Helping MPOs with MOVES Inputs for Transportation Conformity

Challenges and Solutions

presented to

EPA MOVES Conference

presented by

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Thanks to: Keli Kemp, Tracy Selin

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Transportation leadership you can trust.

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Overview

- MOVES Transition Support for MPOs for Transportation Conformity

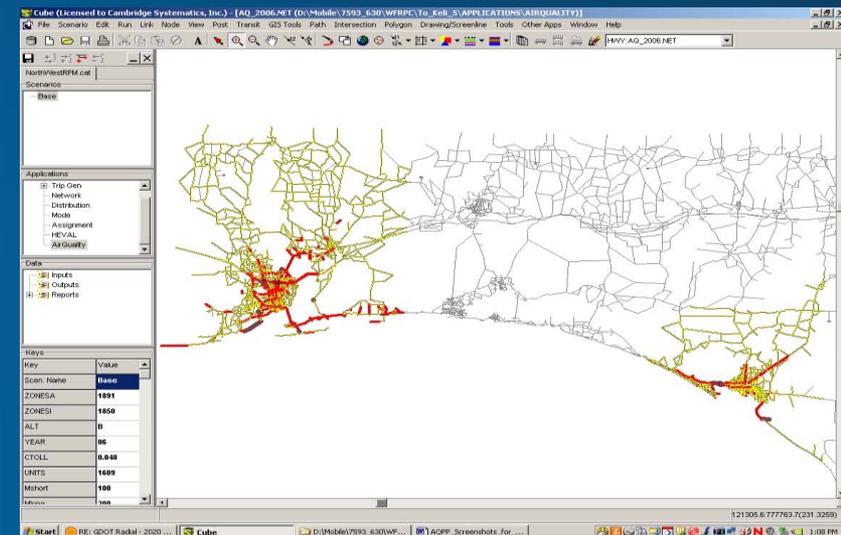- MOVES Inventory vs. Emission Rate Mode

- MOVES Inputs Data Sources

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- Florida

  » Florida DOT Systems Planning Office:

    - Developed first Air Quality Postprocessor in FL using MOVES as an emission rate model and integrated within Florida Standard Urban Transportation Model Structure (FSUTMS)

    - Provided training to FDOT D3 and MPO staff

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- Georgia
  - » Atlanta Regional Commission:
    - Providing guidance on how to update Cube air quality postprocessor to reflect MOVES
    - Provided training to ARC staff on running MOVES, input requirements, and data options.

- Tennessee
  - » Chattanooga TPO – Updating TransCAD air quality postprocessor to reflect MOVES

- Indiana
  - » Indianapolis MPO – Updating TransCAD air quality postprocessor to reflect MOVES

Two Options for Applying MOVES

- Option 1: MOVES as an Emissions **Inventory** Model

  - » Requires running of MOVES every time the travel demand model is modified

  - » Uses output loaded network from travel demand model

Travel Demand Model (TDM)	→	MOVES
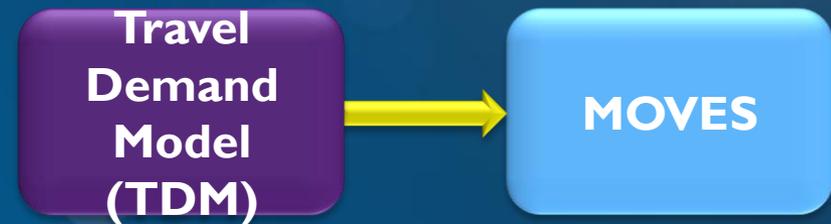
- Option 2: MOVES as an Emissions **Rate** Model

  - » Significantly reduces frequency of MOVES runs

  - » Uses emissions rates from MOVES as inputs into travel demand model

MOVES	→	Travel Demand Model (TDM)

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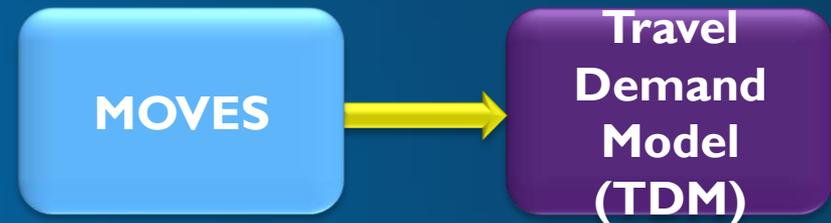
MOVES Inventory vs. Emission Rate Mode

- Pros for Inventory Mode
  - » No need to develop a TDM post-processor to mimic MOVES
  - » Operating/Parked relationship updated with changes in TDM
  - » Properly accounts for VOC process 18 & 19 (refueling) and does not require work-around.

- Pros for Emission Rate Mode
  - » TDM Post-processor has some advantages
    - Link-level emissions
    - Visualization of results
  - » Significantly reduces number of MOVES runs for TIP amendments, etc.
  - » Static set of emission rates for sharing with adjoining MPOs/other applications, e.g. CMAQ

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What Options Are Other Regions Using?

- Option 1: MOVES as an Emissions Inventory Model
  - » Metropolitan Washington COG (most work has been with MOVES as an inventory model, but still evaluating option 1 v. 2)

- Option 2: MOVES as an Emissions Rates Model
  - » Chattanooga, TPO (TN)
  - » Atlanta Regional Commission (GA)
  - » Florida (statewide)
  - » Dallas-Fort Worth (TX)
  - » Houston (TX)
  - » Salt Lake City (UT)
  - » Baltimore (MD)
  - » Cincinnati (OH, KY, IN)

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Data Requirements for County Data Manager

Local Registration Data Desired

No National Defaults Available in MOVES (Must Use Travel Demand Model or HPMS Data)

Previous MOBILE6 or MOVES National Defaults Generally Available.

Source (Vehicle) Type Population

Average Speed Distribution

Vehicle Type Vehicle Miles Traveled (VMT)

Road Type Distribution

Ramp Fraction

Fuel Supply

Age Distribution (Population Based)

Meteorology

Inspection and Maintenance Program

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County Data Manager for MOVES Runs

County Data Manager Input	Excel Sheet Tab Name	Common Data Sources
Source (Vehicle) Type Population	sourceTypeYear	Local Registration Data (often needs updated); Often not available for heavy-duty.
Vehicle Type VMT (by 13 MOVES Vehicle Types)	HPMSVTypeYear	VMT from Travel Demand Model; Statewide Permanet Count Stations
	MonthVMTFraction	National Default or Statewide Fractions
	DayVMTFraction	National Default or Statewide Fractions
	HourVMTFraction	National Defaults or Permanent Count Station Data
Average Speed Distribution (% of VHT in each 5 mph speed bin)	avgSpeed Distribution	Travel Demand Model
Road Type Distribution (VMT by 5 MOVES Road Types)	roadType Distribution	Travel Demand Model
Age Distribution (Vehicle Population by Age of Vehicle)	sourceTypeAge Distribution	Light-Duty Registration Data; MOVES default age distributions for heavy-duty
Ramp Fraction	RoadType	Travel Demand Model
Meteorology Data	ZoneMonthHour	MOBILE6 Data Converted
Fuel (% of Market Share by Fuel Type)	FuelFormulation	National Defaults
	FuelSupply	MOBILE6 Data Converted
I/M Program	IMCoverage	MOBILE6 Data Converted

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