



CALIFORNIA  
AIR RESOURCES BOARD

[About](#) [Our Work](#) [Resources](#) [Business Assistance](#) [Rulemaking](#) [News](#)

# Mobile Source Emissions Inventory – Categories

*This page last updated on March 1, 2018*

Category specific emissions estimates have been developed over the past several years in support of specific agency regulatory objectives. Documentation and emissions estimates are available through the regulatory process. This site provides links to available information for each rulemaking.

## **On-Road Motor Vehicles:**

The EMFAC emissions model is developed and used by CARB to assess emissions from on-road vehicles including cars, trucks, and buses in California, and to support CARB's regulatory and air quality planning efforts to meet the Federal Highway Administration's transportation planning requirements. USEPA approves EMFAC for use in State Implementation Plan and transportation conformity analyses. The most recent approved version is EMFAC2014 ([Federal Register Notice](#)).

### **Recommended Tools to Use for On-Road Emissions Analyses**

Analysis	Recommended Tool
Criteria Pollutant Emissions	EMFAC, <a href="#">EMFAC Web Database</a>
Greenhouse Gas Emissions	<a href="#">Greenhouse Gas Inventory</a>

State Implementation Plans	EMFAC with MPO Activity
Conformity Analyses	EMFAC with MPO Activity
SB375 Analyses	EMFAC with MPO Activity and SB375
CEQA with Localized Data	EMFAC Emission Rates Mode (PL)

## **EMFAC2017 (Latest Version - NOT YET APPROVED BY US EPA)**

As the latest version of the model, EMFAC2017 represents CARB's current understanding of motor vehicle travel activities and their associated emission levels. EMFAC2017 will use a similar framework as EMFAC2014 and has very similar Graphical User Interface (GUI) with slight modification for new modules (e.g., GHG and Natural Gas). However, it is strongly recommended that users thoroughly read the User's Guide before installing and running the model. Please join the [MSEI mailing list](#) if you would like to be informed of general developments related to EMFAC2017. For EMFAC2017 related questions, please send an email to [the EMFAC team](#).

- [EMFAC2017 Update \(v1.0.2\) Public Release Notice](#) (350 KB)
- [EMFAC2017 User's Guide](#) (2.7 MB)
- [EMFAC2017 PL Handbook](#) (2.5 MB)
- [EMFAC2017 Technical Documentation](#) (9.9 MB)
- [EMFAC2017 Software Installation Package \(v1.0.2\)](#) (305 MB)
- [EMFAC2017 Web Database](#)
- [EMFAC training materials](#)
- [List of Updates Since v1.0.1](#)

## EMFAC2014 (USEPA approved)

Effective December 14, 2015, the USEPA has approved the EMFAC2014 emissions model for SIP and conformity purposes ([Federal Register Notice](#)). As the latest version of the model, EMFAC2014 represents CARB's current understanding of motor vehicle travel activities and their associated emission levels. Compared to previous versions of EMFAC, there has been a variety of changes to the Graphical User Interface and to the overall flow of using EMFAC. As a result, it is strongly recommended that users thoroughly read the User's Guide before installing and running the model. Please join the [MSEI mailing list](#) if you would like to be informed of general developments related to EMFAC2014. For EMFAC2014 related questions, please send an email to [the EMFAC team](#).

- [EMFAC2014 Update \(v1.0.7\) Public Release Notice](#) (25 KB)
- [EMFAC2014 User's Guide](#) (3.0 MB)
- [EMFAC2014 Technical Documentation](#) (5.0 MB), [PL Handbook](#) (1.4 MB)
- [EMFAC2014 Software Installation Package \(v1.0.7\)](#) (480 MB)
- [EMFAC2014 Web Database](#)
- [List of Updates Since v1.0.1](#)
- [Comprehensive Table of EMFAC Topics](#) (26 KB)

## EMFAC2011

- [EMFAC2011 Release Document](#)
- EMFAC2011 User's Guides: [LDV](#), [HD](#), [SG](#), [PL](#)
- [EMFAC2011 Technical Documentation](#) (5.4 MB), [PL Handbook](#) (12 MB)

- EMFAC2011 Software Installation Packages: [LDV](#) (2.6 MB), [HD](#) (14 MB), [SG](#) (1.6 GB), [PL](#) (9.4 MB)
- [EMFAC2011 Idling Emission Rates](#)
- [More Information on EMFAC2011](#)

Over the years CARB has also developed emissions inventories for regulatory purposes. Historical documentation and methods are posted below.

## **On-Road Passenger Cars and Light Trucks:**

- Advanced Clean Cars
  - [Rulemaking Page](#)
  - [Inventory Documentation](#)
  - Regulatory Development Background Materials
    - Emissions Inventory - Models
      - ["LEV3 Tool" Corrected](#) - Same as "LEV3 Tool" below, but corrected for a bug in PM30 only
      - ["LEV3 Tool"](#) - Generates statewide baseline and LEV3 emission rates and inventories
      - ["Scaling Tool"](#) - Takes a regional EMFAC run as input and scales the data to the LEV3 tool adjusted baseline
      - [Annual Inventory](#) - Apply LEV3 Reductions to Regional EMFAC Inventory, Annual or Summer Average
      - [Summer Inventory](#) - Apply LEV3 Reductions to Regional EMFAC Inventory, Annual or Summer Average

- ["CARBITS Tool"](#) - Generates emissions from CARBITS population inputs and LEV3 Tool emission rates
- [Regional Inventory](#) - Generates regional inventory based on summer or annual inventories referenced above
- [Model Structure and Inputs](#) - A brief description of the input tables in the models
- [Model Directions](#) - Directions on how to run the emissions models
- Emissions Inventory - CARBITS Rebound
  - [Rebound Scenarios](#) - Calculates Change in VMT due to Rebound Effect
  - [CARBITS Populations](#) - Populations from CARBITS for Emission Scenarios
- Emissions Inventory - Tech Group Phase-In
  - [Emission level Splits](#) - The phase-ins for the populations of the scenarios
  - [Emission rate recipes](#) - Emission level instructions and recipes
  - [Emission level Splits/Emission rates](#) - Worksheets for phase-ins and exhaust emission rates
  - [Emission level Splits/Emission rates](#) - Worksheets for phase-ins and evaporative emission rates
  - [PM Exhaust Emission rates](#) - Worksheets and correction factors for Gas Exhaust PM
  - [ZEV Implementation Input](#) - Contains EMFAC 2011 Sales projections and ZEV Implementation facts

- [LEV 3 Implementation Input](#) - LEV 3 Proposed Compliance Scenario MSCD
- [LEV 3 Accelerated Scenario](#) - Accelerated Compliance Scenario from MSCD
- [LD Exhaust Emission Factors from EMFAC 2011](#) - Summer Exhaust Emission factors from EMFAC 2011
- [Evaporative Emission Factors from EMFAC 2011](#) - Summer Evaporative Emission factors from EMFAC 2011
- [Gasoline PM exhaust emission factors](#) - Gasoline PM exhaust Emission factors from EMFAC 2011
- [Methane for NMOG calculation](#)
- [TOG for NMOG calculation](#)
- [MDV diesel populations](#) - Correct EMFAC 2011 Output MDV diesel populations
- [LHD1&2 diesel populations](#) - Correct EMFAC 2011 Output LHD1&2 diesel populations
- [Tech Group fraction assignments](#) - EMFAC 2011 Tech fraction assignments
- [Programmed Emission Level Splits EMFAC 2007](#) - Revised EMFAC 2007 LEV 2 baseline
- [LEV 3 Implementation Original](#) - LEV 2 Actual PZEV sales from Manufacturer Submission
- [PM Brake wear emission rates](#) - Brakewear PM emissions from EMFAC 2010 LDV source code

- [PM Tire wear emission rates](#) - Tire wear PM emissions from EMFAC 2010 LDV source code
- [Survival rates from EMFAC LDV 2010](#) - Survival rates from EMFAC LDV 2010 source code
- Emissions Inventory - Greenhouse Gases
  - [Low Carbon Fuel Standard \(LCFS\)](#) - Percent reduction from LCFS
  - [Proposed LEV III](#) - Percent reduction from federal standard and proposed LEV III standard
  - [Global Warming Potential](#) - Global Warming Potential for 100-yr period
- Clean Cars Standards - Pavley, Assembly Bill 1493
  - [Rulemaking Page](#)
  - [2008 Documentation](#)
  - [2008 Documentation Addendum](#)
- SB375
  - [Program Website](#)
  - [Pavley I + LCFS Post Processor \(Ver 1.0\) Installation](#) (superceded by EMFAC2011-SG; only to be used in conjunction with EMFAC2007)

## On-Road Heavy Duty Diesel Trucks:

- Trucks and Bus

- [2010 Rule Update ISOR Executive Summary](#)
- [November 2010 Support Data](#)
- [2010 Documentation \(Appendix G\)](#)
- [Inventory Database](#)
- [AB1085 Data Sources](#)
- [2008 Rule Board Meeting Slides](#)
- [2008 Rule News Clips](#)
- [2008 Documentation \(Appendix G\)](#)
- [Rulemaking Page](#)
- Drayage Truck
  - [2010 Documentation \(Appendix G\)](#)
  - [2007 Documentation \(Appendix B\)](#)
  - [Rulemaking Page](#)
- Public / Utility Fleets
  - [2006 Documentation \(Appendix B\)](#)
  - [Rulemaking Page](#)
- Solid Waste Collection Vehicles
  - [2003 Documentation \(Staff Report - Revised Appendix E\)](#)
  - [2003 Documentation \(Staff Report - Appendix E\)](#)
  - [Rulemaking Page](#)

## Go to [Off-Road Diesel Emissions Inventory Webpage](#)

Off-road diesel categories include diesel equipment in construction and mining, agriculture, cargo handling equipment, transport refrigeration units, commercial harborcraft, locomotives, and ocean-going vessels.

## Off-Road Gasoline Motor Vehicles:

In the past CARB released the OFFROAD model which calculated emissions from off-road sources. The OFFROAD model is now being replaced by category specific methods and inventory models that are being developed for specific regulatory support projects. The categories listed below have been or are being updated with new methods and data. Where available, new inventories and models are provided. If a category is not listed below, OFFROAD2007 is the current tool for estimating emissions. It is available [here](#).

- Pleasure Craft
  - [AB 1085 Compliance Page](#)
  - [Rulemaking Page](#)
- Recreational Vehicles
  - [Inventory Documentation \(Attachment C\)](#)
  - [RV2013 \(Inventory Model Database\)](#)
  - [RV2013 Support Documents](#)
  - [Rulemaking Page](#)

- Outboard Marine Tank
  - [2008 Documentation \(Staff Report\)](#)
  - [2007 Outboard Marine Tank Survey](#)
  - [Rulemaking Page](#)
- Portable Fuel Tanks
  - [2005 Documentation \(Staff Report\)](#)
  - [1999 Documentation \(Staff Report\)](#)
  - [Rulemaking Page](#)
- Lawn and Garden
  - [2006 Commerical Lawn and Garden Survey](#)
  - [2001 Residential Lawn and Garden Survey](#)