



MOVES

Motor Vehicle Emission Simulator

MOVES Plans & Status

Presentation for MOVES Review Work Group

October 14, 2020



New Naming Convention

MOVES3

- We have changed the naming system for MOVES
 - Provides clarity on the various versions of the model.
 - Under this new naming system, future minor revisions would be designated by increments of the number after a decimal point (e.g., MOVES3.1).
 - EPA may also use an additional decimal point to designate minor patches (e.g., MOVES3.0.1).



Status Update

- We plan to release the new version of MOVES by the end of 2020; possibly next month
- Since the last Work Group meeting, we have:
 - Updated MOVES inputs (see today's other presentations)
 - Peer-reviewed remaining inputs and analysis
 - Had a few experienced modelers test a draft version of the model
 - Updated the MOVES interface and code to fix errors and improve usability
 - Drafted technical reports, guidance documents and user support information



Next steps

- Complete documentation
- Post model and documentation on web
- Share MOVES3 results and features with MRWG
- Provide public webinar on MOVES3 features
- Update training materials
 - including training for experienced MOVES modelers
- Work on evaluating MOVES3 and planning future updates



MOVES3 Data Updates: Heavy Duty

Change	Description	MRWG Presentation
Heavy-duty GHG Phase 2 standards	Incorporated Heavy-duty 2017-2025 GHG regulation into MOVES	September 2016
HD diesel running rates	Based on heavy-duty in-use data	December 2016, December 2017, April 2019
HD CNG and gasoline emission rates	Updated 2007+ CNG and 2008+ Gasoline emission rates	June 2017, April 2019
HD start emission rates	Updated 2010+ Diesel and 2008+ Gasoline starts based on compliance data. Updated relationship of starts vs. parking time	June 2017
HD extended idle rates	Updated heavy-duty diesel emission rates for extended idling and auxiliary power units	December 2016
Hotelling activity	Decreased hotelling (extended idling trucks at truck stops) nation-wide by ~2/3	December 2016, June 2018
HD vehicle masses	Increased resolution in vehicle masses, using weigh-in-motion and other data	December 2017
Add Gliders	Accounted for gliders in vehicle fleet	April 2019
HD Crankcase emissions	Updated rates for MY 2010+	October 2020

MOVES3 Data Updates: Light Duty & General

Change	Description	MRWG Presentation
LD PM rates	Included new data from GDI vehicles, and updated PM temperature adjustments	March 2017
LD HC/CO/NOx rates	Updated LD running rates based on new I/M, PEMS and remote sensing data. Updated running and start rates. Reduced high-power emission rates.	March 2017, Sept. 2017, April 2019, October 2020
LD Fuel & CO2	Increased fuel consumption and thus CO2 to account for SAFE rule.	October 2020
LD start emissions	Updated the relationship between starts and soak (parked) time based on EPA and ARB data	June 2017, June 2018
Improved speciation	Updated organic gas speciation profiles, including methane emissions	June 2017
LD and HD off-network idle time	Accounted for off-network and work-day idling (idling in parking lots, distribution centers, etc). Based on Verizon, NREL datasets.	March 2017, June 2018
LD and HD start activity	Updated start activity based on Verizon, NREL datasets. Accounted for fewer starts by vehicle age.	June 2017
Road type categories	Removed “ramps” as a separate road type. Ramp driving is now incorporated in rural and urban freeway driving.	September 2016, December 2017,
LD and HD VMT, populations, and vehicle characteristics	Updated historic and projected VMT and vehicle populations based on 2019 Highway Statistics and AEO. Updated vehicle age distributions	December 2016,
Fuel properties	Updated information on gasoline and diesel fuel properties based on fuel compliance data	Sept. 2017, Oct. or Nov. 2020