Report from MOVES Review Workgroup

October 5, 2010

What is MOVES?

- Motor Vehicle Emission Simulator
- Estimates total emissions & energy use from all on-road sources over variety of scales
- Replaces MOBILE6.2 as EPA's official car & truck emissions model for SIPs and conformity determinations

MOVES Releases

- Draft MOVES2009 –April 2009
  - Draft version of MOVES
  - Extensive comments from MOVES Workgroup and others
- MOVES2010 – December 2009
  - Now official model for use in SIPs & conformity
- MOVES2010a– September 2010
  - Minor update to account for new fuel consumption/GHG rules
  - Recommended for SIP & conformity use when possible

MOVES Review Workgroup

- Formed by MSTRS in April 2007 to provide input to EPA on MOVES development; met through April 2010
- Workgroup members represented wide range of stakeholders
- Reviewed and provided comments on MOVES inputs and algorithms
  - Recommendations were incorporated in subsequent versions of MOVES
- Developed comments and recommendations for MSTRS
  - Vote today whether to forward to CAAC

Workgroup Final Comments & Recommendations (Summary)

- MOVES overall structure is solid
- MOVES validation and corroboration work has been helpful.
  - EPA has compared MOVES results to a variety of independent data sets
  - These efforts should continue
- EPA needs to continue model updates
- EPA needs long-term data collection plan
  - identifying data gaps
  - prioritizing data collection efforts.

MSTRS Questions to MOVES Team (1)

Question	EPA Response
What are EPA plans for addressing the known uncertainties in the model (e.g. fuel effects, operation at higher power, modeling of conventional hybrid and PHEV)?	For the past 3 years, EPA, DOE and CRC have collaborated on the largest evaluation of fuel effects since the Auto/Oil study in the early 1990's; this study is focused on Tier 2 vehicles. Project partners are currently analyzing these data, and EPA plans to integrate the findings from the research as part of the anti-backsliding study required by Congress and future model updates. Data on emissions in higher power bins will be collected in our Tier 2 PEMS study, beginning this fall. Hybrid vehicles are addressed below.

MSTRS Questions to MOVES Team (2)

Question	EPA Response
What are EPA plans for scheduling new releases of the model (e.g. annual, biennial, point releases)?	Each MOVES release requires careful consideration of the policy implications and technical justification for a model change. It also requires overcoming the analysis, software and design challenges required to update the model. Because the policy climate and technical context are not easily predicted, future MOVES releases will not meet a rigid pre-determined schedule. However, EPA does plan to continuously improve the MOVES model, as we did with our recent release of MOVES2010a, and to update the model frequently enough that it continues to reflect our best understanding of vehicle emissions.

MSTRS Questions to MOVES Team (3)

Question	EPA Response
What are EPA plans for incorporating new technologies into the model as they become important (e.g. various biodiesel blends and feedstocks, ethanol blends between E10 and E-85, diesel hybrids, PHEV, transponder based I/M, etc.)?	Explicit modeling of hybrid vehicles and other vehicle technologies is not necessary for MOVES traditional uses (SIPs, conformity, EPA inventories). Our current version of MOVES does not model conventional and plug-in hybrids; rather it computes emissions for "average vehicles" for each model year and includes hybrids in the average. EPA is now anticipating what kinds of modeling will require explicit consideration vehicle technologies and is considering whether this should be designed into future versions of MOVES or developed as a stand-alone modeling tool. We do plan to update MOVES with information on E-85 and other ethanol blends. Other new technologies will be added to the model as they become important and data becomes available.