoline	MC	Motorcycles	0.257	0.045	212.962	232.078
Yuba	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	269.134	271.335
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	328.361	331.381
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	477.569	482.110
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	220.816	230.062
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.043	273.927	285.382
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.159	1007.125	1049.357
	Gasoline	MC	Motorcycles	0.272	0.047	212.943	233.101

Table 5-48. EMFAC County-Specific On-Road Vehicle GHG EFs - 2029

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Alameda	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	259.057	261.323
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	315.154	317.816
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.011	460.728	464.114
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.341	232.689
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	282.641	294.458
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.203	1286.916	1340.730
Alpine	Gasoline	MC	Motorcycles	0.209	0.040	203.317	219.896
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	252.088	254.541
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	311.848	315.048
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.015	474.116	478.692
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.033	210.399	219.210
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.043	271.614	282.976
Amador	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.203	1291.281	1345.306
	Gasoline	MC	Motorcycles	0.258	0.045	207.928	227.064
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	253.645	256.093
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.014	326.785	330.873
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.017	502.348	507.606
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.033	209.371	218.143
Butte	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.041	263.391	274.402
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.153	971.965	1012.752
	Gasoline	MC	Motorcycles	0.272	0.049	206.986	227.666
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	264.594	266.878
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	327.799	330.968
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	478.012	482.302
Calaveras	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	227.233	236.747
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	283.076	294.914
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.192	1218.247	1269.235
	Gasoline	MC	Motorcycles	0.260	0.045	212.178	231.473
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	266.132	268.612
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.014	344.017	348.252
Colusa	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.023	0.018	509.397	514.759
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	229.568	239.194
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	292.613	304.858
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.156	990.197	1031.753
	Gasoline	MC	Motorcycles	0.313	0.050	219.925	241.999
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	265.817	267.967
Contra Costa	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	323.828	326.596
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	478.797	482.659
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	221.852	231.140
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	278.281	289.918
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.196	1245.867	1297.997
	Gasoline	MC	Motorcycles	0.220	0.042	205.730	222.961
Del Norte	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	258.206	260.411
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.009	315.940	318.561
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.012	458.759	462.308
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.326	232.670
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	288.685	300.754
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.182	1156.629	1205.027
Del Norte	Gasoline	MC	Motorcycles	0.217	0.041	203.917	220.988
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	275.895	278.416
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	349.487	353.492
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	508.955	513.865
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	242.411	252.573
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	305.902	318.709
Del Norte	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.139	879.469	916.420
	Gasoline	MC	Motorcycles	0.307	0.049	226.150	247.779

Table 5-48. EMFAC County-Specific On-Road Vehicle GHG EFs - 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
El Dorado	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.008	260.282	262.513
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	329.170	332.270
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	483.519	487.864
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.004	235.469
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	290.848	303.010
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.155	983.942	1025.188
Fresno	Gasoline	MC	Motorcycles	0.286	0.048	217.901	238.513
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	263.326	265.469
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	321.841	324.551
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	464.779	468.441
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.033	211.080	219.912
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.042	268.566	279.792
Glenn	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.210	1335.297	1391.139
	Gasoline	MC	Motorcycles	0.218	0.042	204.055	221.283
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	270.534	272.707
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	328.118	330.868
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.013	480.171	484.125
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	225.624	235.072
Humboldt	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	282.758	294.587
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.191	1211.145	1261.837
	Gasoline	MC	Motorcycles	0.244	0.043	211.591	229.871
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.009	265.233	267.795
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.013	335.517	339.366
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	492.841	497.625
Imperial	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.996	242.765
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	289.935	302.063
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.174	1105.823	1152.158
	Gasoline	MC	Motorcycles	0.298	0.050	219.042	240.567
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	280.846	283.006
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.010	339.923	342.925
Inyo	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.013	458.476	462.168
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.242	241.964
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.045	287.227	299.232
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.206	1306.106	1360.712
	Gasoline	MC	Motorcycles	0.201	0.039	203.408	219.491
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	276.214	278.502
Kern	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	340.171	343.234
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	499.908	504.233
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.894	242.655
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	291.743	303.947
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.182	1154.655	1203.000
	Gasoline	MC	Motorcycles	0.251	0.044	215.475	234.151
Kings	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	263.859	266.007
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.009	320.262	322.927
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	473.248	476.944
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	216.625	225.690
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.043	272.828	284.233
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.217	1379.050	1436.717
Kings	Gasoline	MC	Motorcycles	0.214	0.042	203.191	220.214
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	271.884	273.970
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	331.825	334.605
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	475.913	479.504
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	222.743	232.063
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	282.778	294.600
Kings	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.218	1383.885	1441.757
	Gasoline	MC	Motorcycles	0.217	0.042	208.486	225.605

Table 5-48. EMFAC County-Specific On-Road Vehicle GHG EFs - 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Lake	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	276.970	279.778
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.013	343.978	347.792
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.023	0.018	505.827	511.177
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	237.091	247.039
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	295.126	307.474
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.152	962.896	1003.305
Lassen	Gasoline	MC	Motorcycles	0.310	0.050	222.333	244.296
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	276.090	278.530
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.011	345.945	349.407
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.017	511.534	516.717
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	240.104	250.166
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	307.319	320.182
Los Angeles	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.141	893.068	930.566
	Gasoline	MC	Motorcycles	0.301	0.047	225.789	246.793
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	269.684	271.863
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.009	324.814	327.523
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.012	447.453	450.960
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	232.872	242.625
Madera	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	293.743	306.029
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.002	0.178	1129.926	1177.169
	Gasoline	MC	Motorcycles	0.207	0.039	206.086	222.106
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	267.042	269.147
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	327.362	330.194
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	485.634	489.612
Marin	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	220.483	229.705
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.044	278.462	290.100
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.208	1319.235	1374.422
	Gasoline	MC	Motorcycles	0.233	0.044	208.905	227.089
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	267.042	269.147
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	327.362	330.194
Mariposa	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	485.634	489.612
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	220.483	229.705
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.044	278.462	290.100
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.208	1319.235	1374.422
	Gasoline	MC	Motorcycles	0.233	0.044	208.905	227.089
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.009	273.404	275.987
Mendocino	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.019	0.014	354.211	358.475
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.029	0.022	537.236	543.922
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.038	240.743	250.843
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	302.058	314.702
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.009	0.142	899.756	937.575
	Gasoline	MC	Motorcycles	0.348	0.053	228.877	252.576
Merced	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	261.733	264.196
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.012	329.375	332.962
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.019	0.016	487.153	491.878
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.036	230.169	239.823
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	293.513	305.793
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.189	1201.771	1252.084
Monterey	Gasoline	MC	Motorcycles	0.275	0.047	214.554	234.731
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.007	0.007	259.607	261.697
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.010	319.394	322.342
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.014	467.591	471.639
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.033	209.000	217.745
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.041	262.969	273.963
San Diego	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.221	1401.475	1460.082
	Gasoline	MC	Motorcycles	0.222	0.043	200.736	218.317

Table 5-48. EMFAC County-Specific On-Road Vehicle GHG EFs - 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Modoc	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	295.519	298.052	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	367.930	371.500	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.024	0.018	543.426	548.894	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.042	267.386	278.608	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.053	335.253	349.296	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.152	964.392	1004.861	
	Gasoline	MC	Motorcycles	0.323	0.047	238.419	260.038	
	Mono	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	264.532	266.989
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.015	0.011	331.997	335.366
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.020	0.016	493.281	498.110
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	231.635	241.338
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	301.937	314.568
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.195	1239.751	1291.639	
	Gasoline	MC	Motorcycles	0.282	0.047	220.447	240.689	
	Monterey	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	262.358	264.758
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	326.324	329.537
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.015	482.694	487.122
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	231.047	240.718
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	297.150	309.572
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.183	1161.321	1209.918	
	Gasoline	MC	Motorcycles	0.233	0.043	207.903	225.865	
	Napa	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	254.049	256.226
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	317.550	320.379
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	482.743	486.813
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	221.772	231.058
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	292.982	305.231
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.181	1151.220	1199.411	
	Gasoline	MC	Motorcycles	0.234	0.044	204.977	223.063	
	Nevada	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	257.282	259.630
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	336.463	340.068
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.017	491.998	497.041
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	221.352	230.621
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	298.476	310.961
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.193	1224.847	1276.119	
	Gasoline	MC	Motorcycles	0.314	0.051	220.778	243.079	
	Orange	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	259.641	261.686
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.008	316.607	319.120
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.012	0.011	443.067	446.345
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	224.138	233.517
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	289.877	301.998
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.002	0.160	1012.488	1054.821	
	Gasoline	MC	Motorcycles	0.199	0.038	201.540	217.315	
	Placer	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	263.118	265.340
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.009	320.815	323.369
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	470.674	474.316
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	224.847	234.264
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	285.867	297.822
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.191	1214.830	1265.664	
	Gasoline	MC	Motorcycles	0.249	0.044	211.207	229.854	
	Plumas	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.009	281.037	283.612
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.018	0.013	361.757	365.712
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.027	0.020	527.132	533.059
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.040	252.675	263.276
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.051	326.787	340.475
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.150	952.462	992.442	
	Gasoline	MC	Motorcycles	0.349	0.050	236.255	259.260	

Table 5-48. EMFAC County-Specific On-Road Vehicle GHG EFs - 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Riverside	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.007	0.007	265.778	267.848	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.009	321.235	323.832	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.012	0.012	437.401	440.792	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	225.300	234.726	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	282.431	294.238	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.204	1292.248	1346.273	
	Gasoline	MC	Motorcycles	0.205	0.040	202.172	218.449	
	Sacramento	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	269.450	271.747
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	328.339	331.067
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	484.007	487.796
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.308	232.655
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	284.071	295.951
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.187	1185.848	1235.467	
	Gasoline	MC	Motorcycles	0.246	0.043	211.483	229.878	
	San Benito	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	255.472	257.747
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.009	312.005	314.758
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.013	460.247	464.152
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	221.145	230.406
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	279.721	291.419
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.217	1376.347	1433.908	
	Gasoline	MC	Motorcycles	0.263	0.045	211.782	231.127	
	San Bernardino	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.007	0.007	264.610	266.692
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.009	320.072	322.767
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.012	438.302	441.878
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	226.691	236.176
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	283.274	295.115
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.202	1280.325	1333.852	
	Gasoline	MC	Motorcycles	0.213	0.041	203.592	220.418	
	San Diego	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	276.141	278.264
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	341.075	343.849
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.012	0.011	488.414	491.768
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	242.681	252.849
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.049	310.279	323.268
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.176	1115.552	1162.240	
	Gasoline	MC	Motorcycles	0.243	0.041	217.635	235.407	
	San Francisco	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	271.383	273.665
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.009	336.168	338.927
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.012	0.011	490.688	493.957
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	242.874	253.049
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	319.255	332.613
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.184	1167.486	1216.313	
	Gasoline	MC	Motorcycles	0.260	0.043	221.784	240.558	
	San Joaquin	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	268.041	270.220
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	323.271	325.935
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.012	465.303	469.014
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.550	232.909
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	281.148	292.910
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.205	1302.000	1356.457	
	Gasoline	MC	Motorcycles	0.244	0.043	210.465	228.623	
	San Luis Obispo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	261.605	263.863
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	327.337	330.288
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	479.935	484.021
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.037	231.950	241.659
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	301.120	313.709
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.163	1034.152	1077.476	
	Gasoline	MC	Motorcycles	0.267	0.047	215.878	235.799	

Table 5-48. EMFAC County-Specific On-Road Vehicle GHG EFs - 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
San Mateo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	257.290	259.717
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	306.709	309.381
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.012	0.011	445.920	449.132
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	218.329	227.463
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.043	273.892	285.342
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.156	992.208	1033.719
	Gasoline	MC	Motorcycles	0.189	0.038	201.357	216.603
Santa Barbara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	253.697	256.048
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.011	314.905	318.051
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	471.159	475.363
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	214.488	223.463
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	280.132	291.842
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.175	1113.202	1159.793
	Gasoline	MC	Motorcycles	0.233	0.044	204.458	222.730
Santa Clara	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.008	257.690	259.916
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	315.492	318.263
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.013	0.012	455.834	459.299
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	217.413	226.512
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	279.048	290.714
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.187	1184.596	1234.145
	Gasoline	MC	Motorcycles	0.202	0.040	201.137	217.274
Santa Cruz	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.009	265.929	268.515
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.014	0.011	331.099	334.490
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.018	0.015	479.781	484.281
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.038	239.365	249.399
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.048	304.645	317.386
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.171	1082.612	1127.938
	Gasoline	MC	Motorcycles	0.294	0.048	220.144	241.103
Shasta	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	263.826	266.018
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	324.414	327.334
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	479.814	483.963
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.111	232.450
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	277.431	289.030
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.200	1266.521	1319.524
	Gasoline	MC	Motorcycles	0.267	0.047	213.844	233.714
Sierra	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	286.768	289.300
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	358.631	362.194
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.023	0.017	518.117	523.246
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.041	259.950	270.864
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.051	324.433	338.021
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.007	0.143	907.070	945.149
	Gasoline	MC	Motorcycles	0.323	0.048	235.354	257.017
Siskiyou	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	283.004	285.516
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	354.105	357.692
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.022	0.017	513.835	518.964
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.040	254.579	265.258
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.050	314.766	327.944
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.208	1321.766	1377.071
	Gasoline	MC	Motorcycles	0.323	0.049	233.196	255.093
Solano	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	263.799	265.971
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.010	0.009	321.102	323.741
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	474.292	477.886
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	227.808	237.344
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.045	287.709	299.734
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.201	1274.180	1327.485
	Gasoline	MC	Motorcycles	0.229	0.043	207.557	225.456

Table 5-48. EMFAC County-Specific On-Road Vehicle GHG EFs - 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)				
				Greenhouse Gas Species				
				CH ₄	N ₂ O	CO ₂	CO ₂ e	
Sonoma	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.009	0.008	258.959	261.304	
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.013	0.010	319.837	322.933	
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.014	490.691	494.906	
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	229.346	238.950	
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	293.305	305.569	
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.171	1087.729	1133.272	
	Gasoline	MC	Motorcycles	0.252	0.045	209.157	228.061	
	Stanislaus	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	254.850	256.995
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	311.863	314.645
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	461.933	465.801
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.033	206.507	215.148
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.042	263.540	274.559
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.196	1246.169	1298.308	
	Gasoline	MC	Motorcycles	0.229	0.043	200.765	218.685	
	Sutter	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.008	268.695	270.933
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	325.416	328.217
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.016	0.013	475.073	479.022
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.035	223.818	233.189
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.044	281.222	292.983
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.200	1272.523	1325.755	
	Gasoline	MC	Motorcycles	0.240	0.043	210.443	228.581	
	Tehama	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.008	269.035	271.269
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.012	0.010	330.310	333.328
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	482.550	486.735
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	231.258	240.945
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.046	289.522	301.635
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.205	1303.738	1358.290	
	Gasoline	MC	Motorcycles	0.272	0.046	217.398	237.207	
	Trinity	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.011	0.008	301.387	303.921
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.016	0.012	375.612	379.322
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.021	0.016	536.251	541.107
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.043	271.977	283.395
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.002	0.054	341.986	356.314
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.005	0.196	1245.795	1297.943	
	Gasoline	MC	Motorcycles	0.338	0.048	243.507	265.705	
	Tulare	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	259.360	261.472
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.010	316.199	319.137
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.015	0.013	460.333	464.316
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	214.920	223.911
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.000	0.043	271.720	283.078
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.196	1245.341	1297.447	
	Gasoline	MC	Motorcycles	0.221	0.043	200.584	218.106	
	Tuolumne	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.010	0.008	272.134	274.669
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.017	0.013	347.170	351.074
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.026	0.020	521.631	527.670
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.002	0.037	235.798	245.685
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	296.873	309.299
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.008	0.141	893.820	931.369	
	Gasoline	MC	Motorcycles	0.337	0.051	227.934	251.007	
	Ventura	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	257.700	259.843
		Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	316.118	318.883
		Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	437.347	441.035
		Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	228.367	237.923
		Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.047	295.638	307.997
Diesel		HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.003	0.156	989.354	1030.734	
	Gasoline	MC	Motorcycles	0.224	0.042	205.507	222.927	

Table 5-48. EMFAC County-Specific On-Road Vehicle GHG EFs - 2029 (cont.)

County	Fuel Type	Vehicle Type		Emission Factors (g/mi)			
				Greenhouse Gas Species			
				CH ₄	N ₂ O	CO ₂	CO ₂ e
Yolo	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.007	0.007	265.007	267.043
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.009	326.035	328.684
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.014	0.012	474.079	477.682
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.036	225.399	234.836
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.045	287.857	299.895
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.004	0.188	1193.478	1243.414
Yuba	Gasoline	MC	Motorcycles	0.252	0.044	212.197	230.986
	Gasoline	LDGV	Light-Duty Vehicles (Passenger Cars)	0.008	0.007	264.163	266.292
	Gasoline	LDGT	Light-Duty Trucks (0-8,500 lbs)	0.011	0.010	321.523	324.369
	Gasoline	HDGV	Heavy-Duty Vehicles (8,501 + lbs)	0.017	0.014	467.823	472.127
	Diesel	LDDV	Light-Duty Vehicles (Passenger Cars)	0.001	0.034	218.270	227.407
	Diesel	LDDT	Light-Duty Trucks (0-8,500 lbs)	0.001	0.042	269.622	280.897
	Diesel	HDDV	Heavy-Duty Vehicles (8,501 + lbs)	0.006	0.159	1010.770	1053.146
	Gasoline	MC	Motorcycles	0.266	0.047	212.167	231.967

Table 5-49. OCONUS On-Road Composite Vehicle Emission Factors – POV

Year	Vehicle Type	Emission Factors (g/mi)										
		Criteria Pollutants, Ozone Precursors and Greenhouse Gas Species										
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃	CH ₄	N ₂ O	CO ₂	CO ₂ e
2025	All Vehicles	4.047	0.303	0.256	0.003	0.027	0.011	0.047	0.020	0.011	399.220	402.559
2026	All Vehicles	3.758	0.290	0.231	0.003	0.026	0.010	0.046	0.018	0.010	391.875	395.122
2027	All Vehicles	3.595	0.282	0.210	0.003	0.026	0.010	0.044	0.017	0.010	384.888	388.072
2028	All Vehicles	3.443	0.275	0.192	0.003	0.025	0.010	0.043	0.016	0.010	377.754	380.881
2029	All Vehicles	3.315	0.269	0.176	0.003	0.025	0.009	0.042	0.016	0.010	371.185	374.268

Table 5-50. OCONUS On-Road Composite Vehicle Emission Factors – GOV

Year	Vehicle Type	Emission Factors (g/mi)										
		Criteria Pollutants, Ozone Precursors and Greenhouse Gas Species										
		CO	VOC	NO _x	SO _x	PM ₁₀	PM _{2.5}	NH ₃	CH ₄	N ₂ O	CO ₂	CO ₂ e
2025	All Vehicles	3.931	0.249	0.793	0.003	0.055	0.026	0.047	0.024	0.040	607.685	618.859
2026	All Vehicles	3.419	0.222	0.725	0.003	0.053	0.024	0.046	0.023	0.040	596.720	607.913
2027	All Vehicles	3.133	0.203	0.646	0.003	0.051	0.022	0.045	0.022	0.040	585.860	597.079
2028	All Vehicles	2.947	0.192	0.583	0.003	0.049	0.021	0.044	0.021	0.040	575.994	587.228
2029	All Vehicles	2.844	0.185	0.532	0.003	0.048	0.020	0.044	0.021	0.040	567.513	578.769

Table 5-51. On-Road Vehicle Speciated VOC Weight Fractions

VOC	HAP	LDGV ^a	LDDV ^b	LDGT ^a	LDDT ^b	HDGV ^a	HDDV ^b	MC ^c
Acetylene		4.05%	8.02%	3.61%	8.52%	2.90%	---	---
Acetaldehyde	X	0.29%	---	1.64%	---	---	---	---
Acrolein	X	0.24%	---	0.40%	---	---	---	---
Alpha-pinene		0.06%	---	0.08%	---	---	---	---
Benzaldehyde		0.29%	---	1.19%	---	---	---	---
Benzene	X	5.89%	2.23%	5.61%	2.91%	1.91%	---	3.99%
Beta-pinene		0.03%	---	0.02%	---	---	---	---
1,3-Butadiene	X	0.57%	1.08%	0.62%	1.44%	---	---	---
Butane		0.37%	0.46%	0.41%	0.32%	24.42%	---	0.65%
1-Butene		2.22%	1.68%	2.47%	2.01%	1.21%	---	2.32%
cis-2-Butene		0.14%	0.61%	0.14%	0.77%	0.73%	---	0.48%
trans-2-Butene		0.35%	2.25%	0.30%	0.24%	0.97%	---	0.29%
Butylbenzene		---	---	---	---	0.23%	---	---
o-tert-Butyltoluene		---	---	---	0.19%	---	1.09%	---
tert-Butyl-m-Xylene		---	---	---	---	---	0.74%	---
Butyraldehyde		0.04%	---	0.42%	---	---	---	---
C6 olefin		---	2.80%	---	2.23%	---	---	---
Crotonaldehyde		0.02%	---	0.06%	---	---	---	---
Cyclohexane		0.50%	---	0.32%	---	1.72%	0.19%	---
Cyclohexene		0.07%	---	0.04%	---	1.72%	0.32%	---
Cyclopentadiene		---	0.53%	---	0.24%	---	---	---
Cyclopentane		0.22%	0.57%	0.20%	0.44%	0.52%	1.09%	1.09%
Cyclopentene		0.12%	0.53%	0.12%	0.39%	0.32%	0.51%	0.31%
Cyclopentylcyclopentane		---	---	---	---	0.50%	---	---
Decane		0.25%	1.30%	0.17%	1.65%	0.12%	1.39%	---
Diethylbenzene		---	0.31%	---	0.39%	---	1.46%	---
1,2-Diethylbenzene		0.09%	0.15%	0.05%	---	0.33%	---	---
1,3-Diethylbenzene		0.29%	---	0.30%	---	0.25%	---	---
1,4-Diethylbenzene		0.12%	---	0.07%	---	---	---	---
Dimethyl Ethylbenzene		---	0.23%	---	0.29%	---	2.30%	---
2,2-Dimethylbutane		0.55%	---	0.49%	---	0.24%	1.13%	1.70%
2,3-Dimethylbutane		0.88%	0.69%	0.87%	0.53%	1.07%	0.61%	1.78%
3,3-Dimethyl-1-butene		---	0.53%	---	---	---	---	---
1,1-Dimethylcyclohexane		0.06%	---	0.06%	---	---	---	---
cis-1,2-Dimethylcyclohexane		---	---	---	---	0.32%	---	---
trans-1,2-Dimethylcyclohexane		---	0.15%	---	0.39%	---	1.50%	---
cis-1,3-Dimethylcyclohexane		---	---	---	---	---	2.07%	---
Cis-1,4-Dimethylcyclohexane		---	---	---	0.09%	0.23%	---	---
cis-1,3-Dimethylcyclopentane		---	---	---	0.68%	---	0.72%	---
Dimethylheptane		0.08%	0.88%	0.08%	1.11%	0.09%	---	---
2,5-Dimethylheptane		---	0.15%	---	0.19%	---	---	---
2,6-Dimethylheptane		---	0.23%	---	0.58%	---	---	---
2,3-Dimethylheptane		---	---	---	---	0.65%	---	---
2,5-Dimethylheptane		0.19%	---	0.18%	---	0.14%	---	---
2,6-Dimethylheptane		---	---	---	---	---	---	---
3,3-Dimethylheptane		0.05%	---	0.04%	---	---	---	---
3,5-Dimethylheptane		---	---	---	---	---	---	---
4,4-Dimethylheptane		---	0.08%	---	---	---	---	---
2,3-Dimethylhexane		0.29%	---	0.36%	---	---	0.38%	---
2,4-Dimethylhexane		0.58%	0.46%	0.68%	0.23%	0.46%	0.25%	---
2,5-Dimethylhexane		0.39%	---	0.45%	---	---	0.21%	---
3,3-Dimethylhexane		---	---	---	---	---	0.11%	---
Dimethyloctane		0.08%	0.31%	0.05%	0.39%	0.08%	---	---
2,2-Dimethyloctane		---	---	---	---	---	0.43%	---
2,3-Dimethyloctane		---	---	---	0.57%	---	---	---
2,4-Dimethyloctane		---	0.15%	---	0.19%	---	2.56%	---
2,4-Dimethylpentane		0.85%	0.08%	0.90%	---	0.70%	0.22%	2.29%
2,2-Dimethylpentane		---	0.08%	---	---	---	---	---
2,3-Dimethylpentane		1.25%	0.15%	1.32%	0.44%	---	1.36%	0.95%
3,3-Dimethylpentane		---	---	---	---	---	0.59%	---
2,2-Dimethylpropane		---	0.33%	---	0.68%	---	---	---
Dipente		0.42%	---	0.33%	---	---	---	---
Dodecane		0.48%	0.50%	0.22%	0.61%	---	3.01%	---
Ethene		---	28.13%	---	30.07%	---	---	---
Ethyl tert-butyl ether		---	---	---	0.39%	---	2.98%	---
Ethylbenzene	X	2.56%	0.38%	2.28%	0.48%	0.73%	1.29%	1.99%
Ethylcyclohexane		---	---	---	---	---	7.69%	---
Ethylene		7.39%	---	6.59%	---	4.74%	---	---
3-Ethylhexane		---	0.15%	---	0.29%	---	0.70%	---
cis-1-Ethyl-2-Methylcyclopentane		---	0.15%	---	---	---	---	---
3-Ethylpentane		0.31%	---	0.27%	---	---	---	---
3-Ethyltoluene		2.02%	---	1.71%	---	0.17%	---	---
Formaldehyde	X	1.06%	---	3.37%	---	---	---	---
Glyoxal		0.03%	---	0.01%	---	---	---	---
Heptane		1.11%	0.08%	1.06%	0.19%	0.79%	0.77%	2.19%
1-Heptene		0.16%	---	0.08%	---	---	---	---
cis-2-Heptene		---	0.15%	---	---	---	---	---
trans-2-Heptene		---	0.15%	---	---	---	---	---
Trans-3-Heptene		0.03%	---	0.04%	---	---	---	---
Hexaldehyde		0.09%	---	0.11%	---	---	---	---
Hexane	X	1.51%	---	1.83%	0.19%	1.67%	2.40%	1.42%
1-Hexene		0.16%	0.94%	0.16%	0.83%	0.30%	1.77%	---
cis-2-Hexene		0.08%	0.23%	0.08%	---	0.12%	---	0.06%
trans-2-Hexene		0.14%	0.46%	0.14%	---	---	---	0.10%
cis-3-Hexene		0.02%	---	0.02%	---	---	---	---
Hexyne		---	---	---	---	0.02%	---	---
Indan		0.24%	---	0.17%	---	0.35%	---	---
Isobutene		---	---	2.66%	---	3.06%	---	---
Isopropylcyclohexane		0.04%	---	0.02%	---	---	---	---
Methylbenzaldehyde		0.02%	---	0.17%	---	---	---	---
2-Methyl-1,3-Butadiene		---	0.54%	---	0.58%	0.11%	---	---
2-Methylbutane		0.27%	0.31%	0.24%	0.39%	12.02%	---	14.59%

Table 5-51. On-Road Vehicle Speciated VOC Weight Fractions

VOC	HAP	LDGV ^a	LDNV ^b	LDCT ^c	LDOT ^b	HDGV ^a	HDNV ^b	MC ^c
2-Methyl-1-Butene		1.71%	4.20%	1.53%	2.27%	---	---	---
2-Methyl-2-Butene		0.32%	0.23%	0.39%	---	0.12%	---	1.08%
3-Methyl-1-Butene		6.54%	---	5.86%	---	0.15%	---	0.14%
Methyl-tert-Butyl Ether	X	0.02%	---	0.05%	---	---	---	---
Methylcyclohexane		0.44%	0.28%	0.40%	0.43%	0.28%	1.62%	0.43%
Methylcyclooctane		---	---	---	---	0.36%	---	---
Methylcyclopentane		1.10%	0.08%	1.04%	0.10%	1.21%	0.44%	1.83%
1-Methylcyclopentene		---	0.23%	---	---	0.03%	---	---
2-Methyldecane		---	---	---	---	0.69%	---	---
Methylethylbenzene	X	0.19%	0.53%	0.15%	0.68%	---	2.39%	0.40%
1-Methyl-2-Ethylbenzene		0.75%	---	0.62%	---	---	---	---
cis-1-Methyl-3-Ethylcyclopentane		---	1.22%	---	0.74%	---	---	---
1-Methyl-4-Ethylbenzene		0.92%	---	0.78%	---	---	---	---
Methyl ethyl ketone		0.05%	---	0.07%	---	---	---	---
2-Methylheptane		0.67%	0.15%	0.53%	---	0.28%	0.44%	1.61%
3-Methylheptane		0.75%	---	0.69%	---	0.38%	0.44%	1.67%
4-Methylheptane		0.28%	0.08%	0.28%	---	0.27%	---	---
2-Methylhexane		1.39%	---	1.34%	---	---	0.52%	3.18%
3-Methylhexane		1.54%	0.61%	1.38%	---	---	1.72%	2.57%
3-Methyl-1-Hexene		---	---	---	0.58%	---	---	---
4-Methyl-1-Hexene		0.03%	---	0.03%	---	---	---	---
1-Methyl-2-Isopropylbenzene		0.03%	---	0.02%	---	---	---	---
1-Methyl-3-isopropylbenzene		0.09%	---	0.06%	---	---	---	---
1-Methyl-4-Isopropylbenzene		0.02%	---	0.02%	---	---	---	---
2-Methyloctane		0.38%	0.15%	0.23%	---	0.04%	0.92%	---
3-Methyloctane		0.34%	0.08%	0.29%	---	0.34%	1.81%	---
4-Methyloctane		---	---	---	0.42%	---	---	---
2-Methylpentane		2.68%	0.28%	---	0.32%	---	3.80%	5.81%
3-Methylpentane		1.85%	0.53%	1.80%	1.21%	1.68%	1.20%	3.48%
3-Methyl-cis-2-Pentene		0.09%	---	0.09%	---	---	---	---
2-Methyl-1-Pentene		0.11%	1.30%	0.11%	0.74%	---	---	0.22%
2-Methyl-2-Pentene		0.10%	0.08%	0.08%	---	0.37%	---	---
3-Methyl-trans-2-Pentene		0.10%	---	0.08%	---	---	0.23%	---
4-Methyl-1-Pentene		---	0.79%	---	0.90%	---	---	---
4-Methyl-trans-2-Pentene		---	---	---	---	2.62%	---	---
2-Methylpropane		0.30%	0.15%	0.31%	0.19%	3.74%	---	0.20%
2-Methyl-2-Propenal		0.04%	---	0.17%	---	---	---	---
2-Methylpropene		---	2.29%	---	2.01%	---	---	---
(1-methylpropyl)benzene		0.06%	---	0.04%	---	0.05%	---	---
(2-methylpropyl)benzene		0.06%	---	0.05%	---	---	---	---
1-Methyl-3-propylbenzene		0.16%	---	0.11%	---	0.17%	---	---
Methylpyrene		---	---	---	---	1.11%	---	---
Methylfluoranthene		---	---	---	---	---	---	---
Methylpyrene		---	---	---	---	---	---	---
Naphthalene	X	0.07%	---	0.03%	---	---	---	---

VOC	HAP	LDGV ^a	LDNV ^b	LDCT ^c	LDOT ^b	HDGV ^a	HDNV ^b	MC ^c
Nonanal		0.53%	---	0.29%	---	---	---	---
Nonane		0.33%	0.64%	0.24%	0.77%	0.12%	0.98%	0.56%
Nonene		---	0.73%	---	0.92%	---	---	---
1-Nonene		0.11%	0.69%	0.10%	0.29%	---	1.22%	---
trans-2-Nonene		---	---	---	---	0.19%	---	---
Octanal		0.03%	---	0.02%	---	---	---	---
Octane		0.60%	0.20%	0.51%	0.45%	0.26%	1.55%	0.89%
1-Octene		0.03%	---	0.05%	---	---	---	---
Pentane		0.06%	1.91%	0.08%	1.52%	5.29%	---	8.14%
1-Pentene		0.37%	2.98%	0.38%	3.23%	0.45%	---	0.27%
cis-2-Pentene		0.20%	0.15%	0.20%	---	1.06%	---	0.35%
trans-2-Pentene		0.39%	1.30%	0.37%	0.97%	0.89%	---	0.58%
Pentylbenzene		---	---	---	---	---	1.62%	---
Pentyne		---	---	---	---	0.21%	---	---
trans-1-Phenylbutene		---	---	---	---	0.25%	---	---
4-Phenyl-1-Butene		---	---	---	---	0.28%	---	---
1,2-Propadiene		---	---	---	---	0.12%	---	---
Propane		0.24%	0.31%	0.23%	3.00%	---	---	---
Propene		4.23%	9.08%	4.56%	8.79%	1.71%	---	1.11%
Propionaldehyde	X	0.04%	---	0.11%	---	---	---	---
Propylbenzene		0.59%	0.20%	0.49%	0.29%	0.34%	0.51%	0.65%
Propylcyclopentane		---	---	---	---	---	---	---
Propyltoluene		---	---	---	---	---	3.37%	---
Propyne		---	0.38%	---	0.10%	0.26%	---	---
Styrene	X	0.13%	0.84%	0.10%	---	---	2.04%	0.23%
Tetramethylbenzene		0.26%	0.27%	0.18%	0.42%	---	14.53%	---
1,2,3,4-Tetramethylbenzene		0.18%	---	0.09%	---	---	---	---
1,2,4,5-Tetramethylbenzene		0.20%	---	0.13%	---	---	---	---
Toluene	X	11.19%	1.62%	10.57%	2.06%	3.25%	---	12.52%
Trimethylbenzene		3.28%	0.31%	2.55%	0.39%	1.57%	4.27%	1.43%
1,2,3-Trimethylbenzene		0.34%	0.23%	0.30%	---	0.28%	---	---
1,3,5-Trimethylbenzene		0.89%	---	0.78%	0.39%	1.32%	---	1.99%
2,2,3-Trimethylbutane		0.03%	---	0.03%	---	---	0.23%	---
1,2,3-Trimethylcyclopentane		---	0.61%	---	---	---	---	---
2,2,5-Trimethylhexane		0.38%	0.15%	0.43%	---	0.26%	0.46%	---
2,3,5-Trimethylhexane		---	0.15%	---	0.19%	0.09%	---	---
2,2,4-Trimethylpentane	X	2.25%	0.94%	4.04%	0.77%	1.63%	0.24%	1.45%
2,3,3-Trimethylpentane		---	---	---	0.10%	0.46%	---	---
2,3,4-Trimethylpentane		0.67%	0.46%	0.92%	0.24%	0.28%	0.33%	0.71%
2,4,4-Trimethyl-1-pentene		0.02%	0.08%	0.04%	---	1.88%	---	---
2,4,4-Trimethyl-2-pentene		---	0.31%	---	---	---	---	---
Undecane		0.13%	1.11%	0.09%	1.40%	0.15%	2.64%	---
1-Undecene		---	---	---	---	0.15%	---	---
Valeraldehyde		0.01%	---	0.01%	---	---	---	---
Xylenes (Mixed Isomers)	X	9.50%	1.90%	8.20%	2.08%	3.02%	---	10.11%

a. SOURCE: Data provided by the EPA's *SPECIATE* database version 4.4.b. SOURCE: *Diesel Unregulated Emissions Characterization*. CRC Report No. E-75-2, Coordinating Research Council, Inc., July 2010.c. SOURCE: *Air Pollutant Emission Factors from New and In-Use Motorcycles*. Atmospheric Environment, April 2000.

"X" Indicates compound is a HAP

"---" Indicates No Data Available

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6.0 FUEL TRANSFER (FDSP, FLD) – EXCLUDES ON-ROAD VEHICLE REFUELING

- *Fugitive Source*
- *Mobile Source* – When fuel is dispensed to mobile equipment.
- *Stationary Source* – Fuel spills and when dispensed to stationary equipment.

***The DAF recommends that most emissions generated during the transfer (dispensing) of fuel into *on-road* vehicles be classified as mobile emissions. However, if the regulator insists this category be included as a stationary source, subtract those emissions from the Mobile AEI, and add them to the Stationary AEI to avoid duplicate reporting. This is accomplished by manually calculating emissions generated from on-road vehicle refueling using the procedures given in this section, then subtracting those values from the emissions generated by on-road vehicles covered in the previous section. ***

6.1 Introduction

Fuel transfer includes the dispensing of fuel into non-road engines and equipment, aircraft, and fuel trucks. **Note that the emissions from the refueling of *VEHEs* are not addressed here since those emissions are accounted for in the EFs generated by the MOVES5 model as explained in the previous chapter.** Emissions from fuel dispensing are the result of vapors being displaced as fuel is added to the fuel tank. The amount of vapor released to the atmosphere is a function of the gas and fuel tank temperatures, the vapor pressure of the fuel, the dispensing rate, and the presence of vapor emission control devices. **The vapor that is emitted into the atmosphere is composed of both VOCs and HAPs and is considered fugitive in nature.**

Minor fuel spills are an inevitable consequence of fuel dispensing. Typically, these spills are individually insignificant though may collectively result in a substantial release of VOC and HAP emissions. **Emissions from minor spills are accounted for in the “Fuel Transfer” section of the Stationary Guide to produce a conservative emissions calculation. Emissions from significant spills, which are those spills that are reported to the Environmental or Civil Engineering Environmental office, are not addressed here but described in the “Fuel Spills” section of the Transitory Guide.** The vapor emissions of concern from fuel dispensing operations are described by the simple control volume given in Figure 6-1.

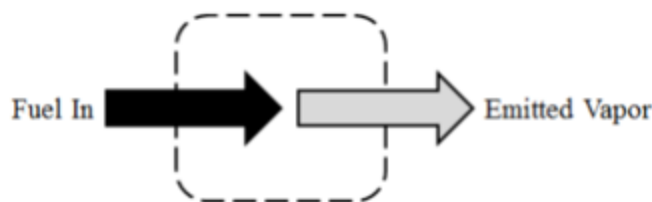


Figure 6-1. Simple Fuel Dispensing Control Volume

The loading method used in the fuel transfer process has a significant effect on the amount of vapor emissions generated during the transfer activity. There are two main fuel loading methods: splash loading and submerged loading. The splash loading method involves the lowering of the fill pipe into the tank and **above the liquid level**. The loading of the fuel using the splash method results in significant turbulence, which increases the amount of vapor released into the atmosphere. The alternative method, submerged loading, may be further subdivided into two techniques: the submerged fill pipe method and the bottom-loading method. In the submerged fill pipe method, the fill pipe extends almost to the bottom of the storage tank. In the bottom loading method, a fill pipe is permanently attached to the bottom of the storage tank. In both cases, the fill pipe is **below the liquid level**. Therefore, turbulence is minimized, and vapor emissions are greatly reduced when compared to the splash loading method. Each method is shown in Figure 6-2.

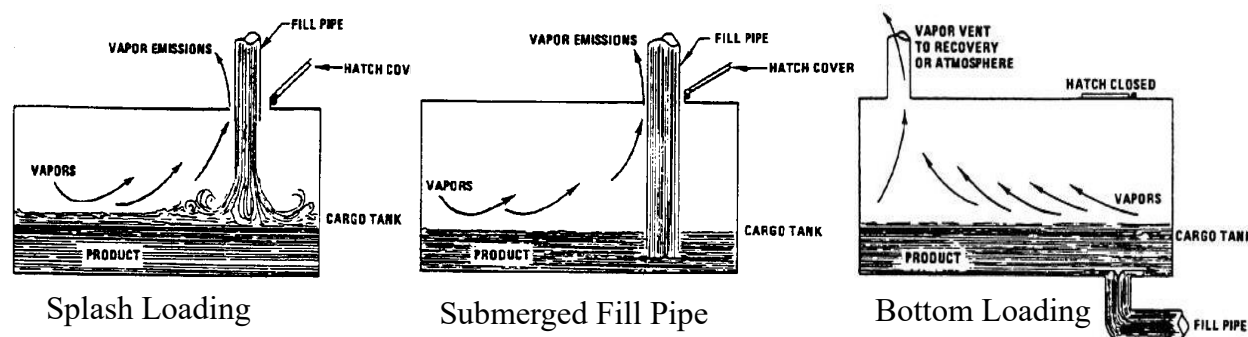


Figure 6-2. Splash Loading, Submerged Fill Pipe, and Bottom Loading Methods

There are several challenges to calculating evaporative emissions from fuel transfer activities. These challenges include the use of several different fuels used on base, such as gasoline, diesel, or JP-8 fuel, and their different vapor pressures. Furthermore, there are multiple destinations for fuels on base that may make it more difficult to gather data or determine what emissions are classified as mobile or stationary. To simplify how each base should calculate fuel transfer emissions, a diagram of the typical transfer methods and destinations of fuel on base is provided in Figure 6-3.

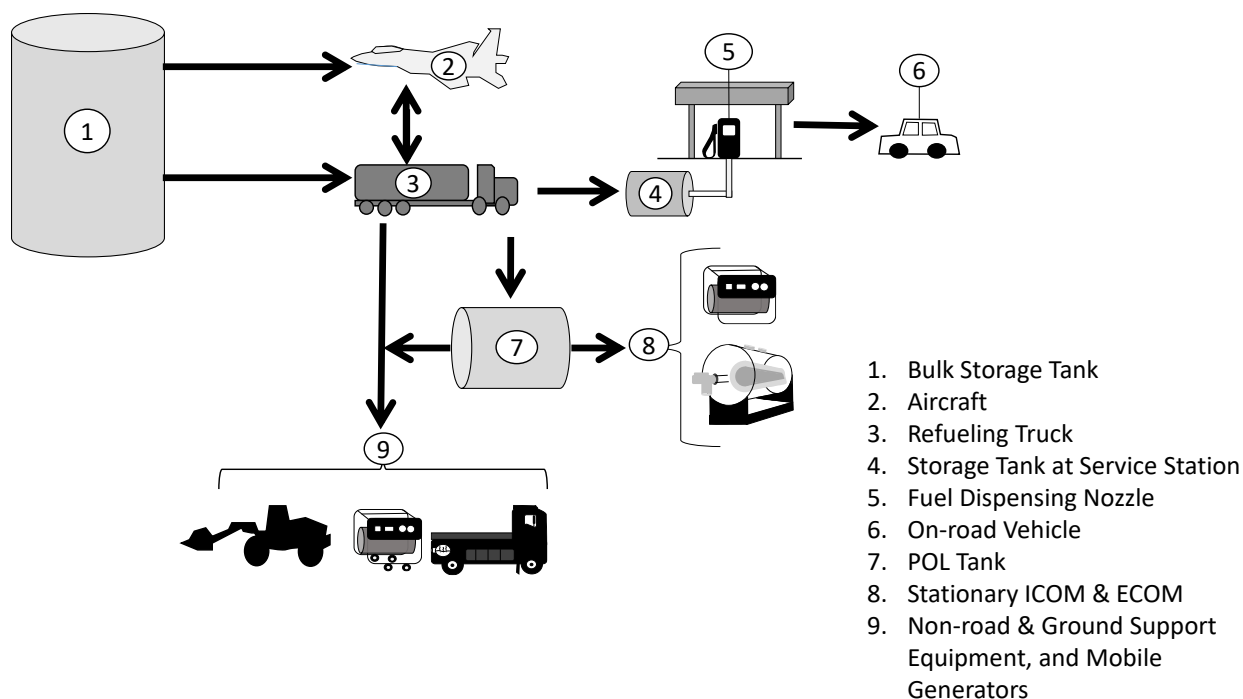
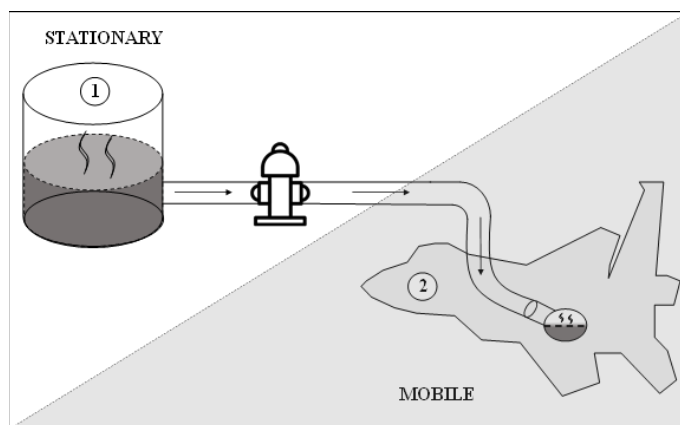


Figure 6-3. Typical On-Base Fuel Transfer Activities and Destinations

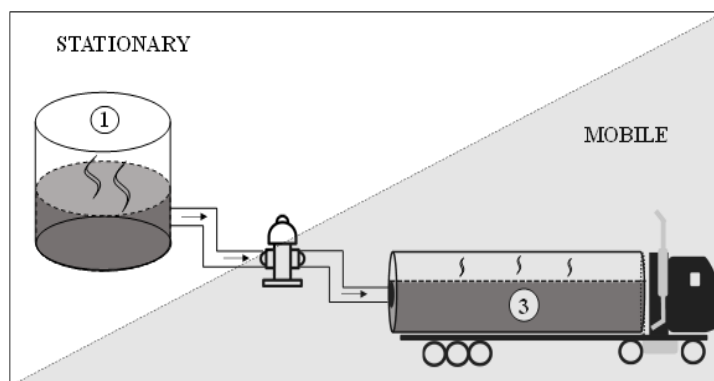
Figure 6-3 shows the typical fuel transfer paths that fuel may go through at a DAF installation. The transfer of the fuel into different equipment results in the generation and release of pollutant emissions. The classification (mobile vs. stationary) of this equipment determines whether the generated emissions are regarded as mobile or stationary source emissions. It is important to note that **significant** fuel spills may occur at any point in the fuel transfer process, which will contribute to VOC and HAP emissions as the fuel evaporates. However, since these are uncommon occurrences, emissions from fuel spills are addressed in the *Air Emissions Guide for Air Force Transitory Sources*. The specific pathways illustrated in Figure 6-3 are described below and categorized as either mobile (shaded) or stationary (not shaded) sources of emissions.



1 (Bulk Storage Tank) → 2 (Aircraft)

The figure above illustrates fuel transferred to refuel an aircraft from a bulk storage tank via a hydrant system. The vapors displaced within the storage tank as the liquid level lowers or rises are known as “working losses.” The vapors generated in the space above the stored liquid are known as “breathing losses.” These are **stationary emissions** and are calculated using the equations provided in Chapter 7 of AP-42. Refer to the *Air Emissions Guide for Air Force Stationary Sources* for more information regarding the calculation of these emissions.

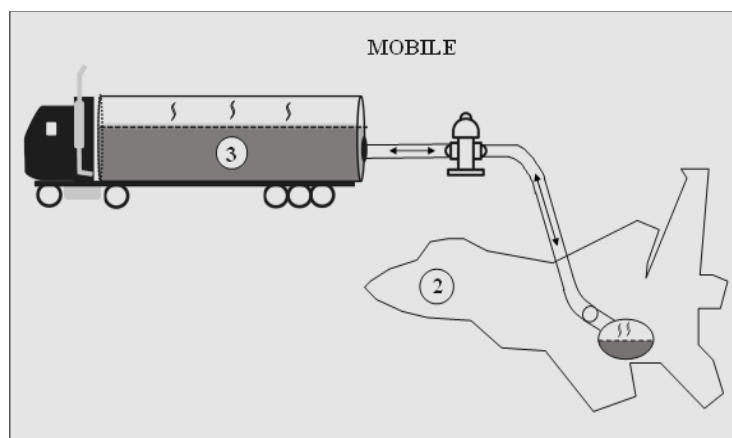
Mobile emissions are generated from the displaced vapor in the aircraft fuel tank. These emissions should be reported in the mobile AEI and are calculated as described later in this chapter.



1 (Bulk Storage Tank) → 3 (Refueling Truck)

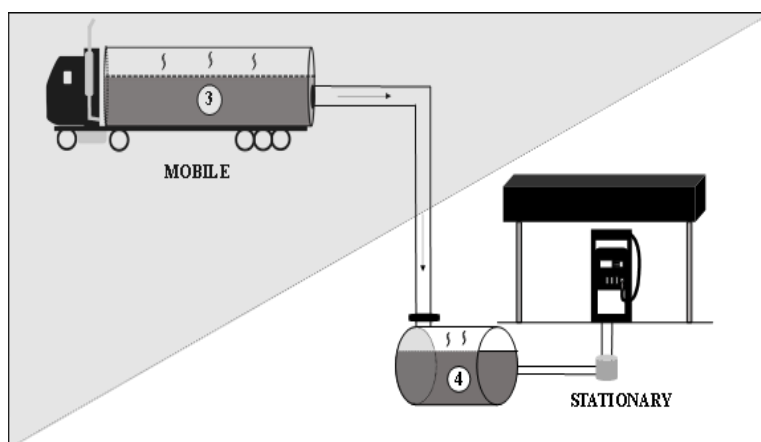
The **stationary source of emissions** is the bulk storage tank producing working losses and breathing losses from the liquid fuel. The methodology for calculating these emissions is provided in the *Air Emissions Guide for Air Force Stationary Sources*.

The **mobile emissions** from loading fuel into refueling trucks are generated from the displaced vapor in the fuel truck. These emissions should be reported in the mobile AEI and are calculated as described later in this chapter.



2 (Refueling Truck) ↔ 3 (Aircraft)

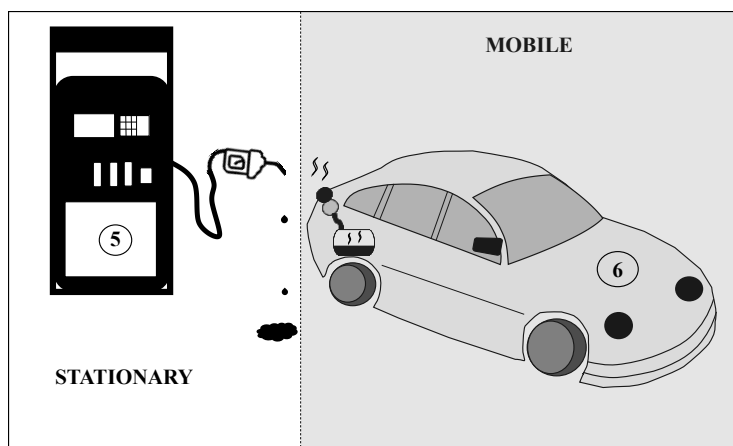
The figure above illustrates the fueling and defueling of aircraft via a refueling truck. Both pieces of equipment are classified as **mobile**, therefore all emissions generated from these activities should be reported in the mobile AEI and are calculated as described later in this chapter. Emissions from both mobile pieces of equipment come from displaced vapors in the refueling truck and aircraft fuel tanks.



3 (Refueling Truck) → 4 (Storage Tank and Service Station)

The figure above illustrates the loading of a refueling truck into a storage tank at a fuel service station. The **stationary emissions** from refilling of a storage tank at a fuel dispensing location include breathing and working losses from the storage tank. The methodology for calculating these emissions is provided in the *Air Emissions Guide for Air Force Stationary Sources*.

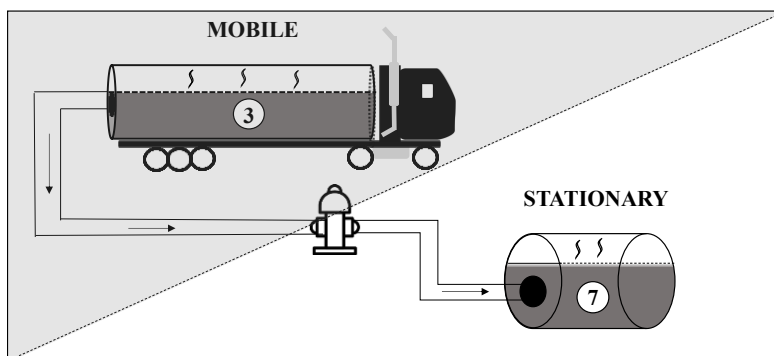
The only substantial **mobile emissions** from the fueling of the tank via the refueling truck are generated from any significant fuel spills which are addressed in the *Air Emissions Guide for Air Force Transitory Sources*.



5 (Fuel Dispensing Nozzle) → 6 (On-Road Vehicle)

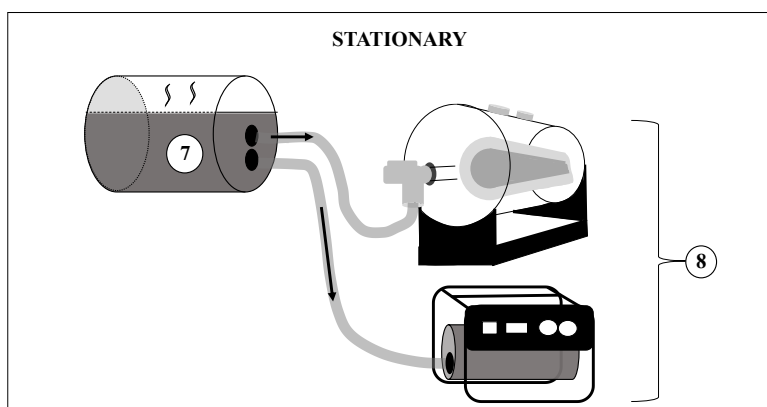
The figure above illustrates the refueling of a vehicle at a service station. The **stationary emissions** are the result of the evaporation of spilled fuel from the fuel nozzle whose calculations are described in the *Air Emissions Guide for Air Force Stationary Sources*.

The **mobile emissions** are generated from the displaced vapors in the vehicle fuel tank. The displaced vapor emissions should be included in a mobile AEI and are already accounted for in the MOVES model used to calculate VEHE emissions. AP-42 states that the motor vehicle refueling emissions equation is incorporated into the MOBILE model, which has been integrated into the MOVES model. The MOVES5 model is the model used for estimating emissions for VEHEs. This version of the model allows for disabling the refueling emissions calculations if these emissions are included in a stationary AEI, rather than in a mobile AEI. **This should only be done if the regulator insists that this category be included as a stationary source. Otherwise, these emissions are already accounted for in the EFs found in the “ON-ROAD VEHICLES (VEHE)” chapter of this guide.**

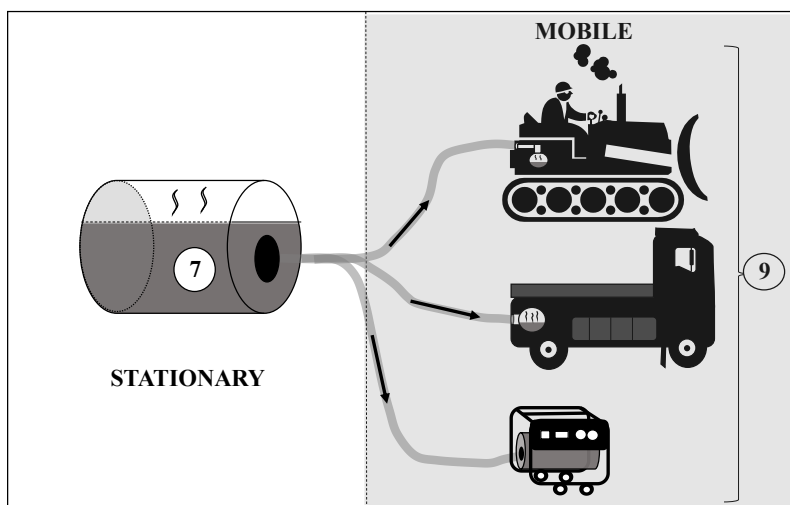


3 (Refueling Truck) → 7 (POL Tank) This fuel transfer pathway illustrates the loading of fuel from a refueling truck into a Petroleum, Oil, and Lubricants (POL) storage tank. The **stationary emissions** include the breathing and working losses from smaller storage tanks on base. The methodology for calculating these emissions is provided in the *Air Emissions Guide for Air Force Stationary Sources*.

Likely, the only **mobile emissions** generated from this pathway are from any significant fuel spills associated with the refueling truck (a mobile source). Such emissions would be considered transitory in nature and are addressed in the *Air Emissions Guide for Air Force Transitory Sources*.



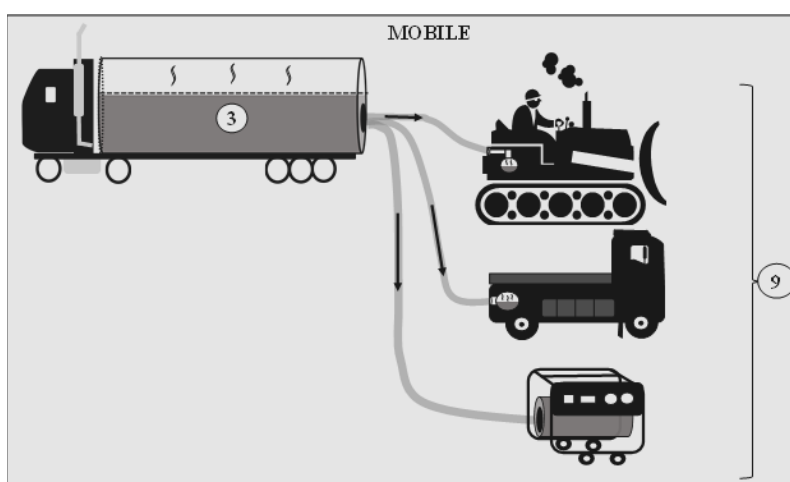
7 (POL Tank) → 8 (Stationary ICOM/ECOM) The figure above illustrates the loading of fuel from a storage tank into a stationary Internal Combustion (ICOM) equipment, such as a generator, or External Combustion (ECOM) equipment, such as a boiler. The **stationary emissions** from the fuel outlet (of the storage tank) are the result of any significant fuel spills and breathing or working losses. The breathing/working losses are calculated using the methodology described in Chapter 7 of AP-42 while emissions from significant fuel spills are described in the *Air Emissions Guide for Air Force Transitory Sources*. The **stationary emissions** from the fuel loading inlet (of the stationary ICOM or ECOM unit) are generated from the displaced vapor in the fuel tanks. The methodology for calculating these emissions is provided in the *Air Emissions Guide for Air Force Stationary Sources*.



7 (POL Tank) → 9 (Non-Road & Ground Support Equipment / Mobile Generators)

During this fuel transfer process, fuel is moved from a storage tank to a mobile piece of equipment, such as non-road equipment, Ground Support Equipment (GSE), or a mobile generator. The **stationary emissions** from the storage tank are the result of any significant fuel spills and the working and breathing losses from the tank. The methodology for calculating these emissions is provided in Chapter 7 of AP-42 and in the *Air Emissions Guide for Air Force Stationary Sources*, while fuel spill emissions are addressed in the *Air Emissions Guide for Air Force Transitory Sources*.

The **mobile emissions** from the fuel loading inlet (of the non-road and ground support equipment or mobile generator) are produced by the displaced vapor in the fuel tanks and should be reported in a mobile AEI. Emissions are calculated as described later in this chapter.



3 (Refueling Trucks) → 9 (Non-Road & Ground Support Equipment / Mobile Generators)

The figure illustrates the transfer of fuel from a mobile fuel loading outlet (refueling truck) into either non-road equipment, GSE, or a mobile generator, **all of which are considered mobile sources**. These emissions should be reported in a mobile AEI, the calculation methodology for which is described later in this chapter.

6.2 Emission Factors

Section 5.2 of AP-42 describes both the emissions from the loading of fuel into fuel trucks and the evaporative emissions from the fueling of a gasoline vehicle. Since the emissions from fueling gasoline vehicles is covered in the MOVES5 model, the EFs for vehicle refueling are not provided here, but may be found in Table 5.2-7 of AP-42. For non-road engines and fuel trucks, the most appropriate method for calculating emissions from fuel dispensing is to calculate the loading loss. The loading loss is the primary source of evaporative emissions from the loading of fuel. These losses are the result of organic vapors within a fuel tank that are displaced into the atmosphere as the tank is loaded with fuel. To calculate these losses, the saturation factor, vapor pressure of the fuel molecular weight of the vapors, and the temperature of the bulk liquid must be known. A detailed description of how to calculate these losses is provided in the next section.

The saturation factor refers to the ratio of the saturated value of the expelled vapor to the unsaturated value. These values vary based on the method of fuel loading. A tank that is filled with only one fuel, or fuels with similar characteristics, is said to be practicing “dedicated normal service.” When loading vapors are returned to the loading terminal after the fuel is unloaded to a storage tank, it is known as “dedicated vapor balance service.” Section 5.2 of AP-42 provides the saturation factors, which are included below in Table 6-1.

Table 6-1. Fuel Loading Saturation Factors

Loading Method	Loading Parameters	S Factor
Submerged Loading	Clean Tank	0.50
	Dedicated Normal Service	0.60
	Dedicated Vapor Balance Service	1.00
Splash Loading	Clean Tank	1.45
	Dedicated Normal Service	1.45
	Dedicated Vapor Balance Service	1.00

SOURCE: U.S. EPA. “Transportation and Marketing of Petroleum Liquids.” *Compilation of Air Pollutant Emission Factors – Volume I: Stationary Point and Area Sources*. Fifth Edition. 1995. Section 5.2.

The vapor emissions resulting from fuel transfer is a function of the vapor pressure of the fuel. The vapor pressure is indicative of the evaporation rate of a liquid. Vapor pressures for select fuels and their respective vapor molecular weights are provided in Table 6-2.

Table 6-2. Vapor Pressures for Various Fuels

Petroleum Liquid	Vapor Molecular Weight (lb/lb-Mol)	True Vapor Pressure (psia)						
		40°F	50°F	60°F	70°F	80°F	90°F	100°F
Crude Oil RVP 5 ^a	50	1.80	2.30	2.80	3.40	4.00	4.80	5.70
Gas RVP 6	69	1.90	2.37	2.93	3.60	4.38	5.29	6.35
Gas RVP 7	68	2.30	2.90	3.50	4.30	5.20	6.20	7.40
Gas RVP 7.8	68	2.59	3.21	3.94	4.79	5.79	6.96	8.30
Gas RVP 8	68	2.67	3.30	4.04	4.92	5.94	7.13	8.50
Gas RVP 8.3	68	2.79	3.44	4.22	5.13	6.19	7.42	8.83
Gas RVP 9	67	3.06	3.77	4.61	5.59	6.74	8.06	9.58
Gas RVP 10	66	3.40	4.20	5.20	6.20	7.40	8.80	10.50
Gas RVP 11	65	3.87	4.75	5.77	6.96	8.34	9.92	11.74
Gas RVP 11.5	65	4.09	5.00	6.07	7.31	8.75	10.41	12.29
Gas RVP 12	64	4.29	5.24	6.36	7.65	9.15	10.86	12.82
Gas RVP 13	62	4.70	5.70	6.90	8.30	9.90	11.70	13.80
Gas RVP 13.5	62	4.93	6.01	7.26	8.71	10.38	12.29	14.46
Gas RVP 15	60	5.58	6.77	8.16	9.77	11.61	13.71	16.09
Diesel	130	3.10E-03	4.50E-03	6.50E-03	9.00E-03	1.20E-02	1.60E-02	2.20E-02
JP-8/Jet A ^b	130	1.58E-02	2.19E-02	3.01E-02	4.08E-02	5.48E-02	7.27E-02	9.54E-02

SOURCE: (unless otherwise stated): Data taken from TANKS version 4.0.9d.

a. SOURCE: U.S. EPA. "Organic Liquid Storage Tanks." Compilation of Air Pollutant Emission Factors – Volume I: Stationary Point and Area Sources. Fifth Edition. 1997. Section 7.1.

b. SOURCE: DAF Environmental Analysis Division. JP-8 Volatility Study, IERA-RS-BR-SR-2001-0002. San Antonio, 2001. Vapor pressures calculated using the composite data calculation, an average flash point temperature of 118.238 °F, and atmospheric pressure of 760mm Hg. Flash point temperature the average provided by Defense Energy Support Center. "Petroleum Quality Information System." Defense Logistics Agency, 1996.

6.3 Control and Capture Efficiencies

Emissions from fuel dispensing may be controlled using a variety of techniques. Estimating emissions in which a control device is utilized is more challenging since the capture efficiency must also be considered. Additionally, since portions of fuel transfer are regarded as either stationary or mobile sources, using the control and capture efficiencies appropriately may be confusing. For example, in Step 1-2 from Figure 6-3, fuel is loaded from a loading terminal storage tank and into a fuel truck. The displaced vapor may be captured with a blower system and run through a vapor recovery unit before being returned to the storage tank. In this case, the capture efficiency of the truck and the control efficiency of the vapor recovery unit are used to determine the emissions from this process. The control efficiency is taken from the stationary

unit, although the emissions are classified as mobile since the emissions are the result of displaced vapor in the mobile fuel truck. Typical capture and control efficiencies can be found in Table 6-3 and Table 6-4 respectively.

Table 6-3. Typical Fuel Truck Capture Efficiencies

Fuel Truck Capture System	Capture Efficiency (%)
Untested	70.0
EPA standards (NSPS Subpart XX) leak test	98.7
MACT-level annual leak test	99.2
Trucks with installed blower system	100.0 ^a

SOURCE (unless otherwise stated): U.S. EPA. "Transportation and Marketing of Petroleum Liquids." Compilation of Air Pollutant Emission Factors – Volume I: Stationary Point and Area Sources. Fifth Edition. 1995. Section 5.2.

a. SOURCE: TCEQ. "Tank Truck Loading of Crude Oil or Condensate." 2013. 14 December 2013.

<<http://www.tceq.texas.gov/assets/public/permitting/air/NewSourceReview/oilgas/tank-truck-load.pdf>>.

Table 6-4. Typical Fuel Transfer Control Efficiencies

Control Techniques		Control Efficiency (%)
Flares ¹	Compounds $\leq$ 3 Carbon atoms	99.0
	Other Organic Compounds	98.0
Thermal Oxidizers ²		99.0
Carbon Systems ³		98.0
Vapor Recovery Units		100.0

SOURCE: TCEQ. "Tank Truck Loading of Crude Oil or Condensate." 2013. 14 December 2013.

<<http://www.tceq.texas.gov/assets/public/permitting/air/NewSourceReview/oilgas/tank-truck-load.pdf>>.

- Flares must meet 40 CFR 60.18 requirements of minimum heating value of waste gas and a maximum flare tip velocity.
- Must be designed for the variability of the waste gas stream and basic monitoring which consists of a temperature monitor that indicates the device is achieving a satisfactory minimum temperature.
- Must have an alarm system that will prevent break through.

Alternatively, EFs for the loading of fuel trucks have been developed for several fuels likely to be distributed on base. These EFs are based on an assumed temperature of 60°F and may be used as an alternative to calculate the loading loss. Table 5.2-5 of AP-42 provides these EFs, which have been reproduced here in Table 6-5.

Table 6-5. VOC Emission Factors for Fuel Dispensing/Loading

Loading Method	Loading Parameters	Emission Factors (lb/10 ³ gal)		
		Gasoline ^a	Diesel/No. 2 Fuel Oil	JP-8/Jet A
Submerged Loading	Dedicated Normal Service	5	0.014	0.016
	Vapor Balance Service	8	---	---
Splash Loading	Dedicated Normal Service	12	0.03	0.04
	Vapor Balance Service	8	---	---

SOURCE: U.S. EPA. "Transportation and Marketing of Petroleum Liquids." *Compilation of Air Pollutant Emission Factors – Volume I: Stationary Point and Area Sources*. Fifth Edition. 1995. Section 5.2.

a. Gasoline has an RVP of 10 psia.

"---" Indicates No Data Available

6.4 Emission Calculations

Emissions of concern from fuel transfer operations are VOCs and HAPs. The volumes of VOCs and HAPs emitted are related to the amount of VOC and HAP constituents within the fuel. Calculations of emissions of VOCs and HAPs from fuel transfer are outlined below.

6.4.1 VOC Emissions Calculations (Preferred Method)

The preferred method for calculating VOC emissions from the transfer of fuel is to use the fuel vapor pressure, saturation factor, temperature, and total throughput to estimate the loading loss. VOCs are calculated as follows:

$$E(VOC) = Q \times \frac{1}{1000} \times 12.46 \times \frac{S \times P \times M}{T} \times \left\{ 1 - \left[\left(\frac{Cap}{100} \right) \times \left(\frac{CE}{100} \right) \right] \right\}$$

Equation 6-1

Where,

- E(VOC)** = Annual emissions of VOCs (lb/yr)
- Q** = Annual quantity of fuel transferred (gal/yr)
- 1000** = Factor converting gallons to 10³ gallons (gal/10³ gal)
- 12.46** = Equation constant (°R lb-mol/psia 10³ gal)
- S** = Saturation factor. Provided in Table 6-1
- P** = True vapor pressure of fuel (psia). Provided in Table 6-2
- M** = Vapor molecular weight of the fuel (lb/lb-mol). (Table 6-2)
- T** = Temperature of bulk liquid loaded (°R)
- Cap** = Capture efficiency of the loading terminal (%). (Table 6-3)
- CE** = Efficiency of the control device (%). Provided in Table 6-4
- 100** = Factor for converting a percent to a fraction (%)

A detailed control volume outlining the emissions from fuel transfer operations is provided in Figure 6-4.

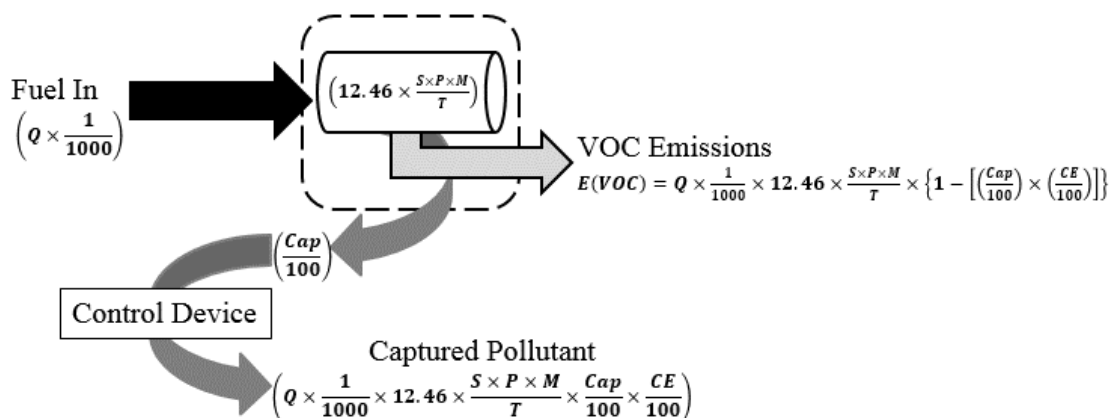


Figure 6-4. Fuel Transfer Control Volume – Preferred Method

6.4.2 VOC Emissions Calculations (Emission Factor Alternative Method)

Using the EF method, the appropriate EF selected from Table 6-5 and the total quantity of fuel transferred, the emissions are calculated as follows:

$$E(VOC) = Q \times \frac{1}{1000} \times EF(VOC) \times \left\{1 - \left[\left(\frac{Cap}{100}\right) \times \left(\frac{CE}{100}\right)\right]\right\}$$

Equation 6-2

Where,

EF(VOC)= VOC emission factor as provided in Table 6-5 (lb/10³ gal)

A detailed control volume is provided in Figure 6-5.

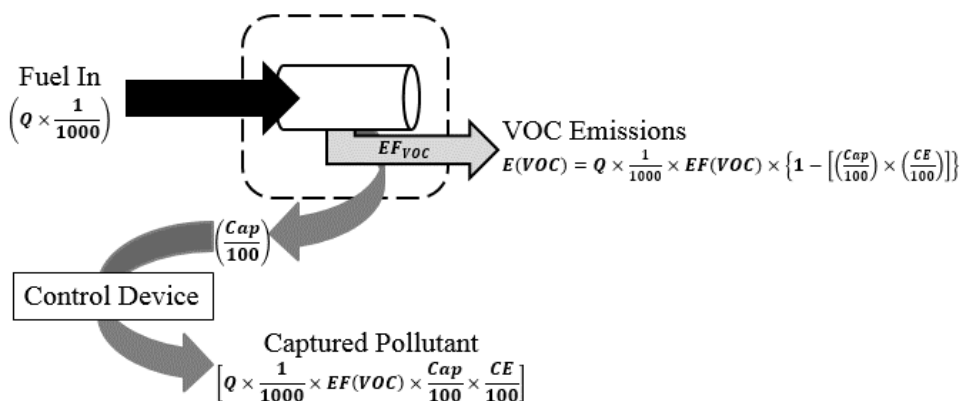


Figure 6-5. Fuel Transfer Control Volume – Emission Factor Method

6.4.3 HAP Emissions Calculation

The number of HAPs released into the environment from fuel transfer operations may be estimated using the total VOCs emitted, as calculated above, and the weight percent of HAPs in the fuel itself (APIMS and the Air Conformity Applicability Model, or ACAM, automatically calculate these values). Contact the fuel supplier for specific information regarding the weight percent of HAPs in fuels commonly used at DAF installations. In the absence of available data, Table 6-6 provides the typical weight percent of individual HAPs found in several fuels used at DAF installations. Using the total VOCs and weight percent HAP in the fuel, the total HAP emissions from fuel transfer operations is calculated using Equation 6-3 below.

$$E(HAP) = E(VOC) \times \frac{WP(HAP)}{100}$$

Equation 6-3

Where,

E(HAP)	=	HAP emissions from fuel dispensing (lb/yr)
WP(HAP)	=	Weight percent HAP in the fuel (%)

Table 6-6. Weight Percent of HAPs in Fuels commonly used at Air Force Installations

Compound	Molecular Weight	Vapor Pressure (psi) ^a	Typical wt. %					
			Diesel		Gasoline		JP-8/Jet A ^b	
			Liquid Phase	Vapor Phase ^c	Liquid Phase	Vapor Phase ^c	Liquid Phase	Vapor Phase ^c
Anthracene	178.22	1.27E-07	2.82E-03 ^d	5.76E-08	---	---	---	---
Benzene	78.11	1.51E+00	8.00E-04	1.94E-01	1.80E+00	6.10E-01	3.36E-02	1.55E+00
1,3-Butadiene	54.09	3.61E+01	---	---	2.19E-04 ^d	1.78E-03	---	---
Cumene (Isopropylbenzene)	120.20	6.93E-02	---	---	5.00E-01	7.79E-03	1.80E-01	3.81E-01
Dibenzofuran	168.20	4.80E-05	1.64E-02 ^d	1.26E-04	---	---	---	---
Ethylbenzene	106.17	1.48E-01	1.30E-02	3.10E-01	1.40E+00	4.67E-02	1.58E-01	7.16E-01
Fluorene	166.21	1.16E-05	2.94E-02 ^d	5.48E-05	---	---	3.42E-03	1.21E-06
Hexane	86.17	2.44E+00	1.00E-04	3.91E-02	1.00E+00	5.48E-01	---	---
Isooctane (2,2,4-Trimethyl Pentane)	114.23	5.38E-02	---	---	4.00E+00	4.84E-02	1.22E-03	2.00E-03
Naphthalene	128.20	3.94E-03	3.39E-01 ^d	2.15E-01	1.74E-01 ^d	1.54E-04	2.66E-01	3.20E-02
Phenanthrene	178.22	2.34E-06	3.22E-02 ^d	1.21E-05	---	---	---	---
Phenylbenzene (1,1'-biphenyl)	154.21	3.78E-04	---	---	---	---	6.74E-02	7.79E-04
Pyrene	202.24	8.70E-08	3.62E-02 ^d	5.06E-07	---	---	1.24E-05	3.31E-11
Toluene	92.13	4.25E-01	3.20E-02	2.19E+00	7.00E+00	6.69E-01	2.18E-01	2.83E+00
Xylenes	106.17	1.30E-01	2.90E-01	6.06E+00	7.00E+00	2.05E-01	1.18E+00	4.69E+00

SOURCE (unless otherwise stated): Data taken from USEPA 2005, TANKS, Version 4.09d, U.S. Environmental Protection Agency, October 2005. wt% = weight percent

- Vapor pressure of pure species used in calculations were taken at 70°F and provided either by TANKS, the Hazardous Substance Data Bank (HSDB), or were calculated using Antoine equation constants provided either by the National Institute of Standards and Technology (NIST) or Perry's Chemical Engineer's Handbook Seventh Ed., Perry, Robert H, 1997.
- SOURCE: "JP-8 Composition and Variability," Armstrong Laboratory, Environics Directorate, Environmental Research Division, May 1996. An average density of 6.71 pounds per gallon (lb/gal) was used for unit conversion.
- The vapor phase speciation data was estimated using the liquid phase speciation data and equations found in Section 7.1.4 of AP-42, Fifth Edition, Volume I last updated November 2006. Physical properties for fuels used for calculations can be found in Table 6-7.
- SOURCE: SPECIATE, Version 4.4, U.S. Environmental Protection Agency, February 2014. For diesel, profile 4673 was referenced. For gasoline, profile 8748 was referenced. "----" Indicates No Data Available

Table 6-7. Fuel Properties

Fuel	Liquid Molecular Weight	Vapor Molecular Weight	Vapor Pressure (psia) ^b
JP-8/Jet A	162	130	4.08E-02 ^c
Diesel	188	130	9.00E-03
Gasoline ^a	92	66	6.20E+00

SOURCE (unless otherwise stated): Data taken from USEPA 2005, TANKS, Version 4.09d, U.S. Environmental Protection Agency, October 2005.

a. Based on gasoline with a Reid Vapor Pressure of 10.

b. Based on temperature of 70°F

c. SOURCE: “JP-8 Volatility Study,” Southwest Research Institute (SWRI), March 2001. Vapor pressures calculated using the composite data calculations, an average flash point temperature of 118.238°F, and atmospheric pressure of 760mmHg. Flash point temperature average provided by “Petroleum Quality Information System Fuels Data (2005),” Defense Logistics Agency (DLA), Defense Energy Support Center, Technology and Standardization Division, 2006.

6.5 Information Resources

Information regarding the annual fuel throughput may be collected from the fuel service station supervisor. The supervisor may also be able to provide specific information regarding the fuel vapor pressure and HAP constituent data. If this information is unavailable, contact the fuel supplier to gather this data for more precise emissions calculations.

6.6 Example Problems

6.6.1 Problem 1 – Preferred Method

A total of 150,000 gal of gasoline and 85,000 gal of diesel were dispensed from a POL tank into non-road equipment during the previous year. Based on the location of the installation, the gasoline used has an average Reid Vapor Pressure (RVP) of 10 and the average fuel temperature at the installation is 60°F. Calculate the total VOCs and xylene emissions.

Step 1 – Convert the temperature to the correct units. The temperature was given in terms of °F; however, to calculate the EFs needed, the temperature must be converted to the correct units (degrees Rankin [°R]) as follows:

$$T(^{\circ}R) = T(^{\circ}F) + 460.67$$

$$T(^{\circ}R) = 60 + 460.67 = 520.67^{\circ}R$$

Step 2 – Record the vapor pressures and vapor molecular weights. These values are needed for EF calculations and are given in Table 6-2. For RVP 10 gasoline, the molecular weight and

vapor pressure at 60°F are given as **66 lb/lb-mol** and **5.20 psia**, respectively. Similarly, for diesel, the vapor molecular weight and vapor pressure at 60°F are given as **130 lb/lb-mol** and **6.50E-03 psia**, respectively.

Step 3 – Select and record the saturation factor. The saturation factor is a function of the load method employed. Knowing that this fuel was loaded into non-road equipment from a POL tank, it may be assumed that the fuel was splash loaded without vapor balance. This gives a saturation factor of **1.45**.

Step 4 – Calculate emissions. Using the data from the previous steps and Equation 6-1, the total VOCs are calculated as follows:

$$E(VOC) = Q \times \frac{1}{1000} \times 12.46 \times \frac{S \times P \times M}{T} \times \left\{ 1 - \left[\left(\frac{Cap}{100} \right) \times \left(\frac{CE}{100} \right) \right] \right\}$$

For Gasoline:

$$E(VOC) = 150,000 \frac{\cancel{gal}}{yr} \times \frac{1}{1000} \left(\frac{10^3 \cancel{gal}}{\cancel{gal}} \right) \times 12.46 \left(\frac{^{\circ}R \text{ lb-mol}}{psia \ 10^3 \cancel{gal}} \right) \times \frac{1.45 \times 5.20 (psia) \times 66 \left(\frac{lb}{lb-mol} \right)}{520.67^{\circ}R} \left\{ 1 - \left[\left(\frac{0\%}{100\%} \right) \times \left(\frac{0\%}{100\%} \right) \right] \right\}$$

$$E(VOC) = 150 \left(\frac{10^3 \cancel{gal}}{yr} \right) \times 12.46 \left(\frac{^{\circ}R \text{ lb-mol}}{psia \ 10^3 \cancel{gal}} \right) \times \frac{1.45 \times 5.20 (psia) \times 66 \left(\frac{lb}{lb-mol} \right)}{520.67^{\circ}R} \{1\}$$

$$E(VOC) = 1869 \left(\frac{^{\circ}R \text{ lb-mol}}{psia \ yr} \right) \times 0.956 \left(\frac{psia \ lb}{^{\circ}R \text{ lb-mol}} \right) = \mathbf{1,786.8 \frac{lb}{yr}}$$

For Diesel:

$$E(VOC) = 85,000 \frac{\cancel{gal}}{yr} \times \frac{1}{1000} \left(\frac{10^3 \cancel{gal}}{\cancel{gal}} \right) \times 12.46 \left(\frac{^{\circ}R \text{ lb-mol}}{psia \ 10^3 \cancel{gal}} \right) \times \frac{1.45 \times 0.0065 (psia) \times 130 \left(\frac{lb}{lb-mol} \right)}{520.67^{\circ}R} \left\{ 1 - \left[\left(\frac{0\%}{100\%} \right) \times \left(\frac{0\%}{100\%} \right) \right] \right\}$$

$$E(VOC) = 85 \left(\frac{10^3 \cancel{gal}}{yr} \right) \times 12.46 \left(\frac{^{\circ}R \text{ lb-mol}}{psia \ 10^3 \cancel{gal}} \right) \times \frac{1.45 \times 0.0065 (psia) \times 130 \left(\frac{lb}{lb-mol} \right)}{520.67^{\circ}R} \{1\}$$

$$E(VOC) = 1059.1 \left(\frac{^{\circ}R \text{ lb-mol}}{psia \ yr} \right) \times 0.002 \left(\frac{psia \ lb}{^{\circ}R \text{ lb-mol}} \right) = \mathbf{2.12 \frac{lb}{yr}}$$

Step 5 – Record xylene weight percent. Table 6-6 states that the vapor weight percent xylene in gasoline and diesel fuel is **0.205%** and **6.06%** respectively.

Step 6 – Calculate xylene emissions. Using the VOC emissions for gasoline and diesel fuel calculated in Step 4 and the vapor weight percent xylene in each fuel as recorded in Step 5, the total xylene emissions are calculated using Equation 6-3 as shown:

$$E(HAP) = E(VOC) \times \frac{WP(HAP)}{100}$$

For Gasoline:

$$E(Xylene) = 1786.8 \frac{lb}{yr} \times \frac{.205\%}{100\%}$$

$$E(Xylene) = 1786.8 \frac{lb}{yr} \times 0.00205 = \mathbf{3.66 \frac{lb}{yr}}$$

For Diesel:

$$E(Xylene) = 2.12 \frac{lb}{yr} \times \frac{6.06\%}{100\%}$$

$$E(Xylene) = 2.12 \frac{lb}{yr} \times 0.0606 = \mathbf{0.13 \frac{lb}{yr}}$$

Step 7 – Calculate total VOC emissions. The total VOC emissions from fuel dispensing are the sum of evaporative emissions from each fuel calculated in Step 4.

$$E(VOC) = \sum_{i=1}^n [E(VOC)_i]$$

$$E(VOC) = \left(1786.8 \frac{lb}{yr} + 2.12 \frac{lb}{yr} \right)$$

$$\boxed{E(VOC) = \mathbf{1,788.9 \frac{lb}{yr}}}$$

Step 8 – Calculate total xylene emissions. The total xylene emissions from fuel dispensing are the sum of evaporative emissions from each fuel calculated in Step 6.

$$E(HAP) = \sum_{i=1}^n [E(HAP)_i]$$

$$E(Xylene) = \left(3.66 \frac{lb}{yr} + 0.13 \frac{lb}{yr} \right)$$

$$E(Xylene) = 3.79 \frac{lb}{yr}$$

6.6.2 Problem 2 – Emission Factor Method

Using the same throughput for gasoline and diesel as given in Problem 1, re-calculate the VOC emissions using the EF method.

Step 1 – Select and record appropriate EF. Again, since the fuel was loaded into non-road equipment, the loading method is assumed to be splash loading without vapor balance. The EFs for gasoline and diesel are **12** and **0.03 lb/10³ gal**, respectively.

Step 2 – Calculate VOC emissions. Using Equation 6-2 and the EFs as recorded in Step 1, the total VOCs emitted are calculated as follows:

$$E(VOC) = Q \times \frac{1}{1000} \times EF(VOC) \times \left\{ 1 - \left[\left(\frac{Cap}{100} \right) \times \left(\frac{CE}{100} \right) \right] \right\}$$

For Gasoline:

$$E(VOC) = 150,000 \frac{gal}{yr} \times \frac{1}{1000} \left(\frac{10^3 gal}{gal} \right) \times 12 \frac{lb}{10^3 gal} \times \left\{ 1 - \left[\left(\frac{0\%}{100\%} \right) \times \left(\frac{0\%}{100\%} \right) \right] \right\}$$

$$E(VOC) = 150 \frac{10^3 gal}{yr} \times 12 \frac{lb}{10^3 gal} \times \{1\} = \mathbf{1,800 \frac{lb}{yr}}$$

For Diesel:

$$E(VOC) = 85,000 \frac{gal}{yr} \times \frac{1}{1000} \left(\frac{10^3 gal}{gal} \right) \times 0.03 \frac{lb}{10^3 gal} \times \left\{ 1 - \left[\left(\frac{0\%}{100\%} \right) \times \left(\frac{0\%}{100\%} \right) \right] \right\}$$

$$E(VOC) = 85 \frac{10^3 gal}{yr} \times 0.03 \frac{lb}{10^3 gal} \times \{1\} = \mathbf{2.55 \frac{lb}{yr}}$$

Step 3 – Sum the VOC emissions. Adding the calculated emissions from Step 2, the total VOCs, as determined by the EF method is calculated as follows:

$$E(VOC) = \sum_{i=1}^n [E(VOC)_i]$$

$$E(VOC) = \left(1800 \frac{lb}{yr} + 2.55 \frac{lb}{yr} \right)$$

$$E(VOC) = \mathbf{1,802.55 \frac{lb}{yr}}$$

6.7 References

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APPENDIX A – EPA HAP LIST

CAS No.	Chemical/Compound
75070	Acetaldehyde
60355	Acetamine
75058	Acetonitrile
98862	Acetophenone
53963	2-Acetylaminofluorene
107028	Acrolein
79061	Acrylamide
79107	Acrylic Acid
107131	Acrylonitrile
107051	Allyl Chloride
92671	4-Aminobiphenyl
62533	Aniline
90040	o-Anisidine
1332214	Asbestos
71432	Benzene
92875	Benzidine
98077	Benzotrichloride
100447	Benzyl Chloride
92524	Biphenyl
117817	Bis(2-ethylhexyl)phthalate
542881	Bis(chloromethyl)ether
75252	Bromoform
106945	1-Bromopropane
106990	1,3-Butadiene
156627	Calcium Cyanamide
133062	Captan
63252	Carbaryl
75150	Carbon Disulfide
56235	Carbon Tetrachloride
463581	Carbonyl Sulfide
120809	Catechol
133904	Chloramben
57749	Chlordane
7782505	Chlorine
79118	Chloroacetic Acid
532274	2-Chloroacetophenone
108907	Chlorobenzene
510156	Chlorobenzilate
67663	Chloroform
107302	Chloromethyl methyl ether
126998	Chloroprene
1319773	Cresylic Acid
95487	o-Cresol
108394	m-Cresol
106445	p-Cresol
98828	Cumene
94757	2,4-D
3547044	DDE

CAS No.	Chemical/Compound
334883	Diazomethane
132649	Dibenzofurans
96128	1,2-Dibromo-3-chloropropane
84742	Dibutylphthalate
106467	1,4-Dichlorobenzene
91941	3,3-Dichlorobenzidine
111444	Dichloroethyl ether
542756	1,3-Dichloropropene
62737	Dichlorvos
111422	Diethanolamine
121697	N,N-Dimethylaniline
64675	Diethyl Sulfate
119904	3,3-Dimethoxybenzidine
60117	Dimethyl Aminoazobenzene
119937	3,3'-Dimethyl Benzidine
79447	Dimethyl Carbamoyl Chloride
68122	Dimethyl Formamide
57147	1,1-Dimethyl Hydrazine
13113	Dimethyl Phthalate
77781	Dimethyl Sulfate
534521	4,6-Dinitro-o-cresol
51285	2,4-Dinitrophenol
121142	2,4-Dinitrotoluene
123911	1,4-Dioxane
122667	1,2-Diphenylhydrazine
106898	Epichlorohydrin
106887	1,2-Epoxybutane
140885	Ethyl Acrylate
100414	Ethyl Benzene
51796	Ethyl Carbamate
75003	Ethyl Chloride
106934	Ethylene Dibromide
107062	Ethylene Dichloride
107211	Ethylene Glycol
151564	Ethylene Imine
75218	Ethylene Oxide
96457	Ethylene Thiourea
75343	Ethylidene Dichloride
50000	Formaldehyde
76448	Heptachlor
118741	Hexachlorobenzene
87683	Hexachlorobutadiene
77474	Hexachlorocyclopentadiene
67721	Hexachloroethane
822060	Hexamethylene-1,6-diisocyanate
680319	Hexamethylphosphoramide
110543	Hexane
302012	Hydrazine

CAS No.	Chemical/Compound
7647010	Hydrochloric Acid
7664393	Hydrogen Fluoride
123319	Hydroquinone
78591	Isophorone
58899	Lindane
108316	Maleic Anhydride
67561	Methanol
72435	Methoxychlor
74839	Methyl Bromide
74839	Methyl Chloride
74873	Methyl Chloroform
71556	Methyl Ethyl Ketone
60344	Methyl Hydrazine
74884	Methyl Iodide
108101	Methyl Isobutyl Ketone
624839	Methyl Isocyanate
80626	Methyl Methacrylate
1634044	Methyl tert Butyl Ether
101144	4,4-Methylene bis(2-Chloroaniline)
75092	Methylene Chloride
101688	Methylene Diphenyl Diisocyanate
101779	4,4'-Methylenedianiline
91203	Naphthalene
98953	Nitrobenzene
92933	4-Nitrobiphenyl
100027	4-Nitrophenol
79469	2-Nitropropane
684935	N-Nitroso-N-Methylurea
62759	N-Nitrosodimethylamine
59892	N-Nitrosomorpholine
56382	Parathion
82688	Pentachloronitrobenzene
87865	Pentachlorophenol
108952	Phenol
106503	p-Phenylenediamine
75445	Phosgene
7803512	Phosphine
7723140	Phosphorus
85449	Phthalic Anhydride
1336363	Polychlorinated Biphenyls
1120714	1,3-Propane Sultone
57578	beta-Propiolactone
123386	Propionaldehyde
114261	Propoxur
78875	Propylene Dichloride
75569	Propylene Oxide
75558	1,2-Propenimine
91225	Quinoline

Appendix A – EPA HAP List

CAS No.	Chemical/Compound
106514	Quinone
100425	Styrene
96093	Styrene Oxide
1746016	2,3,7,8-Tetrachlorodibenzo-p-dioxin
79345	1,1,2,2-Tetrachloroethane
127184	Tetrachloroethylene
7550450	Titanium Tetrachloride
108883	Toluene
95807	2,4-Toluene Diamine
584849	2,4-Toluene Diisocyanate
95534	o-Toluidine
8001352	Toxaphene
120821	1,2,4-Trichlorobenzene
79005	1,1,2-Trichloroethane
79016	Trichloroethylene

CAS No.	Chemical/Compound
95954	2,4,5-Trichlorophenol
88062	2,4,6-Trichlorophenol
121448	Triethylamine
1582098	Trifluralin
540841	2,2,4-Trimethylpentane
108054	Vinyl Acetate
593602	Vinyl Bromide
75014	Vinyl Chloride
75354	Vinylidene Chloride
1330207	Xylenes
95476	o-Xylene
108383	m-Xylene
106423	p-Xylene
---	Antimony Compounds
---	Arsenic Compounds

CAS No.	Chemical/Compound
---	Beryllium Compounds
---	Cadmium Compounds
---	Chromium Compounds
---	Cobalt Compounds
---	Coke Oven Emissions
---	Cyanide Compounds ¹
---	Glycol Ethers ²
---	Lead Compounds
---	Manganese Compounds
---	Mercury Compounds
---	Fine Mineral Fibers ³
---	Nickel Compounds
---	Polycyclic Organic Matter ⁴
---	Radionuclides (including Radon) ⁵
---	Selenium Compounds

1. X'CN where X=H' or any other group where a formal dissociation may occur. For example, KCN or Ca(CN)₂.
2. Includes mono- and di-ethers of ethylene glycol, diethylene glycol, and triethylene glycol R-(OCH₂CH₂)-OR', where:
n = 1, 2, or 3;
R = alkyl C7 or less; or R = phenyl or alkyl-substituted phenyl;
R' = H or alkyl C7 or less; or OR' consisting of carboxylic acid ester, sulfate, phosphate, nitrate, or sulfonate.
3. Includes mineral fiber emissions from facilities manufacturing or processing glass, rock, or slag fibers (or other mineral derived fibers) of average diameter 1 micrometer or less.
4. Includes organic compounds with more than one benzene ring, and which have a boiling point greater than or equal to 100°C.
5. A type of atom which spontaneously undergoes radioactive decay.