FACA MOVES Model Review Workgroup Report

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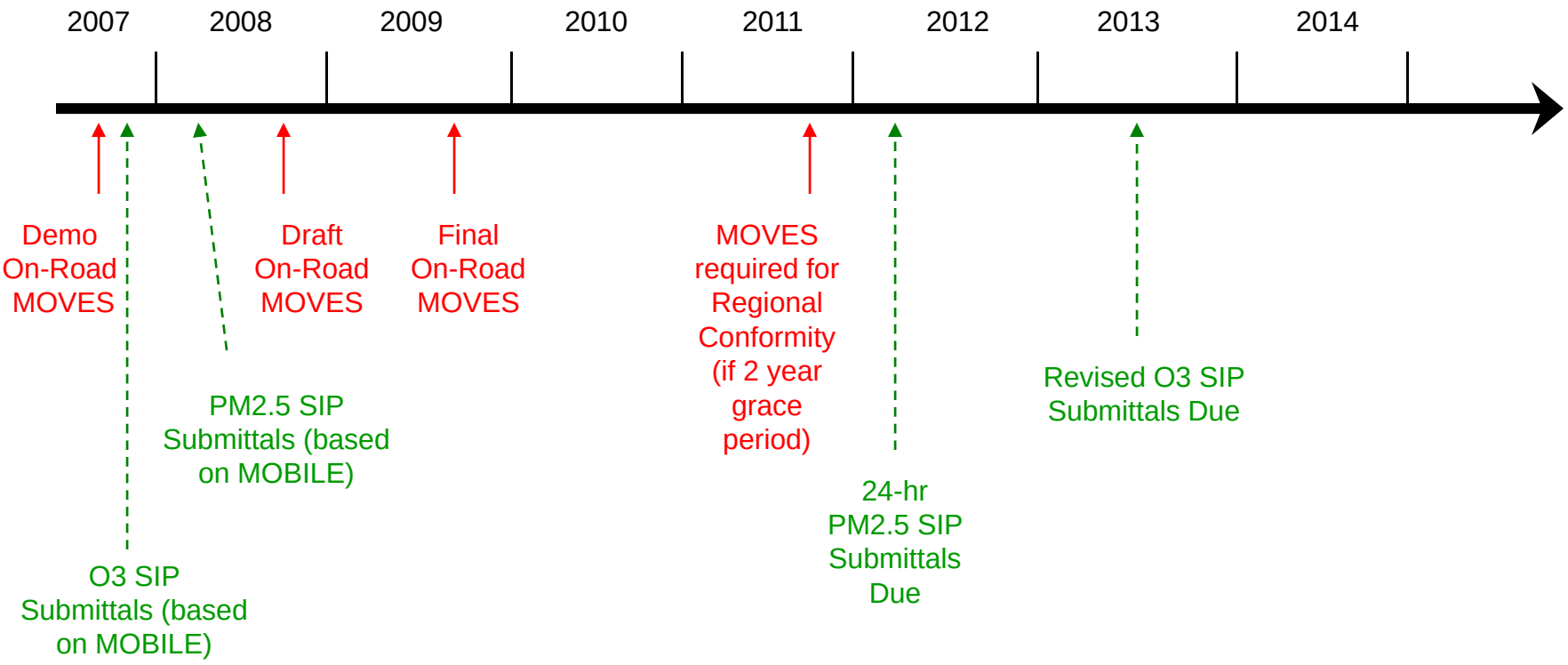
EPA MOVES Model

- **MOtor Vehicle Emissions Simulator**
- **Developed in response to National Research Council recommendations for improvements to EPA's mobile modeling**
- **Will replace current models (MOBILE & NONROAD)**
- **Designed to allow easier incorporation of large amounts of in-use data from a variety of sources**
- **New software framework**

MOVES Timeline



EPA Workgroup Objectives

- **To evaluate and provide recommendations on the inputs proposed for use in MOVES…**
  - **emission rates**
  - **fleet & activity**
  - **fuel and other adjustments**
- **To evaluate MOVES input and output structures and their usefulness in meeting the needs of modelers developing SIPs and transportation conformity programs**
- **Under FACA structure, workgroup recommendations are made to the MSTRS**

MOVES Workgroup Membership

- **Chairs:**
  - **John Koupal, EPA**
  - **Matt Barth, UC Riverside**
- **Industry:**
  - **AAM, AIAM, EMA, API**
- **Environmental Groups:**
  - **NRDC, Environmental Defense**
- **State and Local Government:**
  - **NACAA, AASHTO, CARB**
- **Federal Government:**
  - **EPA, FHWA**
- **Academia:**
  - **UC Riverside, Georgia Tech, NC State, Cornell**

MOVES Workgroup Process

- EPA presents MOVES modeling materials at meetings
- Meeting notes are taken and distributed
- Workgroup members poll their membership and provide feedback comments
- Comments are compiled, summarized, and distributed
- Workgroup discusses comments at next meeting with the goal of developing consensus recommendations to be forwarded to MSTRS
- Workgroup also reviews draft MOVES reports as they become available

Key Topics Covered Since Last MSTRS

- **November 2007**
  - **Inspection/Maintenance**
    - **EPA presented basic framework for estimating light-duty emissions in I/M and non I/M areas, and data sets undergoing analysis**
- **December 2007**
  - **Heavy Duty emissions**
    - **EPA presented approach for using data from in-use HD trucks collected on dynamometer and with portable emission measurement**

Key Topics Covered Since Last MSTRS

- **January 2008**
  - **Fleet & Activity**
    - **EPA presented MOVES' approach to characterizing vehicle activity patterns and vehicle fleet composition**
  - **Interface with Transportation Models**
    - **FHWA consultant presented issues with respect to connecting travel models and emission models**
  - **Guidance issues**
    - **EPA discussed guidance and transition issues for model users**
- **April 2008**
  - **Projecting future emissions**
    - **EPA presented candidate approaches for projecting future emissions from light duty vehicles based on recent emission trends**
  - **MOVES testing plans**

Workgroup Recommendations (1)

- The workgroup members believe that the overall structure of MOVES is solid, providing a good deal of flexibility for a variety of mobile source emissions modeling applications. However, there is still concern that there will be significant data gaps, particularly in the initial stages of the model deployment. Because MOVES is much more of a database-oriented model (compared to previous MOBILE models), it is crucial that a data collection plan be developed to identify where the data gaps are and to prioritize how and when to collect current and future data for the model.

Workgroup Recommendations (2)

- By the end of 2008, the first complete version of MOVES will be released for initial use and evaluation. During the first year of evaluation, it is critical that mechanisms exist to obtain feedback from a variety of users, and that this feedback be incorporated into the model.

Workgroup Recommendations (3)

- Also during the initial evaluation phase, it is important to carry out a variety of validation exercises for the model. Outside organizations are encouraged to fund an independent evaluation/validation exercises, which may include comparisons between MOVES and other mobile source emission models (e.g., older MOBILE versions, California's EMFAC model, etc.). In particular, future year predictions should be carefully compared and analyzed.

Workgroup Recommendations (4)

- Looking back into past modeling efforts, emissions estimation problems in MOBILE have arisen due to several factors (e.g., higher than predicted speeds, SUV/truck fleet fractions, turnover rates, I/M effectiveness). There is concern that MOVES might also suffer from similar problems, therefore these and other potential problems should be examined in detail by the MOVES model development team.

Workgroup Recommendations (5)

- The MOVES development team should determine a strategy for releasing new versions well into the future. This will be challenging since not only with the model (i.e., application) change, but also the underlying database. Do these two components of the model change at the same time? Does the database get updated more often? New versions should not be released too often due to their use in the SIP process, however they should be released on a regular basis with significant improvements and new data.

Workgroup Recommendations (6)

- Because MOVES depends heavily on data, it is important the MOVES development team continue to seek out additional data from other research programs in other states (e.g., from the California Air Resources Board) and possibly other countries.

Future Topics

- **Summer 2008**
  - Toxics
  - MOVES validation approach
- **Fall 2008**
  - Preview of MOVES Results