

National Capital Region Air Quality Planning Transition to MOVES2014 Model

For Use in Regional Air Quality Conformity And
State Implementation Plan Development

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NATIONAL CAPITAL REGION TRANSPORTATION PLANNING BOARD

Briefing Outline

- Good News!
- Why Do This?
- How We Got to This Point
- Important New Features of MOVES2014
- Framework for Testing The Model
- Comparative Test Results Findings
- Test Results Summary
- Quality Assurance and Conclusion

Good News!

The region is set to use the EPA's latest mobile vehicle emissions estimation model ahead of deadline!

- Air Quality Planning
(SIPs, Maintenance Plans, Emissions Inventory)
- Transportation Planning
(Regional Air Quality Conformity analysis of the CLRP and TIP)

Air and Transportation agencies collaborating and supporting COG staff!

Why Do This?

Federal Regulations requires use of latest planning information, assumptions and analysis tools in developing regional plans.

- Were using EPA's MOVES2010a model
- EPA released new model in July 2014 (MOVES2014)
 - Use in SIP and Conformity “as expeditiously as possible” (but no later than 2 years; July 2016)

More accurate estimates of emissions

- Account for reductions from recent control measures
- New Science based on new test programs & studies
- Changes in calculation methodologies

How We Got to This Point

- Installation; Test runs; Training
- Coordination & Consultation with EPA and state air and transportation agencies
- Input Data Conversion (MOVES2010a to MOVES2014)
- New Data Compilation
- Test model runs and debugging
(Representative jurisdictions for 2015, 2017 and 2040)
- Development of customized input & output processing tools
- Full regional test runs (2015 & 2040)
- QA/QC; Interagency consultation

Important New Features of MOVES2014

- **Federal Emissions Reduction Programs:**
 - ✓ Tier 3 in 2017 for cars and light/medium/heavy duty vehicles
 - ✓ New CAFE fuel economy standards effective for passenger car/light truck for 2017, and medium/heavy trucks for 2018
 - Heavy duty vehicle GHG regulation for MY 2014-2018
 - Phase 2 light duty vehicle GHG regulation for MY 2017-2025

- **New Science based calculations:**
 - ✓ Improved emission rates for gasoline sulfur and ethanol
 - ✓ Improved temperature effects on emissions
 - ✓ Improved Evaporative & PM emissions calculations methods

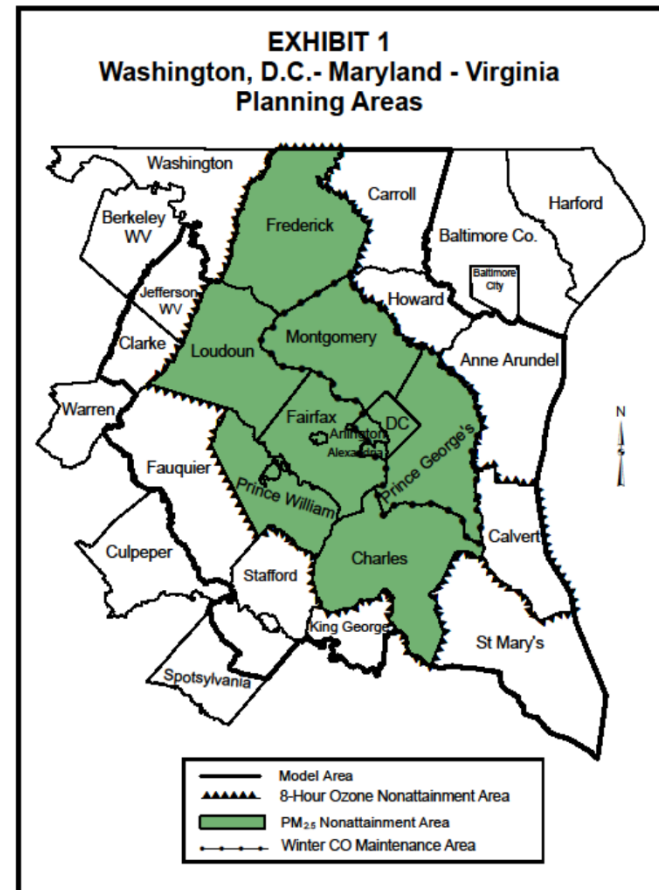
- **Methodological Changes:**
 - E85 inclusion in fuel data
 - ✓ Combination long-haul truck 'hoteling' (auxiliary power unit)
 - ✓ Combination long-haul truck start emissions eliminated

- Not applicable for Conformity Analysis ✓ Applicable for Conformity Analysis

Framework for Testing the Model

Purpose: Determine preparedness of model for use in regional Air Quality Conformity Analysis

- **Inputs:**
 - Travel Data:
 - Travel demand modeling results for 2014 CLRP/FY2015-2020 TIP
 - 2011 Vehicle Registration Data
 - 8.3 Cooperative Land Use Forecasts
 - Non-Travel Data: Fuel, I/M & Meteorological data for 2014 CLRP/FY2015-2020 TIP
- **Geographical Coverage:**
Non-attainment areas
- **Analysis Year:** 2015 and 2040



Comparative Test Results Findings

Relative to MOVES2010a model MOVES2014 estimates for:

- Mobile source emissions for all pollutants are lower.
 - Inclusion of new federal control programs
 - New science-based model data updates
 - Methodological changes

Test Results Summary

POLLUTANT	2014 CLRP - YEAR 2015				2014 CLRP - YEAR 2040			
	MOVES2010a	MOVES2014	DIFF.	% DIFF.	MOVES2010a	MOVES2014	DIFF.	% DIFF.
PM2.5 DIRECT (T/Y)	1,926	1,656	-271	-14%	1,299	734	-565	-43%
PM2.5 NOX (T/Y)	46,115	41,226	-4,889	-11%	21,944	8,277	-13,667	-62%
OZONE VOC (T/D)	59	56	-2	-4%	40	18	-22	-55%
OZONE NOX (T/D)	132	115	-17	-13%	61	21	-40	-66%
Winter CO (T/D)	494	351	-143	-29%	381	121	-261	-68%
GHG-CO2E (T/Y)	25,476,533	24,914,703	-561,831	-2%	26,722,145	19,549,207	-7,172,938	-27%

Quality Assurance and Conclusion

- Consistent with EPA's MOVES2014 Model findings
- Consistent with experience of regional Air and Transportation agencies
- Reasonable relative to expectations from emissions control programs

MOVES2014 model preparation complete and ready for use in regional Air Quality Conformity Analysis And SIP Planning

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Thank You

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