MOVES Update and Workgroup Proposal

Briefing for Mobile Sources Technical Review Subcomittee

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MOVES

Agenda

- Update on MOVES schedule
- Proposal for new “MOVES Review” Workgroup

MOVES

What is MOVES?

- **MOtor Vehicle Emission Simulator**
- **Estimates air pollution emissions from highway vehcles and nonroad equipment**
- **Intended to replace current MOBILE & NONROAD models**
  - Improve software & science
  - Expand capabilities
    - Analysis at multiple scales
    - Additional pollutants
    - Additional pollutant sources

MOVES Versions

- ✓ **MOVES2004 released**
  - On-road Energy Consumption, GHGs, Life Cycle Analysis
- **Highway Vehicle Implementation**
  - Adds on-road HC, CO, NOx, PM, Toxics, NH_3, SO_2
  - Final MOBILE6.2 replacement
- **Off-road implementation**
  - Updates to on-road model based on new data
  - Add equipment covered in NONROAD model
  - Also aircraft, commercial marine, locomotive

MOVES Schedule

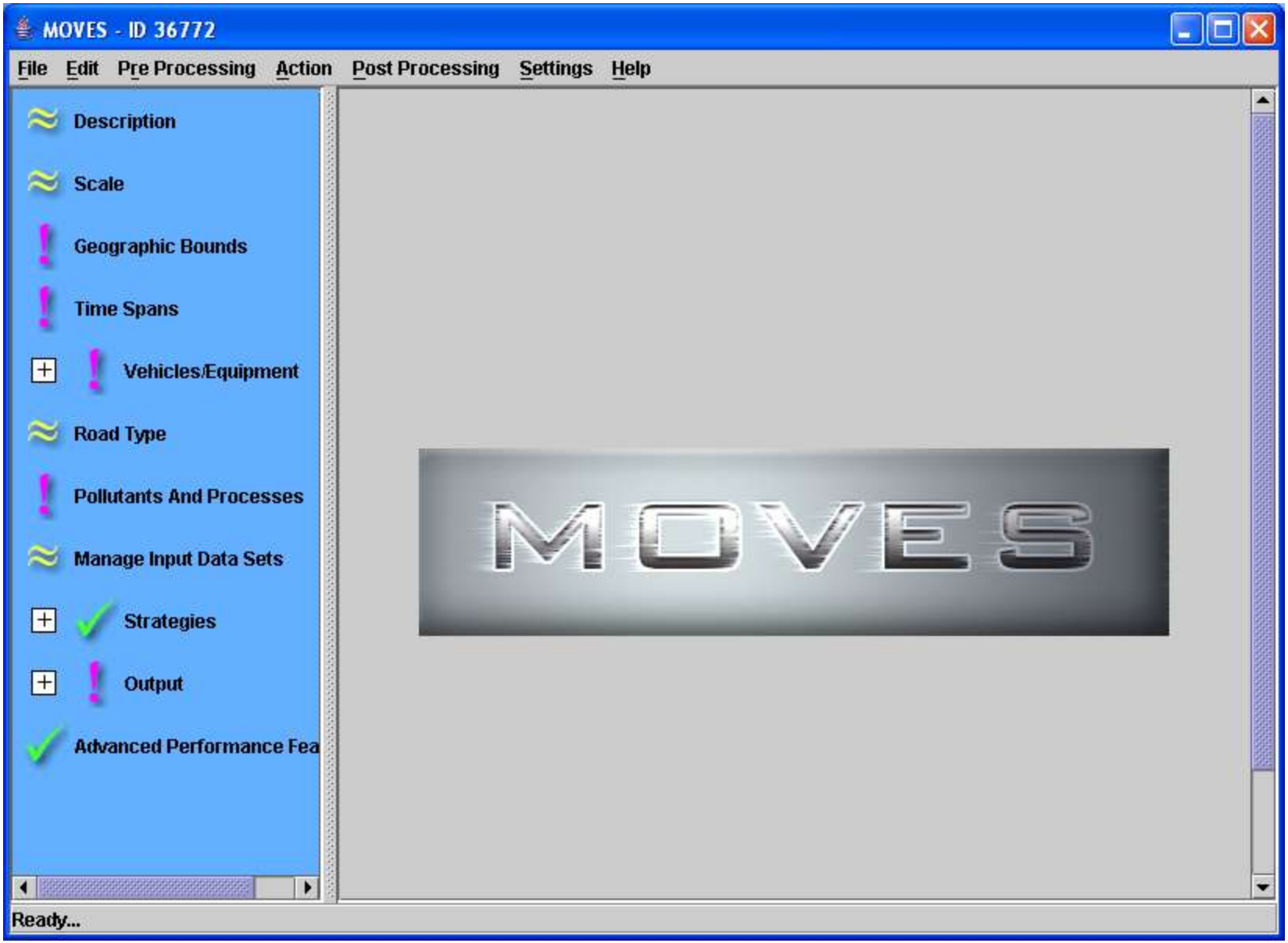
Spring 2007	-- Post MOVES-HVI Demo -- MOVES training at IEIC conference -- Begin user feedback on input/output
Late 2007, Early 2008	--Complete emission rate analysis --Feedback through FACA work group
Fall 2008	-- Release draft MOVES-HVI
2009	-- Release final MOVES-HVI
2010+	-- MOVES for nonroad engines, aircraft, locomotive & marine

MOVES-HVI Demo

- **Demonstration version of MOVES Highway Vehicle Implementation**
- **A tool for users to learn MOVES input & output structures**
- **Placeholder values for emission rates**
  - Not intended to represent actual emission rates
  - Not for use in SIPs or conformity determinations
- **Software improved since MOVES2004**

MOVES-HVI Demo
Software Improvements

- Adds pollutants: HC, CO, NOx, EC, OC & CO2
- Adds evaporative emissions
- Trip start and soak time processor
- Advanced fuel adjustments
- New post-processor for summary reports
- New pre-processor for IM inputs
- Improved data entry for Alternate Vehicle Fuels & Technology strategy
- Optional gram/mile output by speed-bin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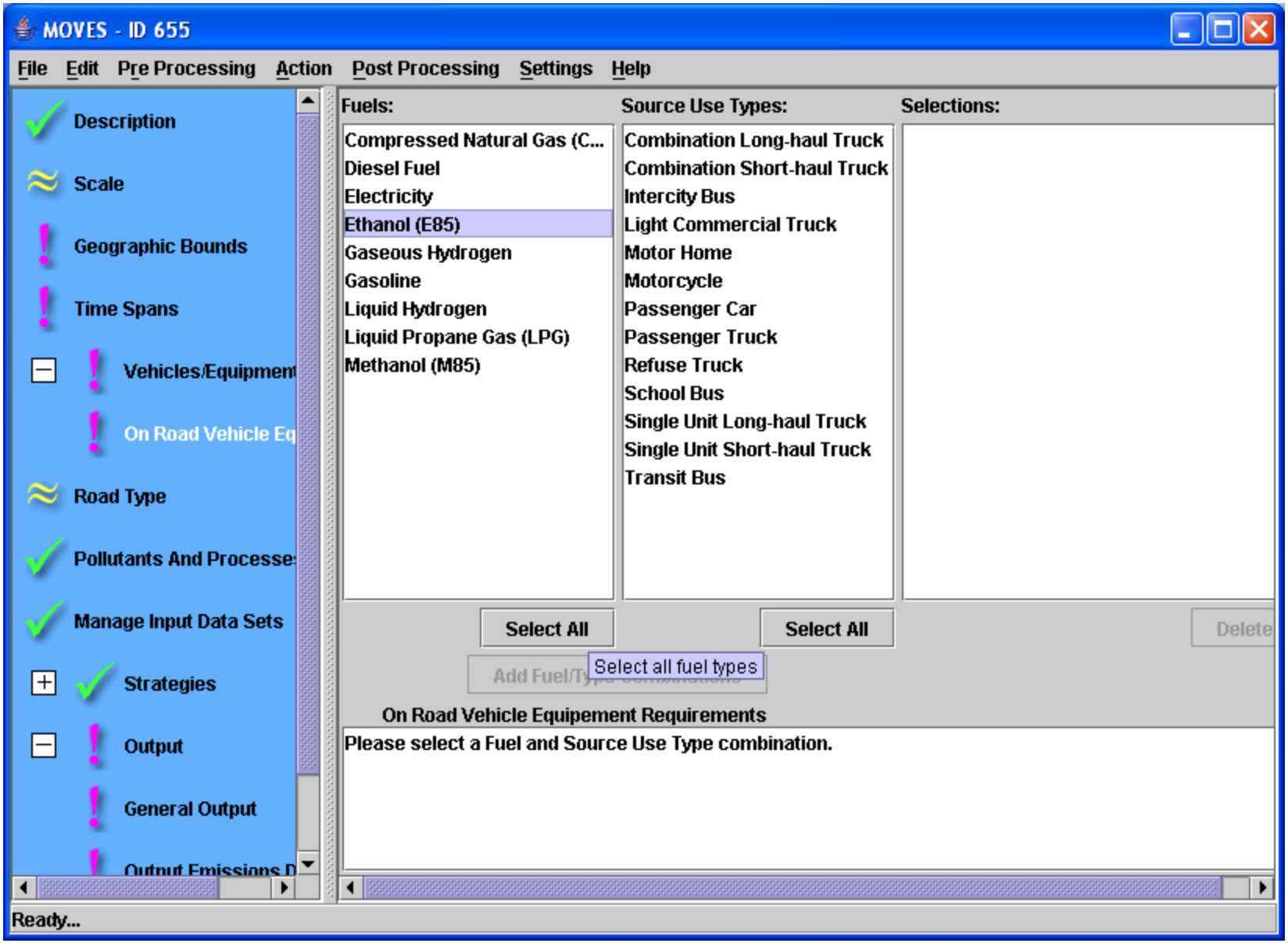
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Fuels:
Compressed Natural Gas (C...
Diesel Fuel
Electricity
Ethanol (E85)
Gaseous Hydrogen
Gasoline
Liquid Hydrogen
Liquid Propane Gas (LPG)
Methanol (M85)
Source Use Types:
Combination Long-haul Truck
Combination Short-haul Truck
Intercity Bus
Light Commercial Truck
Motor Home
Motorcycle
Passenger Car
Passenger Truck
Refuse Truck
School Bus
Single Unit Long-haul Truck
Single Unit Short-haul Truck
Transit Bus
Selections:
Select All
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Select all fuel types
On Road Vehicle Equipement Requirements
Please select a Fuel and Source Use Type combination.
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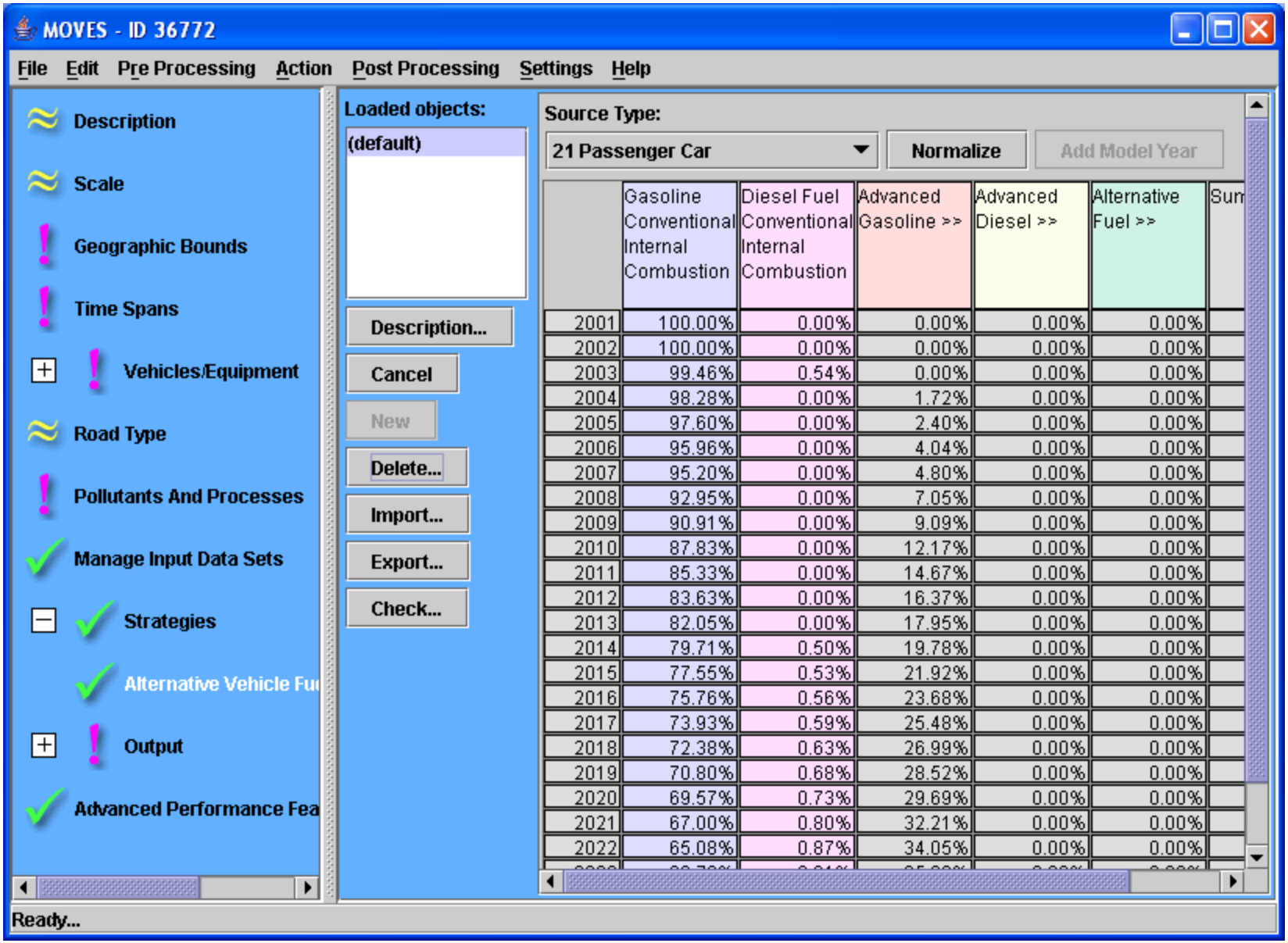
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Loaded objects:
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Description...
Cancel
New
Delete...
Import...
Export...
Check...
Source Type:
21 Passenger Car
Normalize
Add Model Year
Gasoline Conventional Internal Combustion
Diesel Fuel Conventional Internal Combustion
Advanced Gasoline >>
Advanced Diesel >>
Alternative Fuel >>
Sum
2001 100.00% 0.00% 0.00% 0.00% 0.00%
2002 100.00% 0.00% 0.00% 0.00% 0.00%
2003 99.46% 0.54% 0.00% 0.00% 0.00%
2004 98.28% 0.00% 1.72% 0.00% 0.00%
2005 97.60% 0.00% 2.40% 0.00% 0.00%
2006 95.96% 0.00% 4.04% 0.00% 0.00%
2007 95.20% 0.00% 4.80% 0.00% 0.00%
2008 92.95% 0.00% 7.05% 0.00% 0.00%
2009 90.91% 0.00% 9.09% 0.00% 0.00%
2010 87.83% 0.00% 12.17% 0.00% 0.00%
2011 85.33% 0.00% 14.67% 0.00% 0.00%
2012 83.63% 0.00% 16.37% 0.00% 0.00%
2013 82.05% 0.00% 17.95% 0.00% 0.00%
2014 79.71% 0.50% 19.78% 0.00% 0.00%
2015 77.55% 0.53% 21.92% 0.00% 0.00%
2016 75.76% 0.56% 23.68% 0.00% 0.00%
2017 73.93% 0.59% 25.48% 0.00% 0.00%
2018 72.38% 0.63% 26.99% 0.00% 0.00%
2019 70.80% 0.68% 28.52% 0.00% 0.00%
2020 69.57% 0.73% 29.69% 0.00% 0.00%
2021 67.00% 0.80% 32.21% 0.00% 0.00%
2022 65.08% 0.87% 34.05% 0.00% 0.00%
Ready...

MOVES-HVI Demo
More information coming soon!

- **MOVES web site:**

  http://www.epa.gov/otaq/ngm.htm

- **MOBILENEWS email list:**

  http://www.epa.gov/otaq/models/mobilelist.htm

- **User Guide**
- **Software Development Reference Manual**

MOVES Emission Rate Development Areas

- Light Duty HC, CO & NOx
- Light Duty PM
- Heavy Duty HC, CO, NOx & PM
- Evaporative HC

MOVES Review Process--Proposal

- **FACA review of MOVES components**
  - Focus on data & methodologies
  - Bring to workgroup as available
  - Simultaneous formal peer review
- **Form a new MOVES Review workgroup**
  - Current modeling workgroup has existed more than a decade, has lost focus
  - New group would have a specific charge to focus on MOVES

FACA Workgroup– Membership

- **Want participants who**
  - Understand the technical issues
  - Will spend the time to provide constructive feedback
  - Can represent their sector
- **Want representatives from**
  - Industry
  - Academia
  - Federal agencies
  - State & Local organizations
  - Environmental advocacy groups
- **Approach**
  - Ask associations to nominate workgroup participants

MOVES Review Workgroup Charter

- Charged to provide input to OTAQ on specific issues regarding the development of MOVES.
- To meet periodically until the completion of the highway vehicle and nonroad implementations of the MOVES model.
- Members will review draft MOVES reports and presentations as they become available and shall work collaboratively to provide timely, shared recommendations to the MSTRS

Workgroup Issues

1. Evaluating data sources and analysis methods proposed for use developing emission rates to be used in the MOVES model.
2. Evaluating data sources and analysis methods proposed for use developing fleet and activity inputs to be used in the MOVES model.
3. Evaluating data sources and analysis methods proposed for use developing fuel adjustments and other inputs to be used in the MOVES model.
4. Evaluating MOVES input and output structures and their usefulness in meeting the needs of modelers developing State Implementation Plans (SIPs) and transportation conformity determinations.

Workgroup Review Schedule

- **May 2007 through March 2008**
  - Fleet & Activity Defaults
  - Input & Output Formats
  - LD HC/CO/NOx emission rates
  - Inspection Maintenance
  - Evaporative Emissions
  - Fuel Effects
  - LD PM
  - HD HC/CO/NOx/PM emission rates

FACA Review Group– Next Steps

- Contact organizations requesting nominees
- Convene first meeting in May 2007