MOVES3 MODEL

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Introduction

- EPA's MOtor Vehicle Emission Simulator (MOVES) is a state-of-the-science emission modeling system that estimates emissions for mobile (onroad and nonroad) sources at the national, county, and project level for criteria air pollutants, greenhouse gases, and air toxics.

- MOVES3 is the latest official version of the MOVES model approved and published by EPA in November 2020.

- MOVES3 replaces MOVES2014b and contains a number of improvements and updates.

Improvements & Updates

- MOVES3 incorporates the latest data on vehicle populations, travel activity (start and idling activity patterns, updated national VMT, vehicle population), and emission rates (diesel, gasoline, and CNG rates for HD trucks & HC, CO, NOx, and PM rates for LD vehicles) as well as updated fuel supply information at the county level.

- Adjusts modeling to better account for vehicle starts, long-haul truck hotelling, and off-network idling.

- Incorporates impacts of the Heavy-Duty Greenhouse Gas Phase 2 rule and the Safer Affordable Fuel-Efficient (SAFE) Vehicles Rule.

- Has more user-friendly interface and is compatible with newer software.

MOVES3 Vs MOVES2014b

- Both are same structurally.

- New format options for some inputs in MOVES3.

- Model run time may differ depending on the type of run and user inputs and computer configuration.

- EPA testing – Run time at the Default and County Scale should be about the same or lower as runs with MOVES2014b.

- MOVES3 run time at the Project Scale may take notably longer compared to MOVES2014b.

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MOVES3 Vs MOVES2014b

- Emissions comparison – EPA performed comparison using default data at national level and for two sample urban counties with different local travel patterns and ambient conditions.

- National level – MOVES3 emission estimates are slightly lower for most criteria pollutants in future years.

- Urban counties – MOVES3 NOx emissions estimates are higher in future years. This is due to higher running emissions from heavy-duty trucks outweighing declines from heavy-duty hotelling.

- Results for individual areas will vary based on the pollutant selected and that area's local inputs.

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Use in SIPs & Transportation Conformity

- States should use MOVES3 as expeditiously as possible, as there is no grace period for the use of MOVES3 in future SIPs. This will ensure meeting applicable requirements and taking full advantage of the improvements incorporated in this version.

- However, state and local agencies that have already completed significant SIP work with MOVES2014, MOVES2014a or MOVES2014b may continue to use these versions.

- States not required to revise submitted SIPs or SIPs that have already been approved simply because a new motor vehicle emissions model is now available.

Use in SIPs & Transportation Conformity

- States can choose to update these SIPs with MOVES3, for example, if it is determined that it is appropriate to update motor vehicle emissions budgets ("budgets") with the model for future conformity determinations.

- Two-year grace period for using MOVES3 for regional transportation conformity and project-level conformity purposes. EPA encourages states to use the latest version of the MOVES model available at the time that any conformity modeling begins in order to take advantage of the latest information and improvements included in the model.

- EPA will use MOVES3 for the 2020 National Emissions Inventory (NEI).