

MOVES2010 & MOBILE6 MODEL

VMT, Emissions, and Emission Rates

(DRAFT)

TWG QUARTERLY MEETING
August 05, 2010



Madhusudhan Venugopal
North Central Texas Council of Governments

MOVES: Sensitivity Runs

Dallas County

2009 Analysis Year

NO_x, VOC, and CO₂ Analyzed

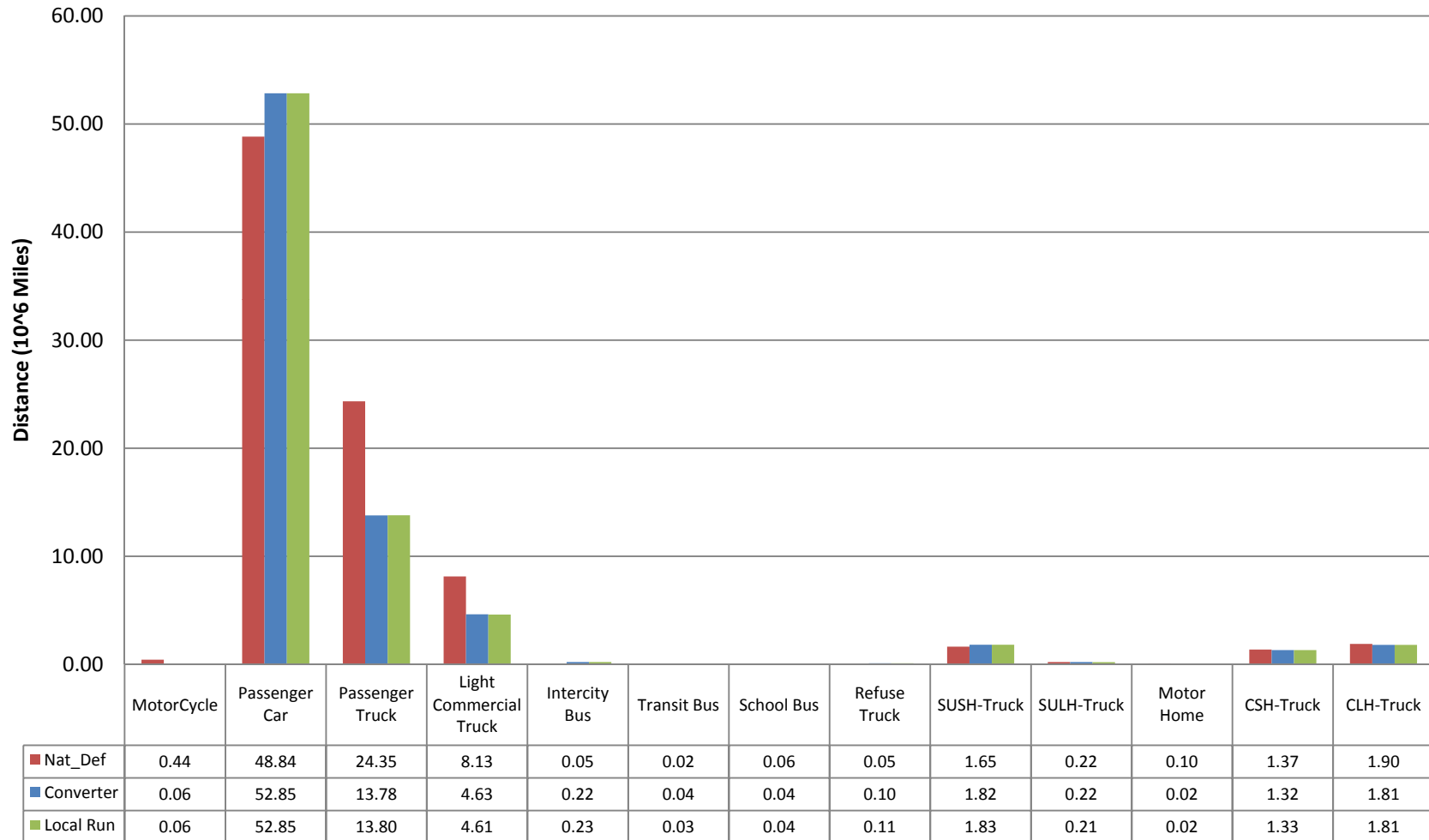
August Weekday VMT

**Three Sensitivity Runs (National
Default, Converter and Local)**

MOVES: Sensitivity Runs

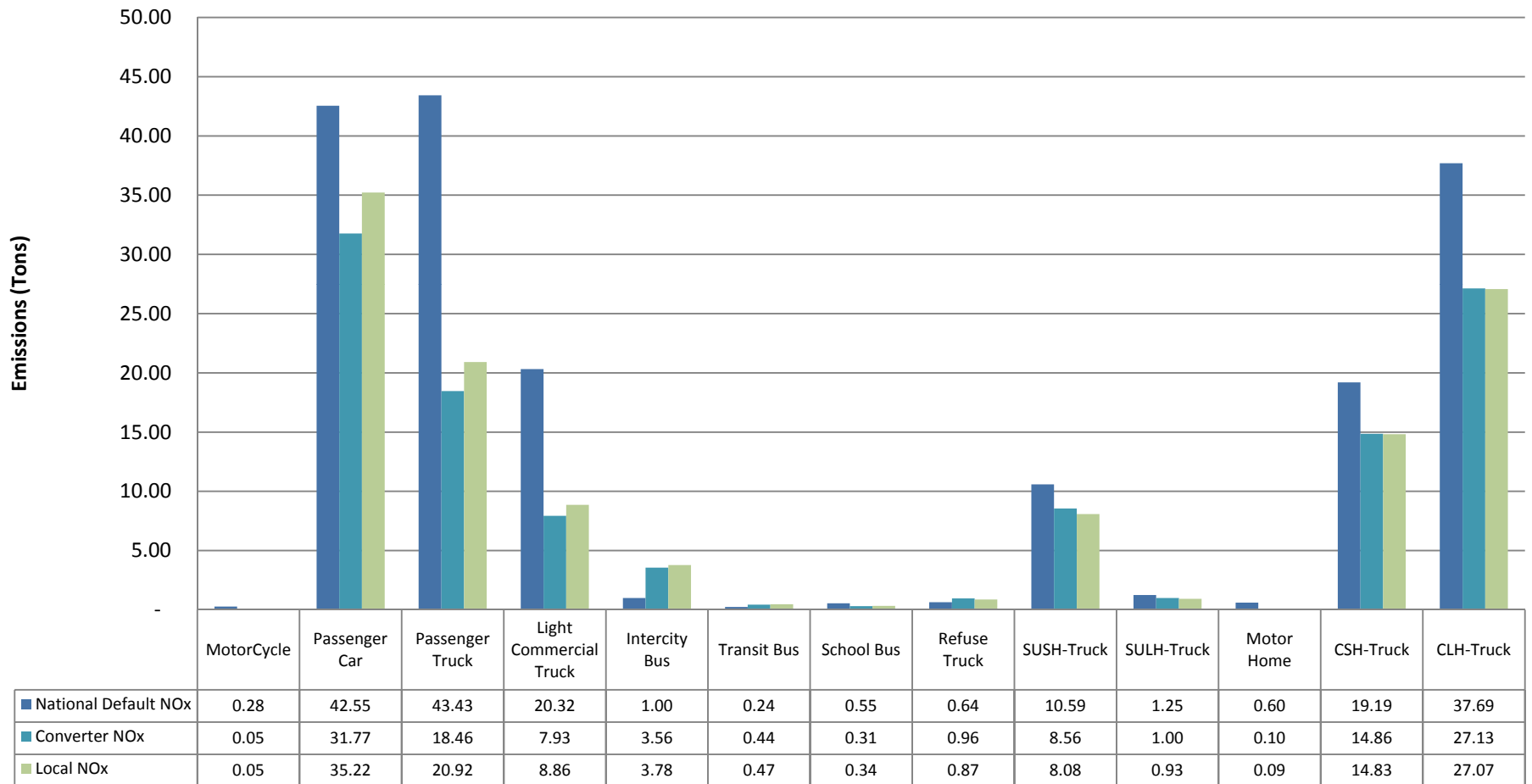
Parameters	Default	Converter	Local
Roadtypedistribution	Default	Local	Local
Population	Default	Local+ Default	Local + Default
Hourvmtfraction	Default	Local	Local
Hpmsvtypeyear	Default	Local	Local
Met Data	Default	Local	Local
Age Distribution	Default	Converter (M6)	Local
Fuel Formulation	Default	Default	Default
Fuelsupply	Default	Default	Default
Imcoverage	Default	Default	Local
Monthvmtfraction	Default August	August Specific	August Specific
Dayvmtfraction	Default Weekday	Weekday Specific	Weekday Specific
Avgspeed Distrubution	Default	Converter (M6)	Converter (M6)
Rampfraction	Default	Local	Local
Fuelengfractions	Default	Default	Local + Default

MOVES: VMT by Vehicle Type



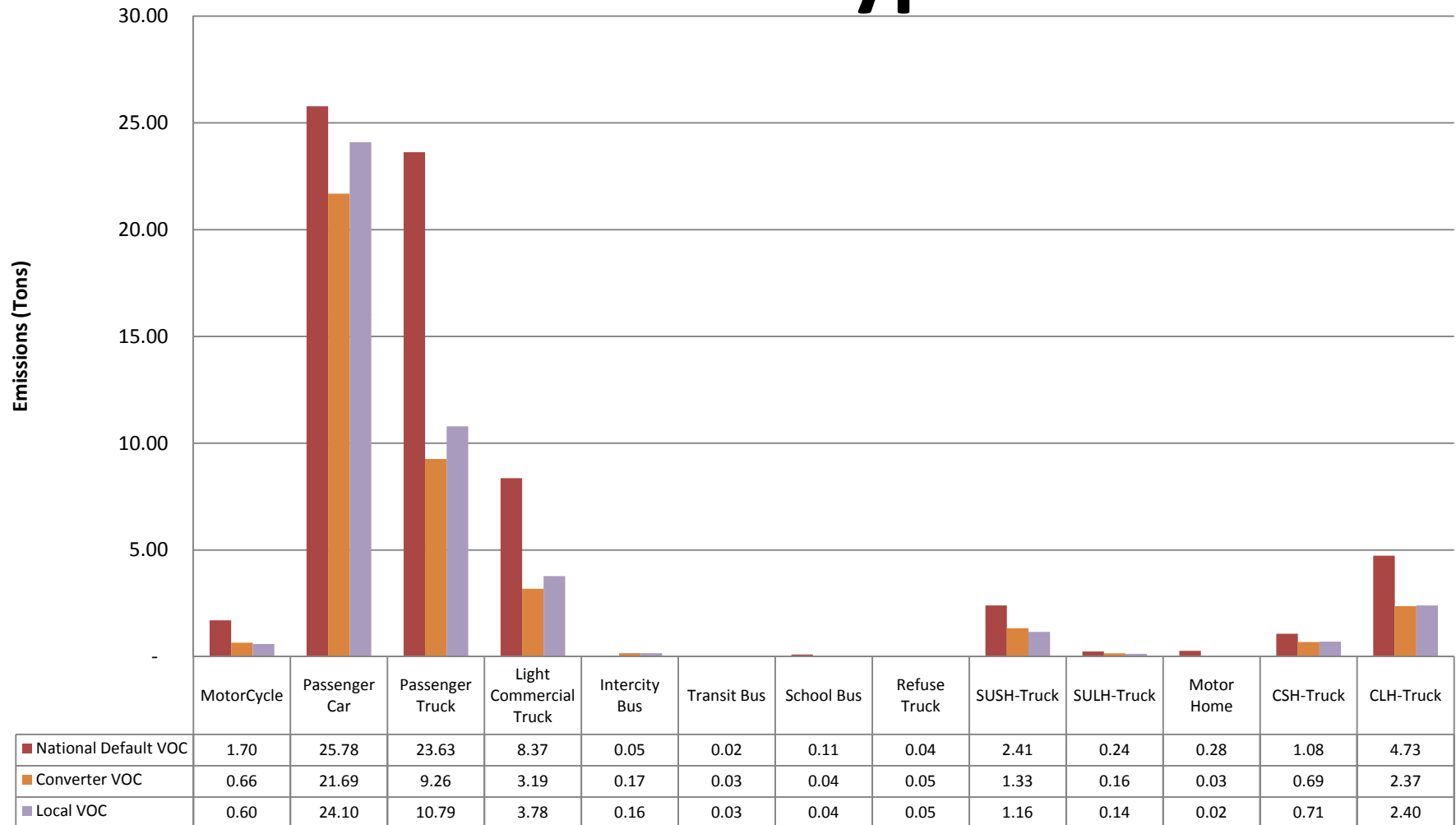
Higher VMT for the National Default Run

MOVES: NO_x Emissions by Vehicle Type



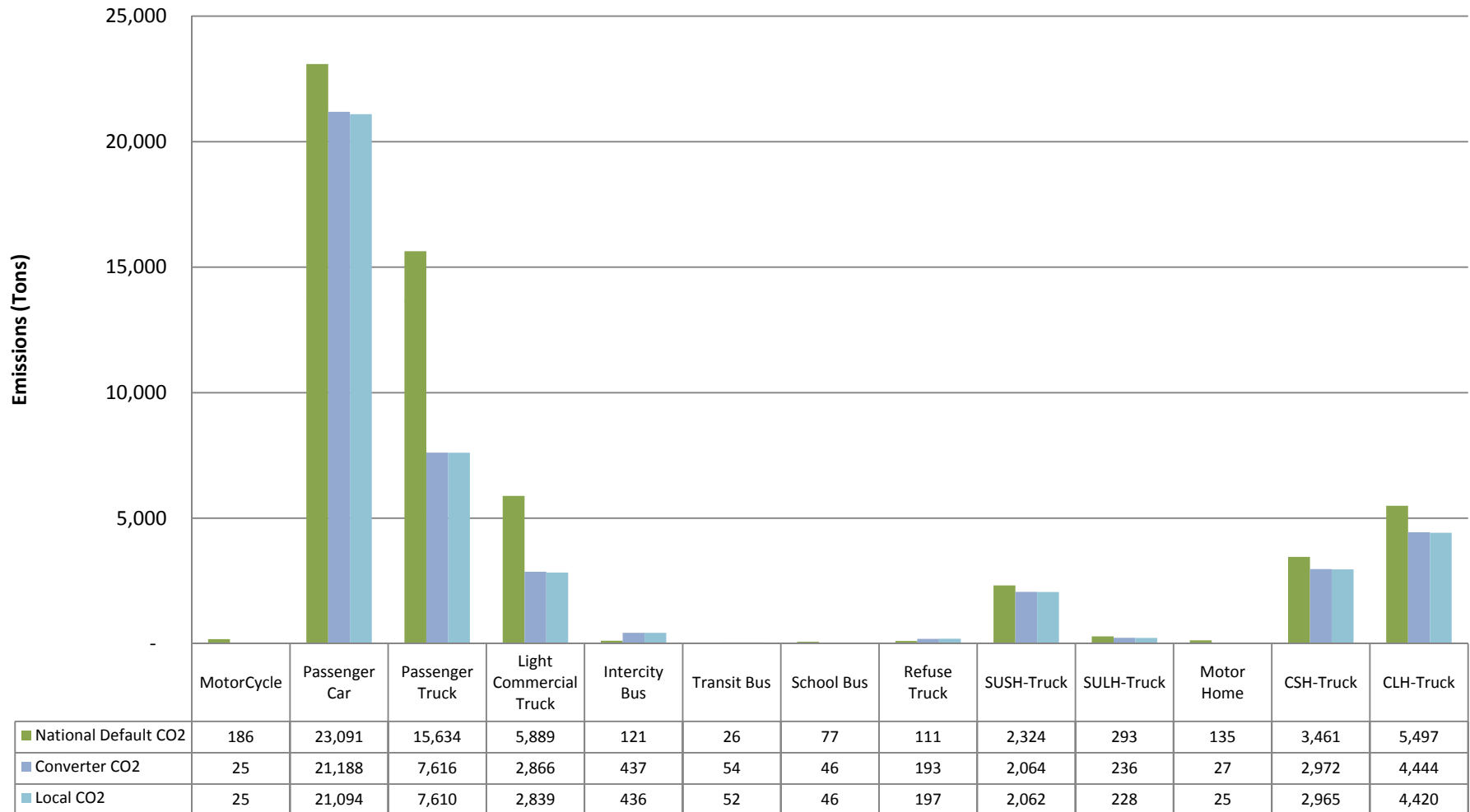
Higher NO_x Emissions for the National Default Run

MOVES: VOC Emissions by Vehicle Type



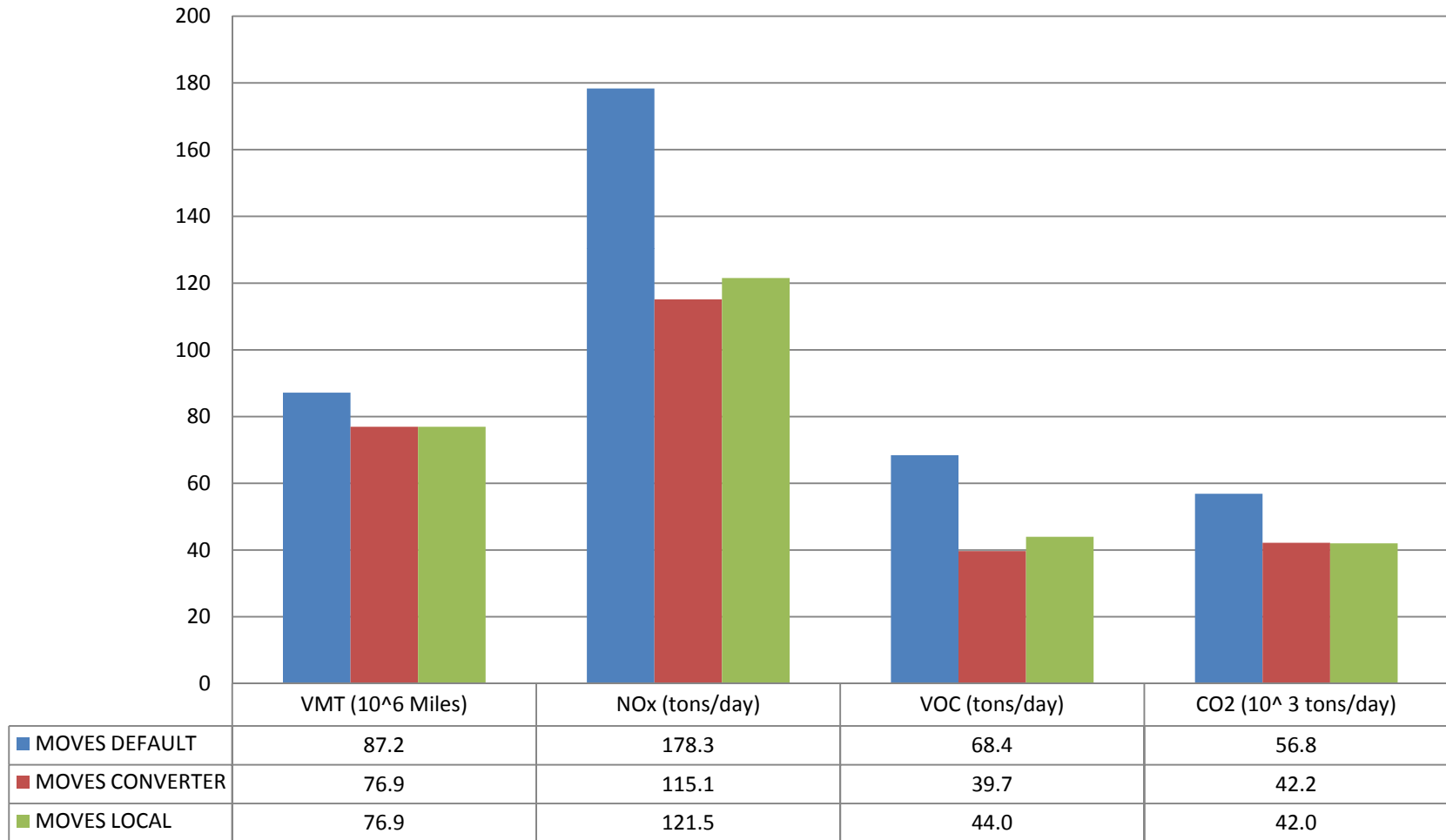
Higher VOC Emissions for the National Default Run

MOVES: CO₂ Emissions by Vehicle



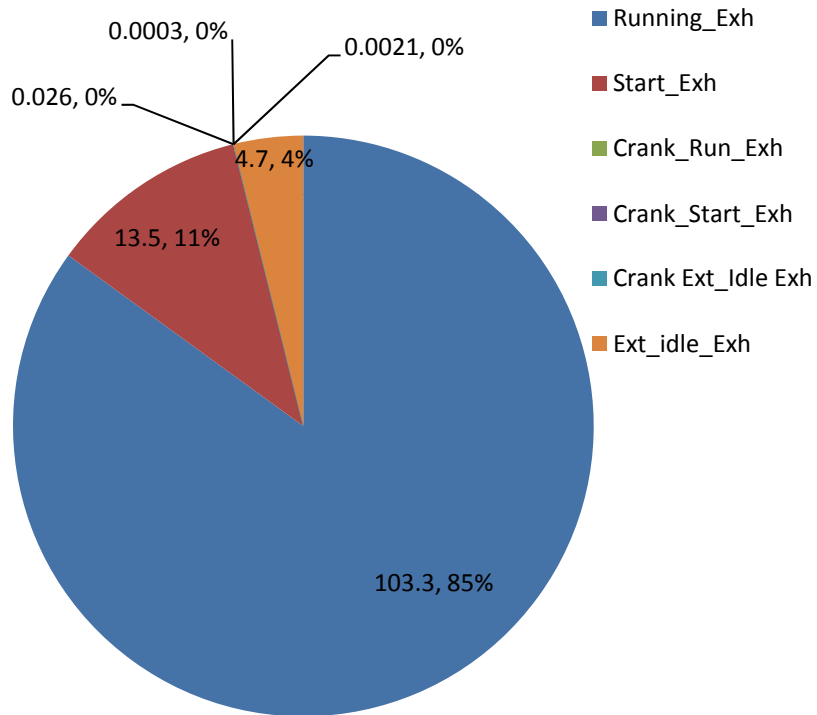
Higher CO₂ Emissions for the National Default Run

MOVES : Emissions Summary

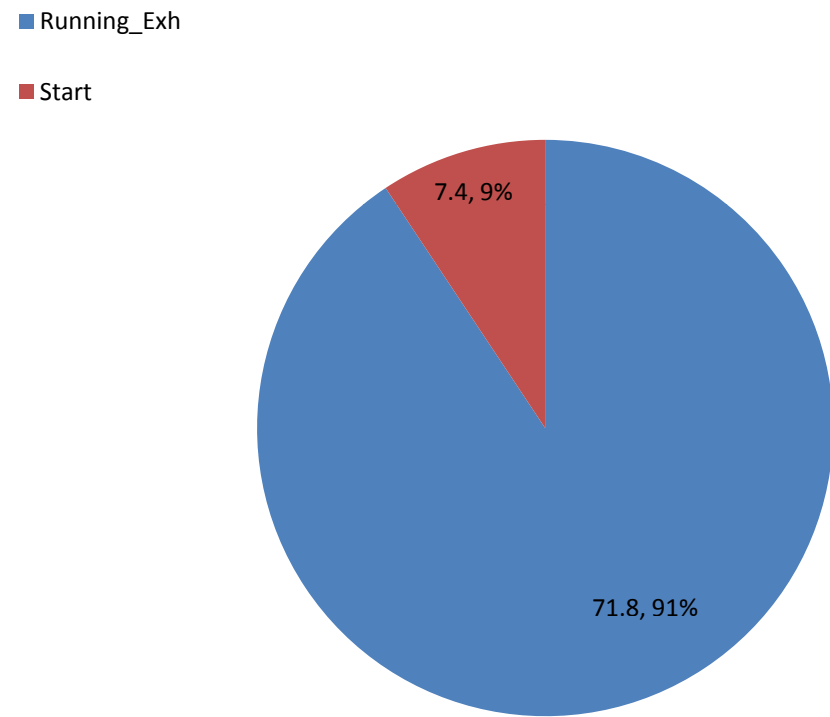


MOVES Vs MOBILE6-NO_x Emissions

MOVES : 121.5 tons/day



MOBILE6:79.2 tons/day

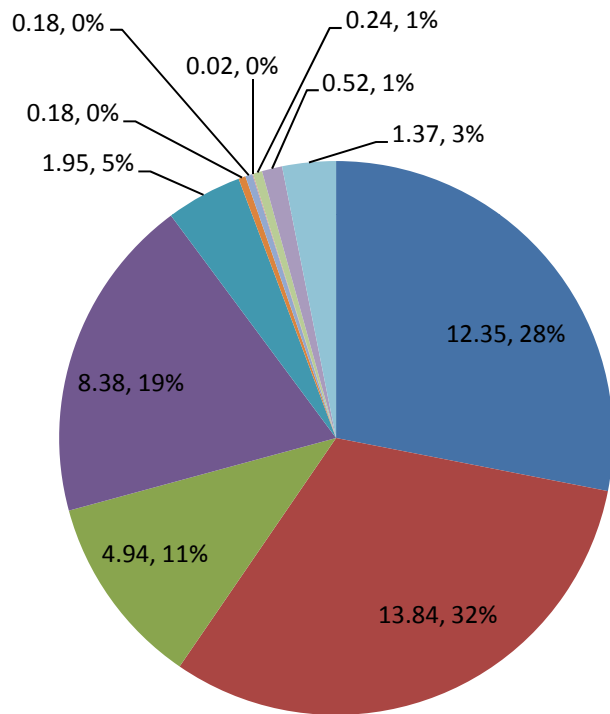


Extended idling has significant impacts and overall 53% higher NO_x emissions.

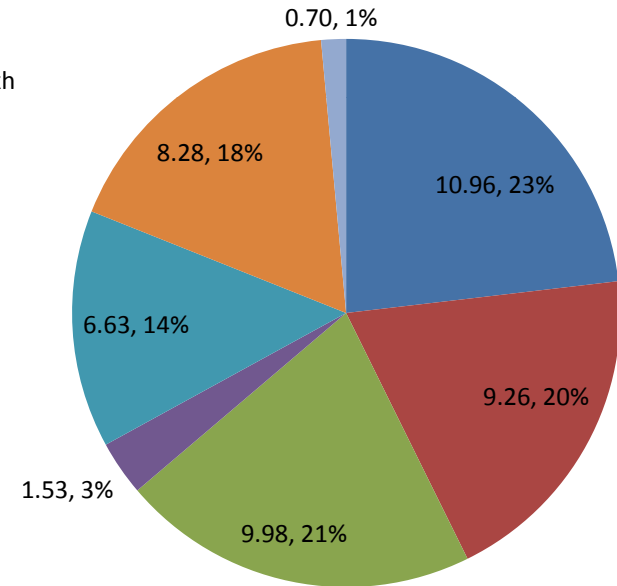
MOVES VS MOBILE6- VOC Emissions

MOVES: 44 tons/day

MOBILE6: 47.4 tons/day



- Running_Exh
- Start_Exh
- Evap_Permeation
- Evap_Fuel_Vap_Vent
- Evap_Fuel Leaks
- Crank_Run_Exh
- Crank_Start_Exh
- Crank Ext_Idle Exh
- Refuel_Vap_Dis
- Refuel_Spill_Loss
- Ext_idle_Exh
- Running_Exh
- Start
- Hot-Soak
- Diurnal
- Rest_Loss
- Run_Loss
- Crankcase

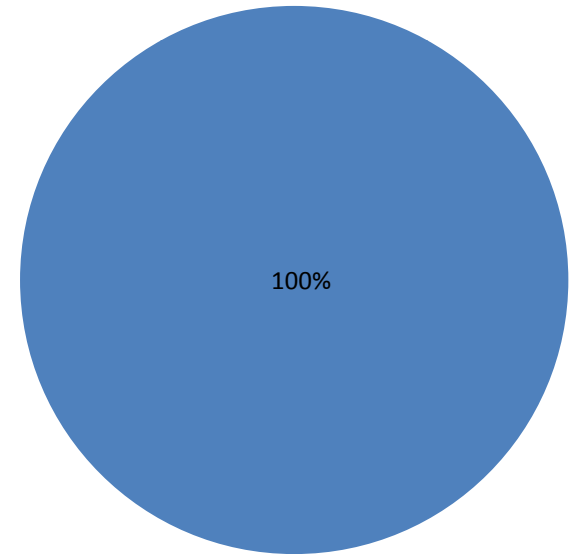
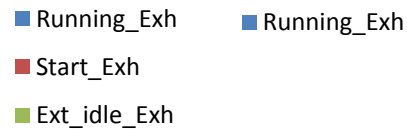
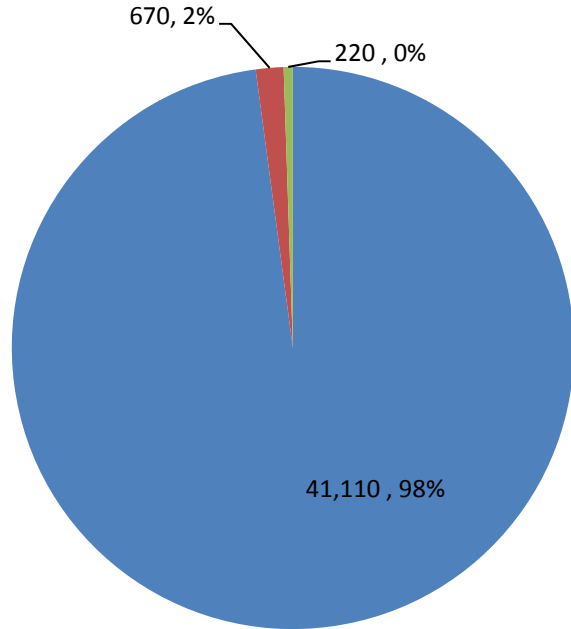


Start exhaust emissions in MOVES are higher than running exhaust emissions. Overall MOVES is 7% lower than MOBILE6.2.

MOVES VS MOBILE6-CO₂ Emissions

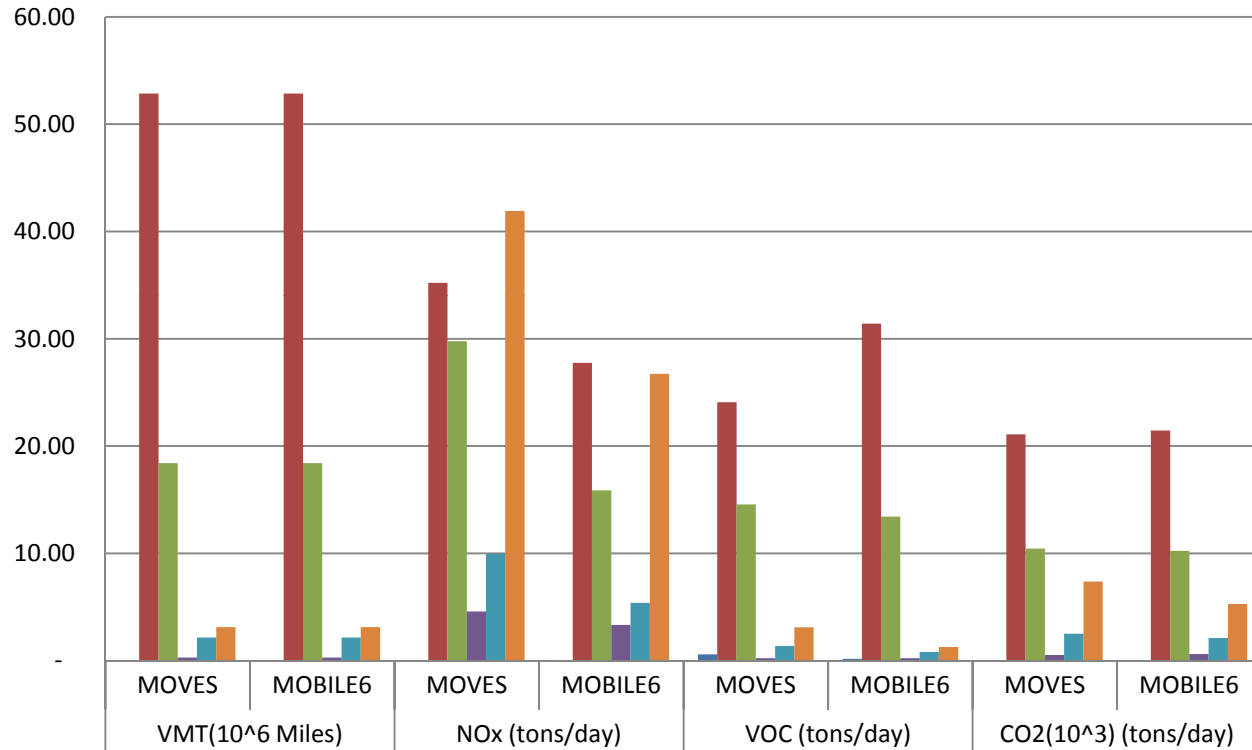
- **MOVES: 42,000 tons/day**

MOBILE6: 39,737 tons/day



MOVES has higher emissions when compared to MOBILE6.2.

MOVES VS MOBILE6- Summary By Vehicle Group

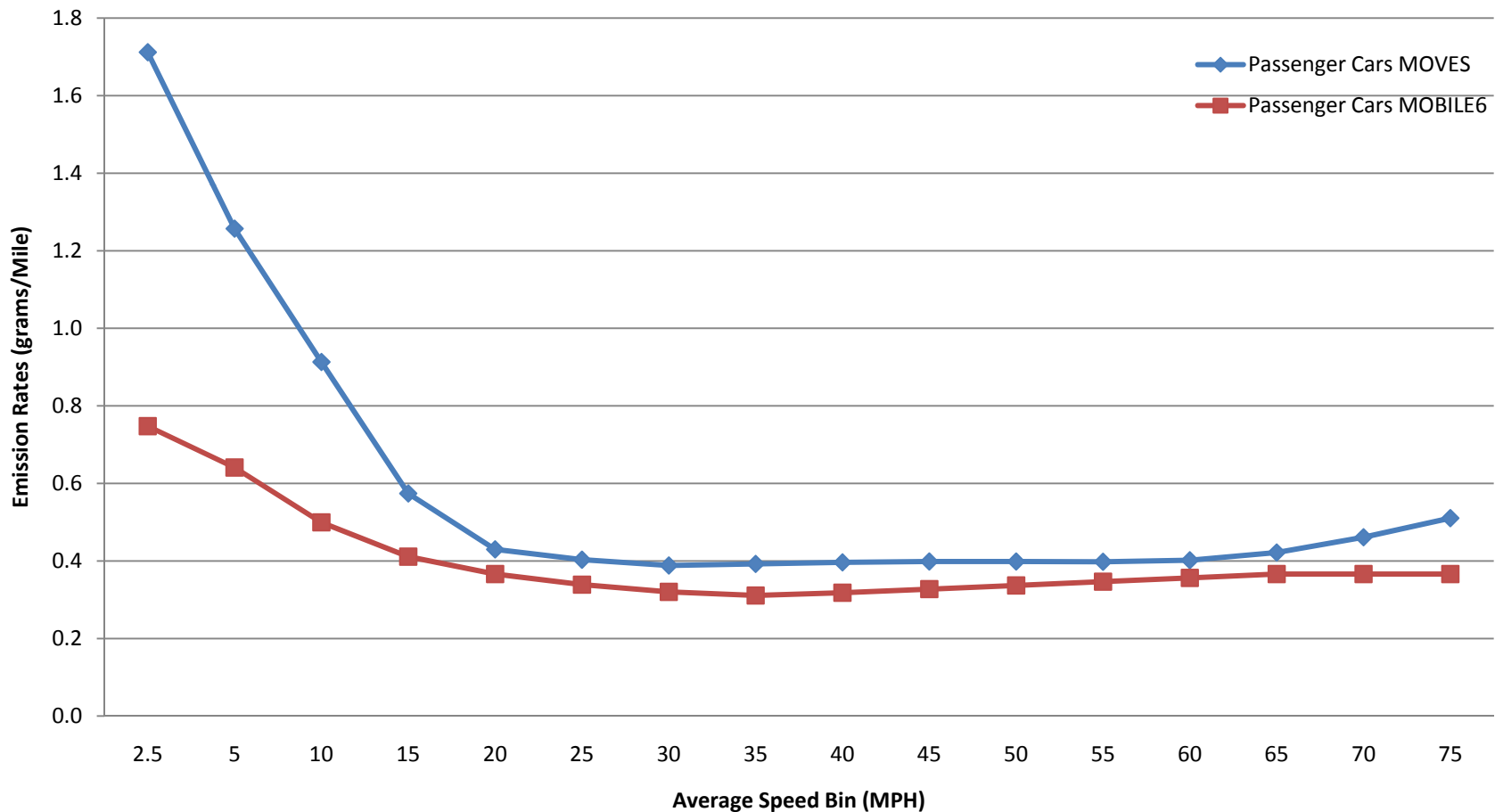


	MOVES	MOBILE6	MOVES	MOBILE6	MOVES	MOBILE6	MOVES	MOBILE6
	VMT(10 ⁶ Miles)		NOx (tons/day)		VOC (tons/day)		CO2(10 ³) (tons/day)	
MC	0.06	0.06	0.05	0.07	0.60	0.18	0.03	0.01
Passenger Cars	52.85	52.85	35.22	27.76	24.10	31.41	21.09	21.45
Light Duty pass and Comm Trucks	18.42	18.42	29.78	15.88	14.56	13.44	10.45	10.24
Buses	0.30	0.30	4.58	3.34	0.23	0.23	0.53	0.63
SU and Ref Trucks, and MH	2.17	2.17	9.98	5.40	1.37	0.82	2.51	2.12
Combination Trucks	3.13	3.13	41.90	26.74	3.11	1.29	7.39	5.29

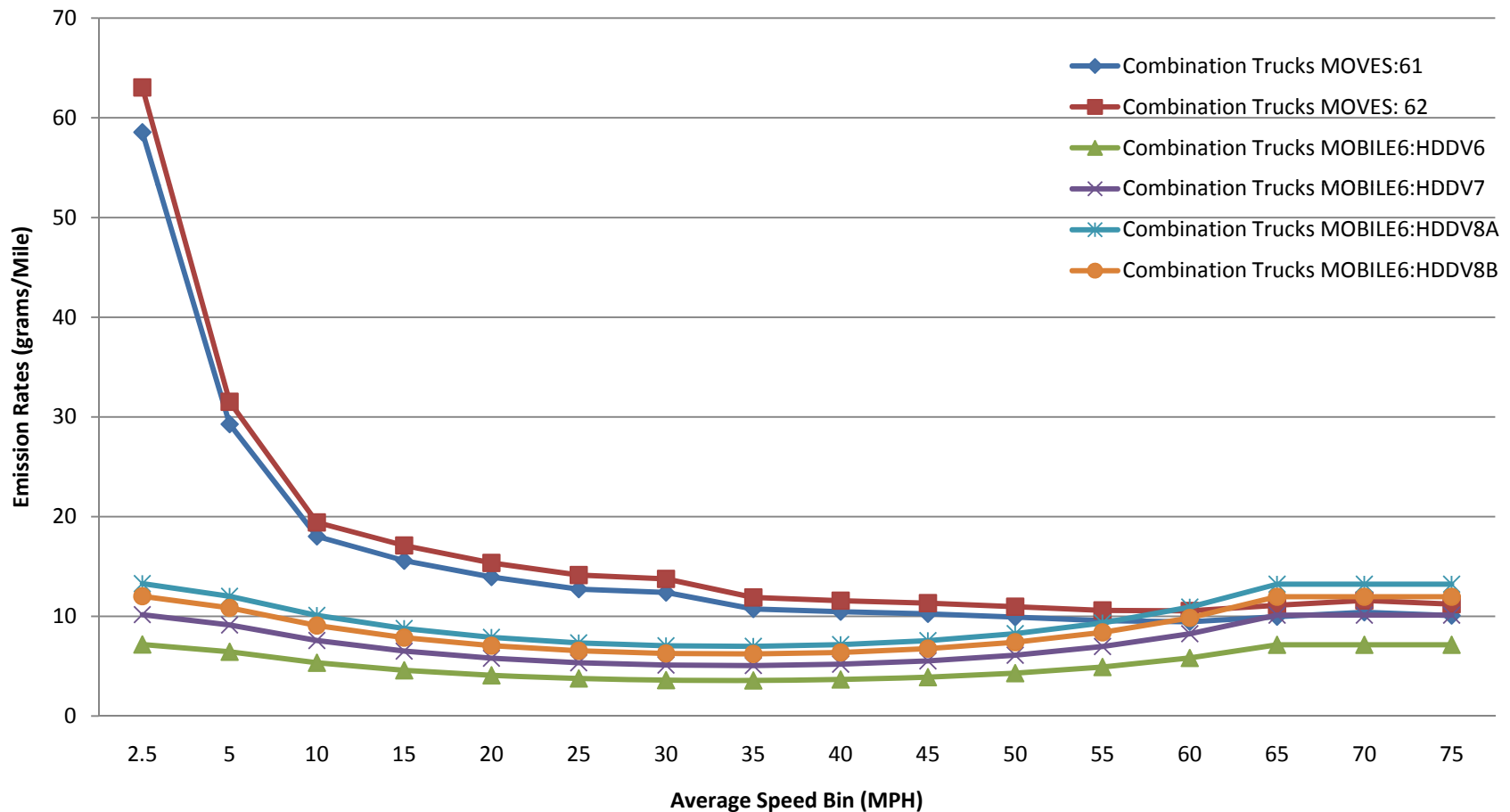
MOVES Vs MOBILE6: Emission Process

Process ID	Process Name	Short Name	MOVES			MOBILE6
			Emission Rates/Distance	Emission Rates/Vehicle	Profile Emission Rates/Vehicle	Emission Rates/Distance
1	Running Exhaust	Running Exh	Grams/Mile			Grams/Mile
2	Start Exhaust	Start Exh		Grams/Vehicle		Grams/Mile
11	Evap Permeation	Evap Permeation	Grams/Mile	Grams/Vehicle		Grams/Mile
12	Evap Fuel Vapor Venting	Evap Fuel Vent	Grams/Mile		Grams/Vehicle	Grams/Mile
13	Evap Fuel Leaks	Evap Fuel Leak	Grams/Mile	Grams/Vehicle		Grams/Mile
15	Crankcase Running Exhaust	Crank Run Exh	Grams/Mile			Grams/Mile
16	Crankcase Start Exhaust	Crank Start Exh		Grams/Vehicle		NA
17	Crankcase Extended Idle Exhaust	Crank Ext Idle				NA
18	Refueling Displacement Vapor Loss	Refuel Disp Vap				Grams/Mile
90	Extended Idle Exhaust	Ext Idle Exh		Grams/Vehicle		Included in the HDDV8b Class

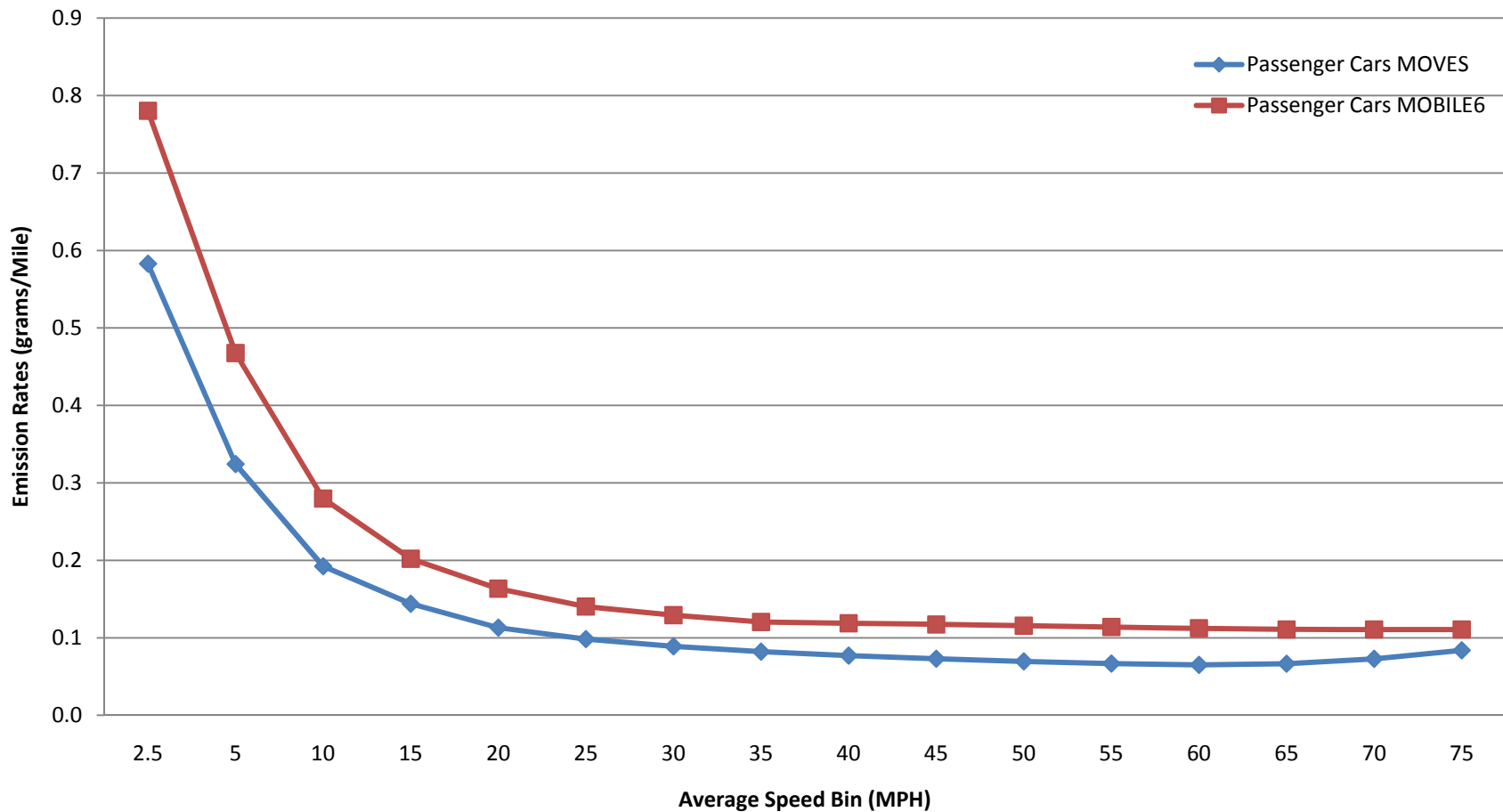
MOVES Vs MOBILE6: Gasoline Passenger Vehicles NO_x Emission Rates



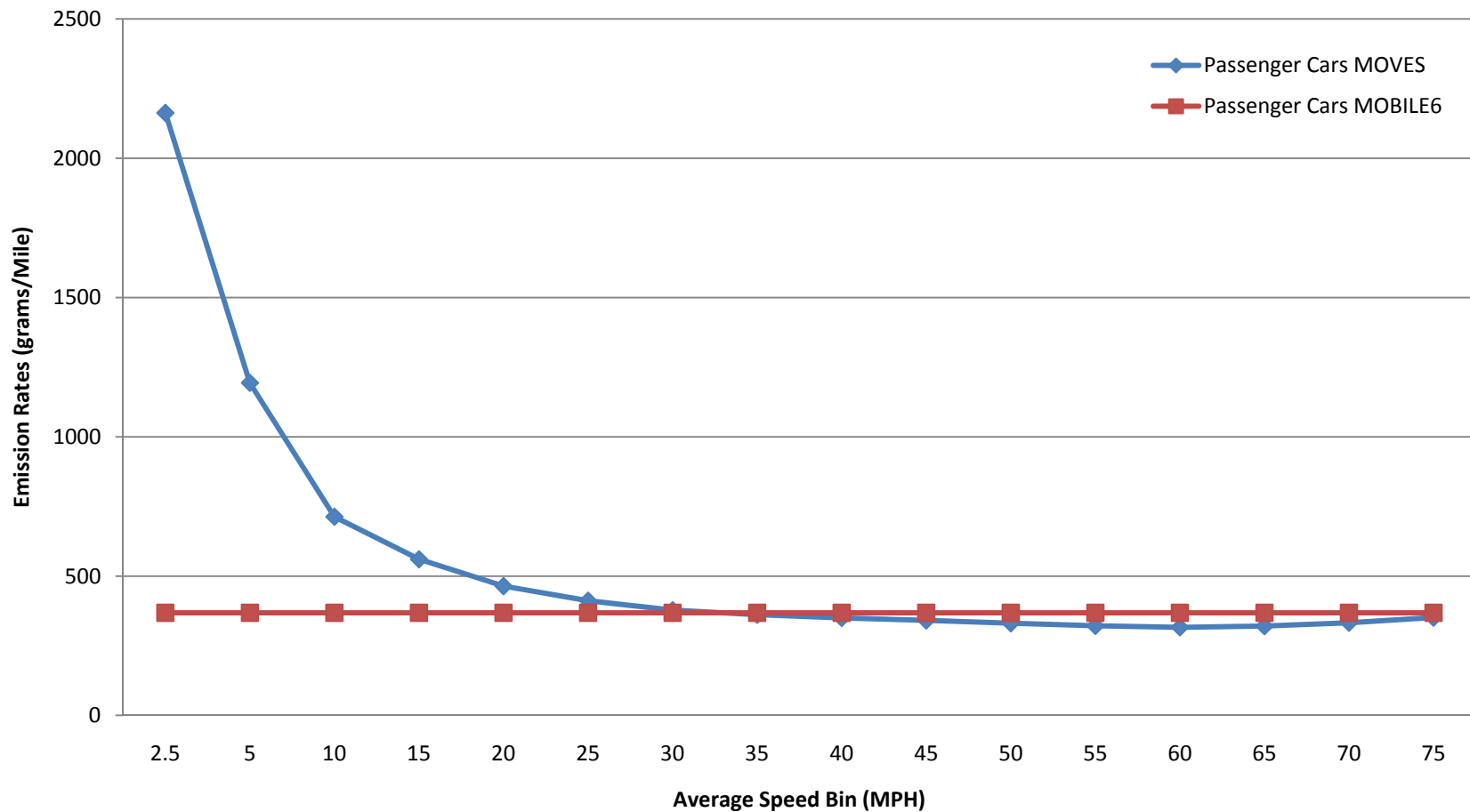
MOVES Vs MOBILE6: Diesel Heavy-Duty Truck NO_x Emission Rates



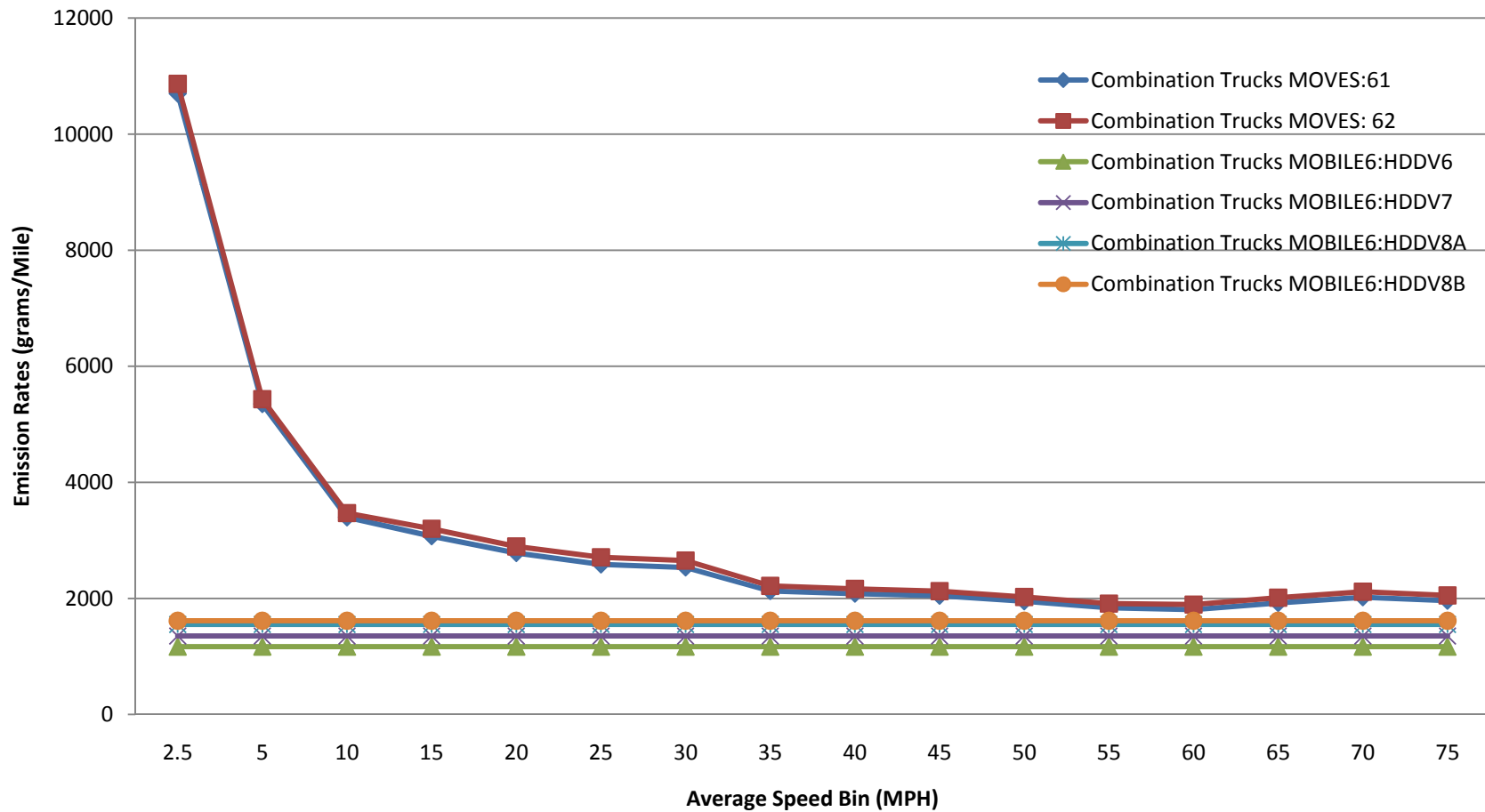
MOVES Vs MOBILE6: Gasoline Passenger Vehicles VOC Emission Rates



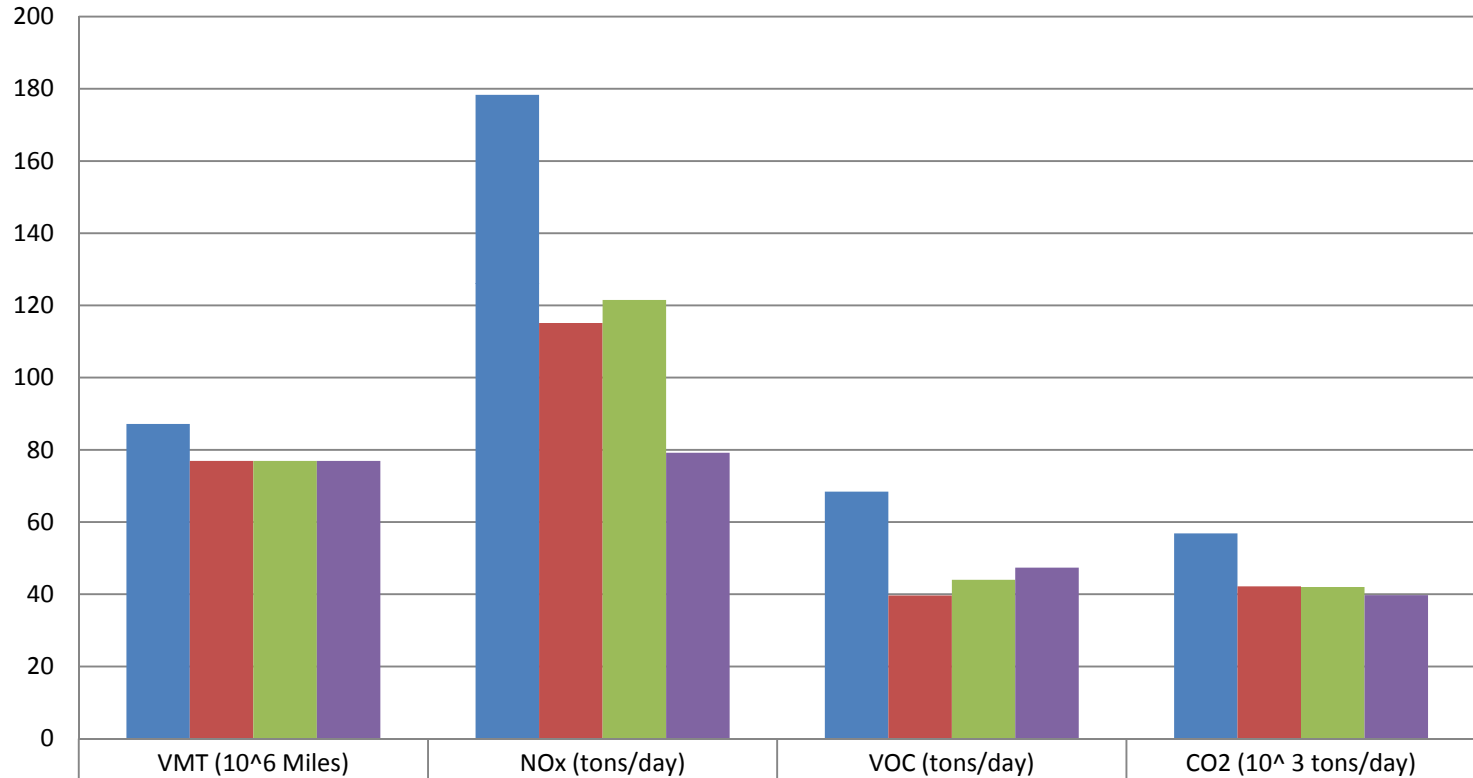
MOVES Vs MOBILE6: Gasoline Passenger Vehicles CO₂ Emission Rates



MOVES Vs MOBILE6: Diesel Heavy-Duty Truck CO₂ Emission Rates



MOVES Vs MOBILE6: Emissions Summary



	VMT (10 ⁶ Miles)	NOx (tons/day)	VOC (tons/day)	CO2 (10 ³ tons/day)
MOVES DEFAULT	87.2	178.3	68.4	56.8
MOVES CONVERTER	76.9	115.1	39.7	42.2
MOVES LOCAL	76.9	121.5	44.0	42.0
MOBILE6.2	76.9	79.2	47.4	39.7

MOVES Vs MOBILE6: Emissions Comparison

NO_x Higher Emission

New Emission Process

Limited Roadway Types

Higher Emission Rates

VOC Slightly Lower Emissions

CO₂ Slightly Higher

Emission Rates Sensitive to the Speeds

FUTURE EFFORTS

Local Vehicle and Activity Information

**Spatial Allocation of the Stationary
Emissions**

Better Mapping of HPMS Vehicle Types

**Incorporating MOVES Emission Rates to
Travel Demand Model (EmiLink:AQ
Interface)**

Contact Information

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