

Release of Draft MOVES2009

Megan Beardsley

For MOVES Review Workgroup
April 28, 2009

The word "MOVES" is displayed in a stylized, metallic, three-dimensional font with a brushed metal texture and a slight shadow effect, set against a dark grey rectangular background.

Draft MOVES2009

- **Released Draft MOVES2009 April 8, 2009**
- **A draft model**
 - No official use requiring Draft MOVES2009
 - Cannot be used for SIPs or conformity analyses
 - Does not include all data or features planned for official MOVES2009
- **Known problems**
 - Errata sheet posted, will be updated
 - Developing trouble-shooting advice

Draft MOVES2009 Results

MOVES

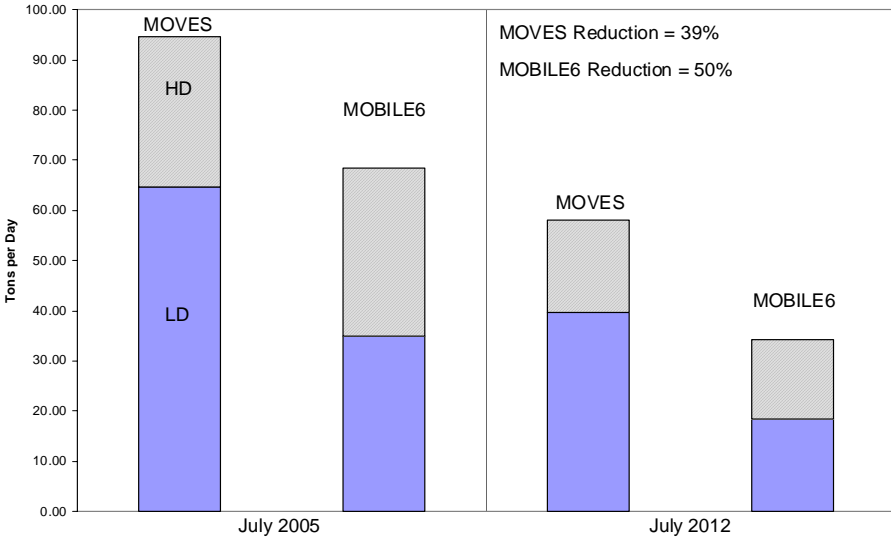


New Local Area Results

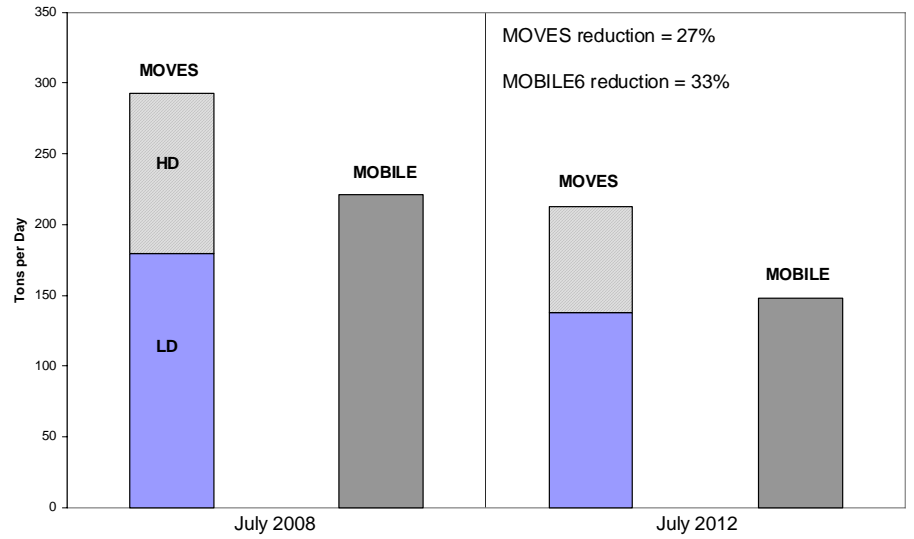
- **Used inputs from states' SIP analysis with MOBILE6**
 - Received MOBILE6 inputs and results from states
 - Converted to MOVES inputs, ran the model
 - Runs just for a single county
 - Shared results and approach with states
 - Not official results!

Draft Local Comparisons: NOx

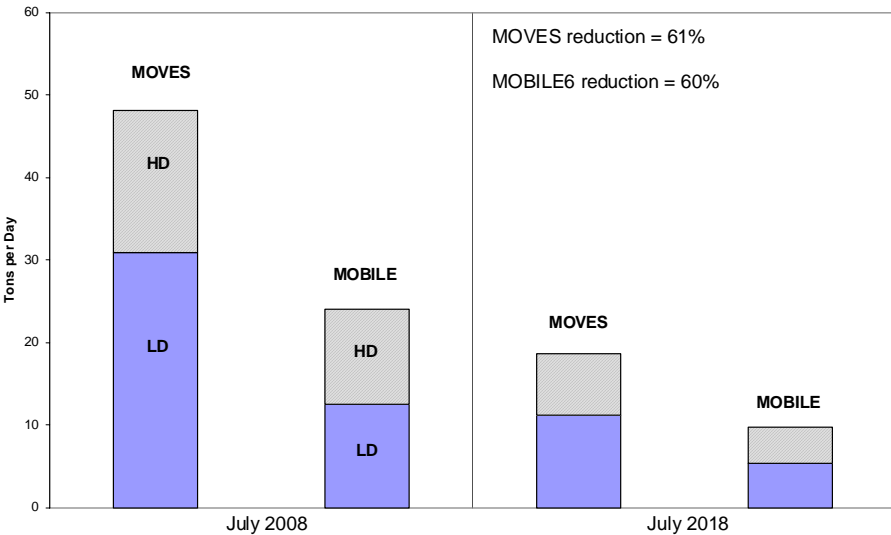
Milwaukee NOx



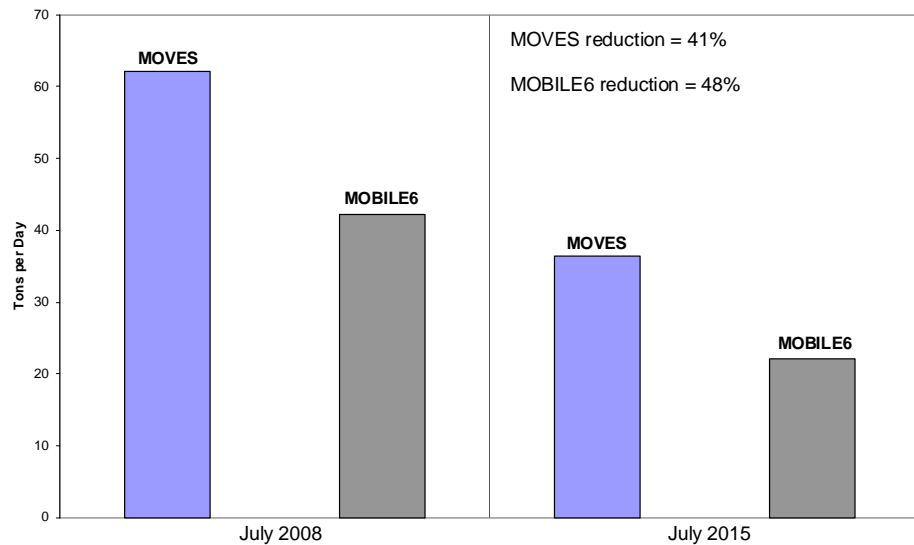
Atlanta NOx



Queens County NOx

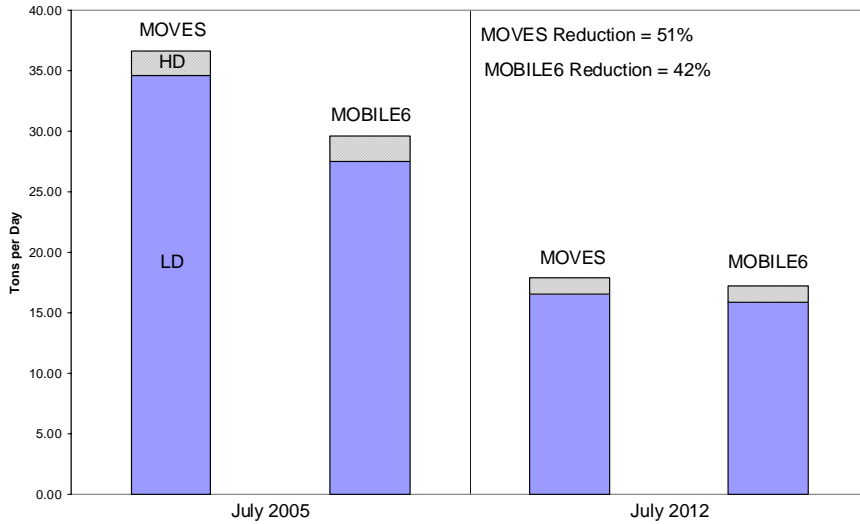


Salt Lake County NOx

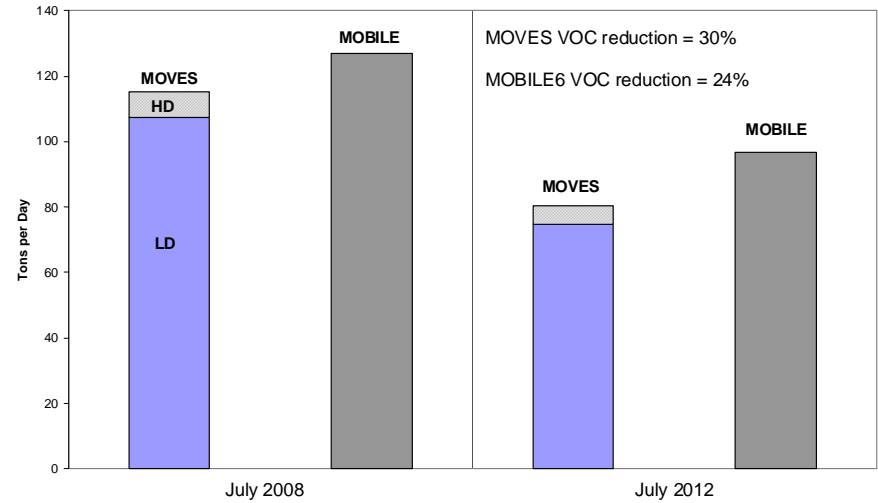


Draft Local Comparisons: VOC

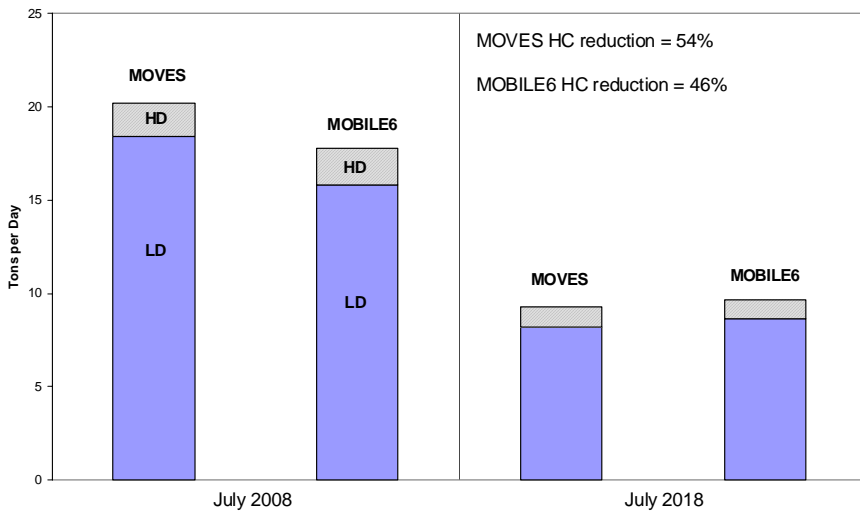
Milwaukee VOC



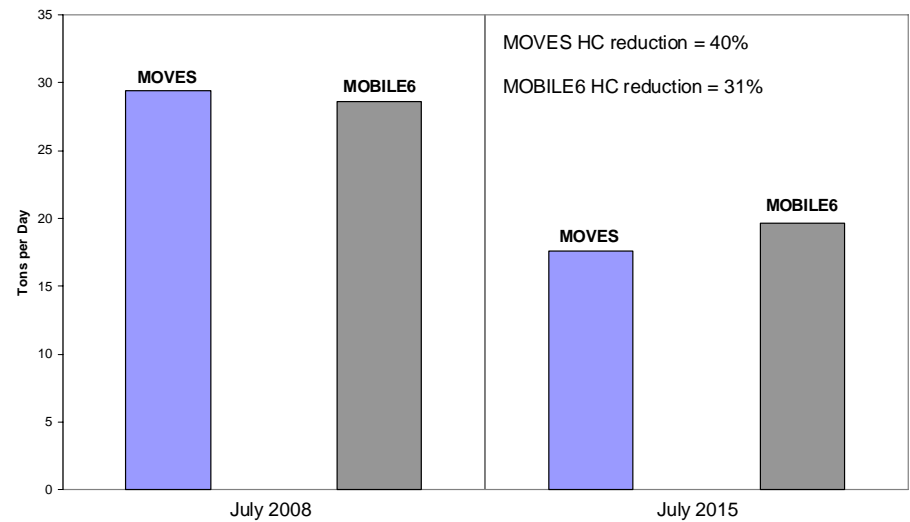
Atlanta VOC



Queens County HC

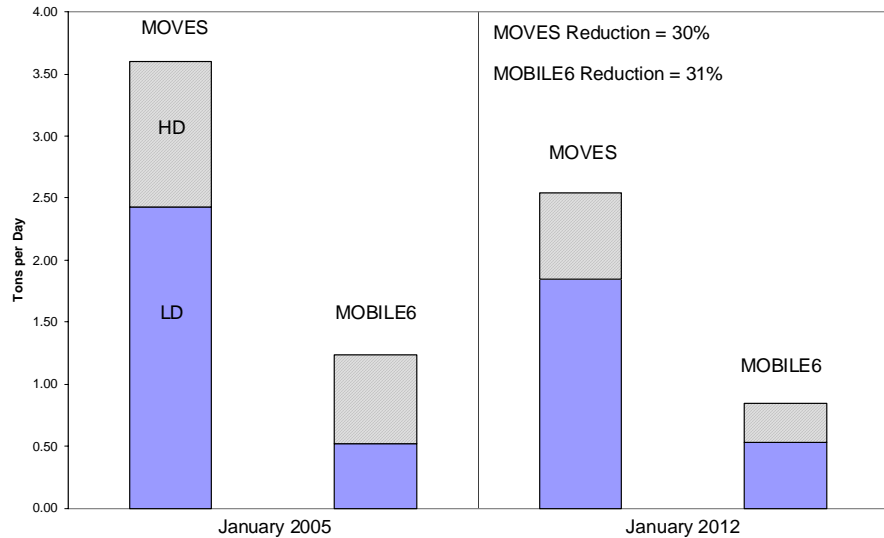


Salt Lake County HC

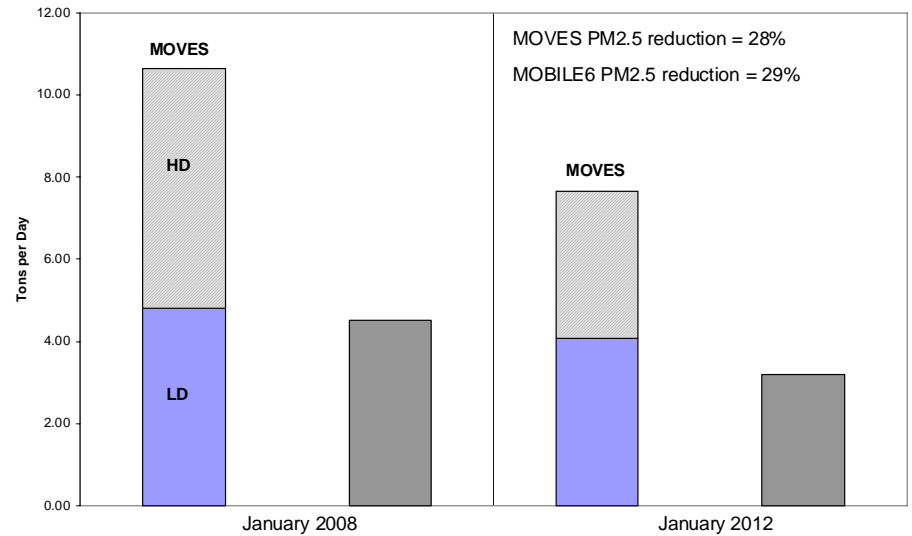


Draft Local Comparisons: PM2.5

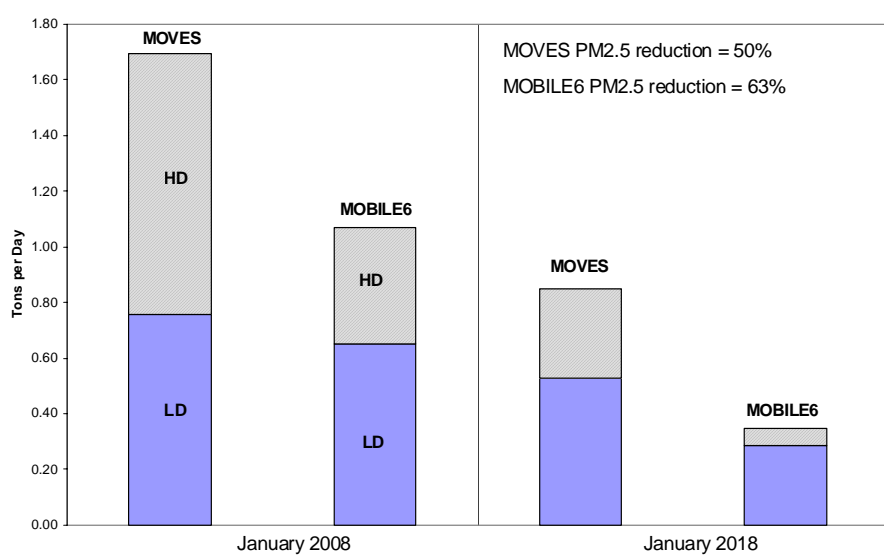
Milwaukee PM2.5



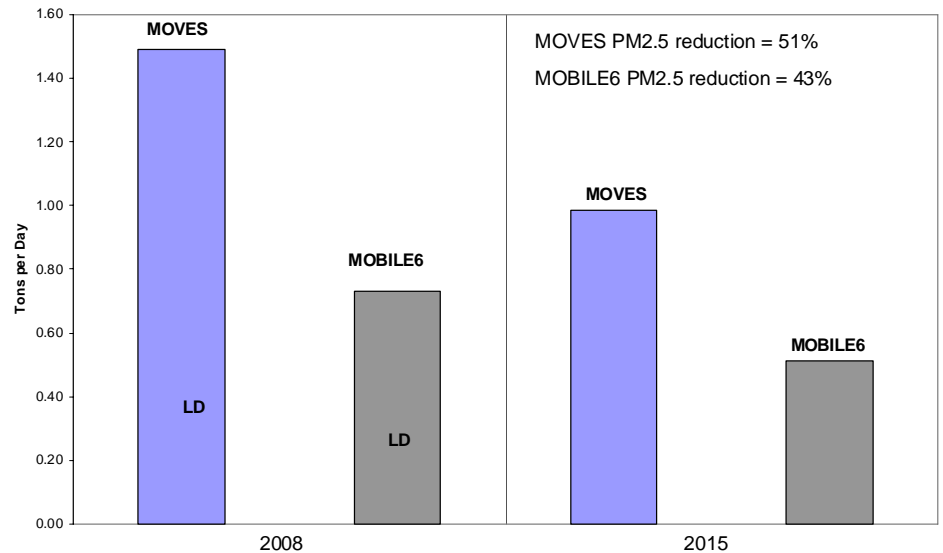
Atlanta PM2.5



Queens County PM2.5



Salt Lake County PM2.5



What It Implies

- **Higher NOx and PM emissions mean mobile sources have bigger role in attainment**
- **Percent reduction from base year is key to attainment analysis**
 - PM2.5 shows higher overall emissions and higher % reductions
 - Effect on attainment demonstrations could be positive
 - NOx shows higher overall emissions but lower % reduction
 - Harder to show attainment
 - Future NOx control measures will have a bigger impact
- **States may need to redo some motor vehicle emissions budgets to meet conformity requirements with MOVES**

What Draft MOVES says about I/M

- Analyzed I/M reductions in Atlanta and Milwaukee to identify I/M credit differences between MOVES and MOBILE6
- For MOVES we saw from 20-70% less I/M credit than MOBILE6
- The range depends on calendar year, program elements and other local factors

Why I/M benefits are lower in MOVES

- **Big factor: change in response to OBD w/o I/M**
 - MOBILE6 assumed 10% response outside warranty w/o I/M
 - Since then CRC did comprehensive survey of MIL response in non-I/M areas, found response was closer to 90%
- **Also, MOBILE6 lower in-use deterioration trend continues with fleet turnover in MOVES**

Draft MOVES2009 Review

MOVES



Review of Draft MOVES2009

- **Public Review**
 - Likely focus on usability & policy questions
- **FACA Workgroup Review**
 - Focus on technical correctness
 - Also appreciate feedback on results and usability
- **Peer Review**
 - Under EPA peer review guidelines
 - Focus on technical correctness of technical reports
- **Coordinating Research Council Review (CRC E-68a)**

Comment Period

- “EPA requests comments by July 2009 in order to give the Agency sufficient time to review comments and make necessary changes in time for the end-of-year release deadline. All comments should be submitted via e-mail to: mobile@epa.gov.”

Technical Reports

- Internal drafts due May 8
- Public release late May/early June
- Six major reports planned
 - Emissions Inputs: light-duty vehicles
 - Emissions Inputs: heavy-duty vehicles
 - Fuel Inputs
 - Adjustments: Temperature and other factors
 - Fleet and Activity (update to 2004 report)
 - Software Design Reference Manual (available now)

CRC Review of MOVES

- **Contracted to Air Improvement Resource**
- **Review of methods**
- **Review of results**
 - MOVES/M6 comparisons
 - Fuel effects (delayed)
 - Sensitivity analysis
 - New Technology Vehicles

Additional Support Materials

MOVES



Additional Support

- **Guidance**
- **Trainings**

Future Guidance Documents

- **EPA expects to release several guidance documents that will help with the transition for final MOVES**
 - MOVES Technical Guidance for SIPs and conformity
 - Project Level Conformity Guidance for PM
 - MOVES SIP and Conformity Policy Guidance
- **Will release draft guidance for comments in next few months**
- **Final guidance documents will be available when Official MOVES2009 is released**

Trainings

- **EPA Regional Staff (March)**
- **Intl. Emission Inv. Conference (April)**
- **Scheduled trainings with FHWA:**
 - Anchorage, Salt Lake City, Chicago, Denver, Phoenix, Portland
- **Additional trainings planned:**
 - Boston, Hartford, New York City, Detroit, Austin, Frankfort, DC, Jacksonville, Pennsylvania, West Virginia
- **Considering adding special topic Webinars**

Future Versions

MOVES



Official MOVES2009

- **Official MOVES2009 planned for release at end of 2009**
 - Timing essential to allow states to use in next round of SIPs
 - due 2012 and 2013
- **Will be official emissions model for on-road vehicles outside of California**
- **Use will be required for:**
 - State Implementation Plans (SIPs)
 - Regional conformity analysis
 - Following regional conformity grace period of 3 to 24 months
 - Project level conformity analysis for PM and CO
 - Following project level conformity grace period which could be shorter than regional conformity grace period
 - NEPA analysis (e.g., air toxics)

Major Additions Planned for MOVES2009

- Bug fixes
- Add SO₂, NH₃, NO₂ & NO
- IM benefits for starts
- Account for HD Excess NO_x & Reflash
- Add motorcycles
- Incorporate road grade for project level
- On-the-fly fuel adjustments
- “No CAAA” tool
- Allow input of DailyTraffic Volumes
- External looping tool
- JAVA 6 & MySQL updates
- Improve performance
- Improve interface

Major Additions Under Consideration

- **Better Science**

- Further speciation of PM
 - NO₃, metals, SVOCs
- Improve off-cycle emissions
- Update fuel effects based on recent testing
- New ramp and other driving cycles
- Add Draft NONROAD
- Add many additional air toxics

- **Better Tools**

- Start & Evap lookup tables
 - Improved reports and post-processing
 - Audit tools
 - Simplified quick tool based on MOVES results
-
- **Long list of other ideas**
 - **Expect more as suggested by users**
 - **Time is short!**

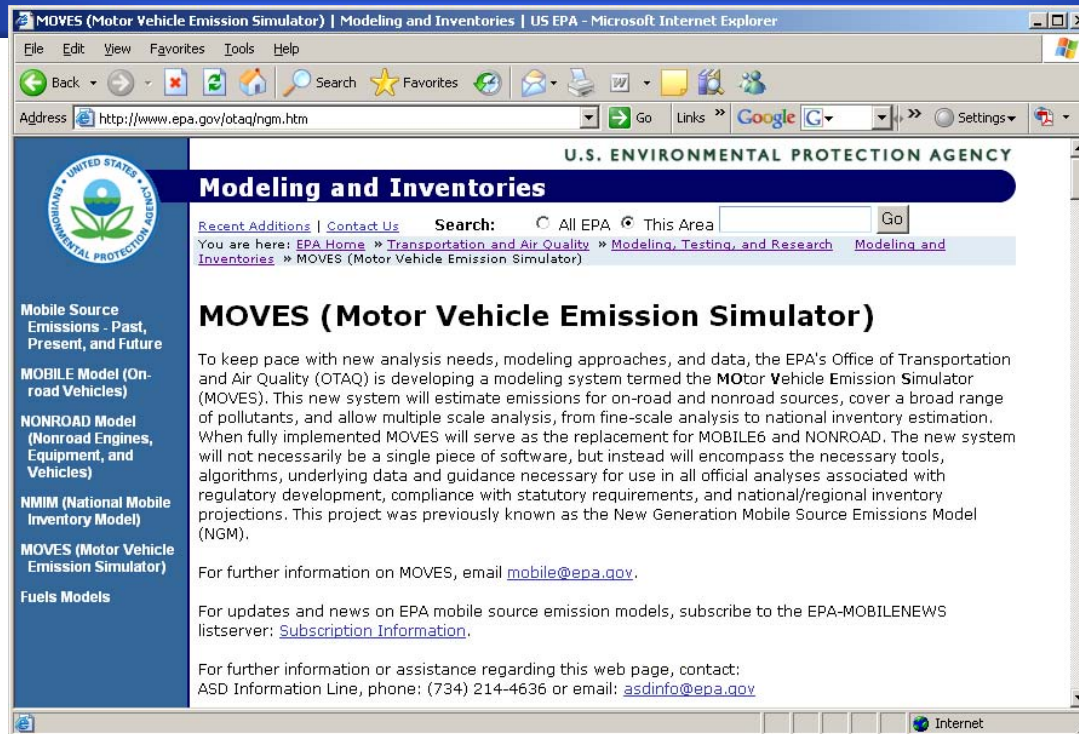
What do we plan for future versions of MOVES

- Next round of updated activity
- Next round of updated emission rates
- Final nonroad capability
- Unique emissions for alt. fueled vehicles
 - CNG, LPG, H2
- Well-to-Pump emissions
- Improved uncertainty inputs

Workgroup Feedback

- **We need your comments and ideas for improving MOVES**
 - Please try installing & using MOVES
- **Especially look to this workgroup for technical feedback**
 - Would like written comments on technical reports by end of June
 - Discuss at next FACA meeting, mid-July

Visit the MOVES website: www.epa.gov/otaq/models/moves



- Software, technical documentation, conference and meeting presentations, and other helpful background materials