CALIFORNIA
AIR RESOURCES BOARD

Gavin Newsom, Governor
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October 14, 2022

Ms. Elizabeth Adams
Director, Air and Radiation Division
U.S. Environmental Protection Agency, Region 9
75 Hawthorne Street
San Francisco, California 94105
Adams.Elizabeth@epa.gov

Dear Ms. Adams:

The California Air Resources Board (CARB) is requesting U.S. Environmental Protection Agency (U.S. EPA) approval of EMFAC2021 (desktop software and web platform) and the EMFAC2017 Off-Model Adjustment Factors. This version replaces the prior versions submitted in our letters dated August 30 and 31, 2021 for use in State Implementation Plans (SIP) and transportation conformity determinations in California, as required by the Clean Air Act (CAA) and U.S. EPA regulations. With this letter, CARB is submitting an updated version of EMFAC2021, also known as EMFAC2021 v1.0.2, that corrects a minor calculation error, described below, and that reflects U.S. EPA's revocation of the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule Part One: One National Program.[1] Consistent with these federal actions, CARB requests to revoke, effective March 14, 2022, the off-model adjustment factors for EMFAC2014 and EMFAC2017 models developed in response to the SAFE Part One rule and actions.[2] In addition, CARB provides detailed information on the web platform format of EMFAC2021, which represents the next step in the ongoing improvement of the EMFAC series of emissions estimation models. CARB also provides the revised EMFAC2017 Off-Model Adjustment Factors that account for the benefits of several recently adopted on-road heavy-duty vehicle and engine regulations (attached).

EMFAC2021 v1.0.2 Minor Update

Recently, CARB found a computational error related to NOx idling emissions from newer heavy-duty trucks affected by the Heavy-Duty Omnibus regulation.[3] CARB has fixed this error in EMFAC2021 v1.0.2 (in both the desktop software and web platform). The impact of this correction is relatively minor and results in an average of a 2 percent decrease in on-road NOx emissions from 2022 to 2050. In addition, CARB provided public notice of the impacts of this update,[4] and details are shown on CARB's Mobile Source Emission Inventory (MSEI) website.[5]

[1] Corporate Average Fuel Economy (CAFE) Preemption, 86 Fed. Reg. 74,236, December 29, 2021; Reconsideration of a Previous Withdrawal of a Waiver of Preemption, 87 Fed. Reg. 14,332, March 14, 2022.
[2] *https://www.arb.ca.gov/msei/emfac_off_model_adjustment_factors_final_draft.pdf*
[3] *https://ww2.arb.ca.gov/rulemaking/2020/hdomnibuslownox*
[4] *https://content.govdelivery.com/accounts/CARB/bulletins/314a532*
[5] *https://ww2.arb.ca.gov/our-work/programs/mobile-source-emissions-inventory/msei-modeling-tools-emfac-software-and*

EMFAC2021 Web Platform

CARB has developed a new EMFAC web platform to provide quicker and easier access to the model, available at: *https://arb.ca.gov/emfac/*. This pre-processed database reduces the model run time from days to hours or minutes, depending on the analyses and inputs modified. Users do not need to install or run the model on their personal computers with this web platform. This form of EMFAC2021 has the same functionality and produces the same results as the desktop software.

Like the desktop version of EMFAC2021 v1.0.2, the web platform includes the described computational error fix. It includes the emission inventory with default or CARB estimated activity, project analysis to support project-level (PL) assessments, scenario analysis, and custom activity (SG) mode to perform emissions assessments to demonstrate conformity to motor vehicle emissions budgets and demonstrate compliance with Senate Bill (SB) 375 targets.

CARB preprocessed the database of this web platform by running the desktop version of EMFAC2021 v1.0.2 model on a high-performance computing (HPC) cluster. The user can generate customized outputs on the web platform from this back-end database. Staff confirmed that the results from this web platform are the same as the desktop software, as noted under the 'Emissions Inventory'[6] and the 'Scenario Analysis'[7] sections.

In the disclaimer of the project level (PL) mode,[8] emission rates extracted from the PL mode of this web platform might differ slightly from those provided by the desktop software depending on the vehicle categories selected. To improve the processing speed, PL Web generates preprocessed correction factors and uncorrected emission rates, and then applies preprocessed correction factors to preprocessed "uncorrected emission rates." These differences are expected for some special cases such as older passenger vehicles, transit buses, oxides of sulfur (SOx) emissions, and plug-in hybrid electric vehicles (PHEV) carbon dioxide (CO2) emissions and are mainly due to how they are corrected.

If updates become necessary for EMFAC2021, the back-end database will be updated by re-running the model to ensure that the web platform is consistent with the desktop software, in consultation with U.S. EPA.

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[6] *https://arb.ca.gov/emfac/emissions-inventory/*
[7] *https://arb.ca.gov/emfac/scenario-analysis/generate-template*
[8] *https://arb.ca.gov/emfac/project-analysis*

EMFAC2017 Off-model Adjustment Factors

The off-model adjustment factors that CARB is providing to U.S. EPA are based on EMFAC2021 v1.0.2 and includes a fix to the computational error described above. The previous August and December 2021 factors were both derived from EMFAC2021 v1.0.1. However, the December 2021 version provided scaling factors by calendar year and vehicle category, whereas the August 2021 version provided scaling factors aggregated by calendar year only. More information on these factors is included in the attachment 'EMFAC2017_adjustment_factors v1.0.2'.

If you have technical questions relating to EMFAC, please contact Dr. David Quiros, Chief of Mobile Source Analysis Branch, at (916) 264-9378 or via email at *David.Quiros@arb.ca.gov*. Questions relating to SIP development should be directed to Ms. Sylvia Vanderspek, Chief, Air Quality Planning Branch, at (916) 324-7163 or via email at *Sylvia.Vanderspek@arb.ca.gov*. Questions regarding transportation conformity should be directed to Dr. Nesamani Kalandiyur, Manager, Transportation Analysis Section, at (916) 324-0466 or via email at *Nesamani.Kalandiyur@arb.ca.gov.*

Sincerely,

Michael Benjamin, D. Env, Division Chief, Air Quality Planning and Science Division

Enclosures

cc:

David Quiros, Branch Chief, Mobile Source Analysis Branch

Sylvia Vanderspek, Branch Chief, Air Quality Planning Branch

Nesamani Kalandiyur, Manager, Transportation Systems Planning Branch