

Helping MPOs with MOVES Inputs for Transportation Conformity

Challenges and Solutions

presented to

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presented by

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Transportation leadership you can trust.



Overview

- MOVES Transition Support for MPOs for Transportation Conformity
- MOVES Inventory vs. Emission Rate Mode
- MOVES Inputs Data Sources

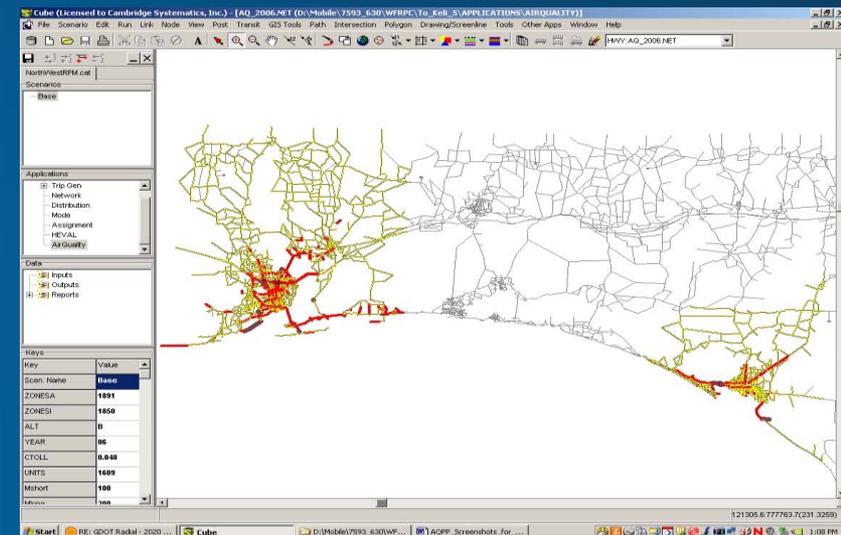
CS' MOVES Transition Experience

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

SUMMARY OF AIR QUALITY FOR BAY COUNTY					
DESCRIPTION, HPMS FUNCTIONAL, NAME,	Daily Model, UNADJ. VMT,	Daily Model, NOX (grams),	Daily Model, VOC (grams),	Annual Model, CO2EQ (grams),	
Rural Interstate,	1, 0,	0,	0,	0,	
Rural Principal Arterial,	2, 801745.6,	1821768.6,	293022.3,	153257849360.6,	
Rural Minor Arterial,	6, 212405.6,	303478.8,	86821.7,	35361813660.2,	
Rural Major Collector,	7, 9935.9,	14031.5,	3814.2,	1606928251.6,	
Rural Minor Collector,	8, 0,	0,	0,	0,	
Rural Local,	9, 99594.6,	192833.1,	60184.4,	21081605546.6,	
Urban Interstate,	11, 0,	0,	0,	0,	
Urban Freeway,	12, 0,	0,	0,	0,	
Urban Other Arterial,	14, 2007735.8,	3157573.0,	1000693.9,	368753338227.1,	
Urban Minor Arterial,	16, 779261.0,	1119808.7,	375044.3,	134575825393.8,	
Urban Collector,	17, 727976.4,	1251992.0,	344296.1,	133658453360.5,	
Urban Local,	19, 590519.5,	1096614.2,	392403.8,	127977315444.3,	
Total Running Emissions	,	8958099.9,	2556280.7,	976255129244.8,	
Total Non-Running Emissions	,	12328330.9,	20617200.8,	26974821875.2,	
Total Emissions including Non-Running	,	21286430.8,	23173481.5,	1003229951120.0,	
HPMS VEHICLE DESCRIPTION, CLASSES,	UNADJ. VMT,	NOX (grams),	VOC (grams),	Ann. CO2EQ (grams)	
Motorcycles,	10, 24424.3,	15667.6,	57675.9,	3172557270.3,	
Private Auto,	20, 3441990.1,	3290262.9,	1380807.4,	501607442968.1,	
Light Trucks,	30, 1476647.1,	2433189.5,	840314.4,	301539489755.2,	
Buses,	40, 5118.1,	65545.0,	4689.2,	2411204242.3,	
Single Unit Trucks,	50, 153313.6,	1026547.9,	168430.0,	62756334168.8,	
Combination Unit Trucks,	60, 127681.0,	2126887.1,	104363.9,	104768090840.1,	



CS' MOVES Transition Experience (Cont'd)

- 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

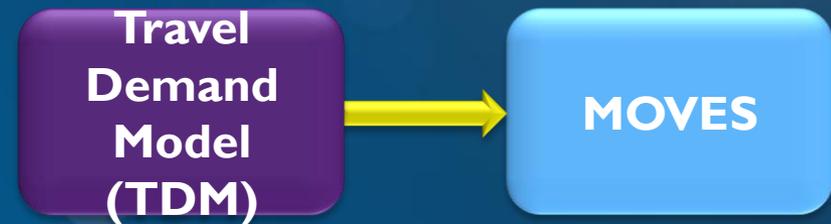
- Indiana

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

Two Options for Applying MOVES

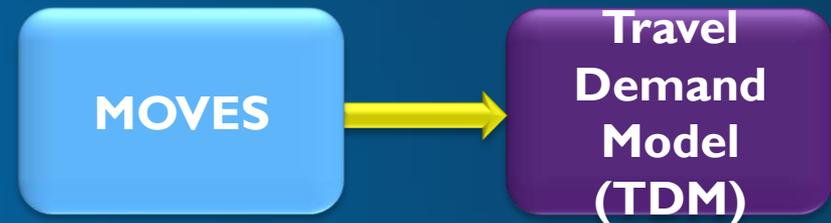
- Option 1: MOVES as an Emissions **Inventory** Model

- » Requires running of MOVES every time the travel demand model is modified
- » Uses output loaded network from travel demand model



- 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 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

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)

Data Requirements for County Data Manager

Local Registration Data Desired

Source
(Vehicle) Type
Population

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

Average
Speed
Distribution

Vehicle Type
Vehicle Miles
Traveled
(VMT)

Road Type
Distribution

Previous MOBILE6
or MOVES National
Defaults Generally
Available.

Ramp
Fraction

Fuel Supply

Age
Distribution
(Population
Based)

Meteorology

Inspection
and
Maintenance
Program

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 Permanent 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