

District 4 – Air Quality Reports

presented by
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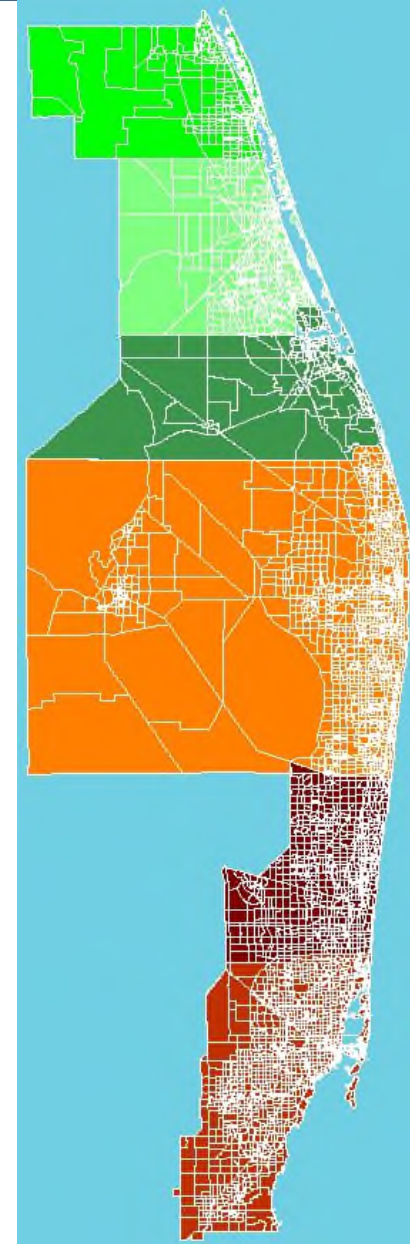
December 9, 2015



Designed for District 4 Activity-Based Models



- Initially implemented for SERPM7
- Based on Florida emission factors from MOVES (extracted by Parsons Brinkerhoff)
- Six pollutants (CO, CO₂E, NO_x, VOC, PM10 and PM2.5)
- Year (2010, 2020, 2030, 2040)
- Extrapolated to 2050
- 13 MOVES vehicle types
- 16 speed bins between 2.5 mph and 72.5 mph



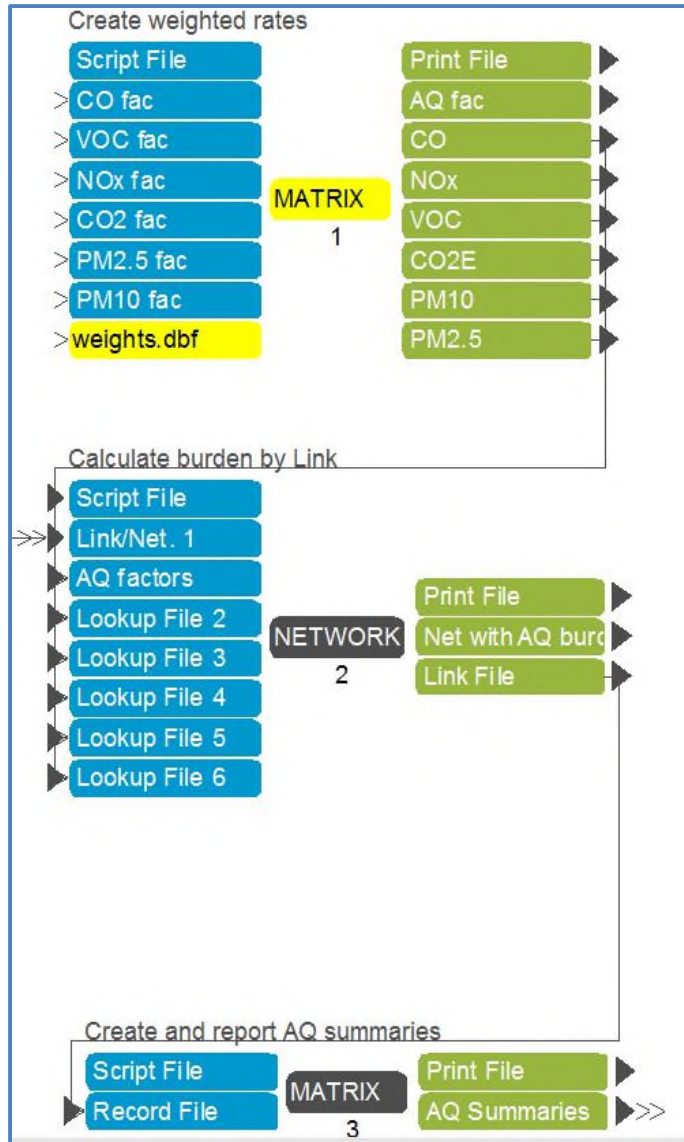
Emission Factors



MOVES		HPMS	CUBE	Table	Auto/Truck	HPMS %	Composite
Veh.Type	Description	Type	TYPE	4.3.4	Weight	x	Weight
				HPMS %		Weight	Weight
11	motorcycle	10	auto	0.006500	0.922780	0.006500	0.007044
21	car	20	auto	0.727780		0.727780	0.788682
31	pickup	30	auto	0.188500		0.094250	0.102137
32	light com truck	30	auto			0.094250	0.102137
41	Inter-City	40	truck	0.005300	0.077200		0.000000
42	transit bus	40	truck			0.002650	0.034326
43	school Bus	40	truck			0.002650	0.034326
51	garbage truck	50	truck	0.033400			0.000000
52	SU short-haul	50	truck			0.016700	0.216321
53	SU long-haul	50	truck			0.016700	0.216321
54	motor home	50	truck				0.000000
61	Comb short-haul	60	truck	0.038500		0.019250	0.249352
62	Comb long-haul	60	truck			0.019250	0.249352
				1.0000	1.0000	1.0000	2.0000

*NCHRP Web-Only Document 210: Input Guidelines for Motor Vehicle Emissions Simulator Model, Volume 1

CUBE APPLICATION



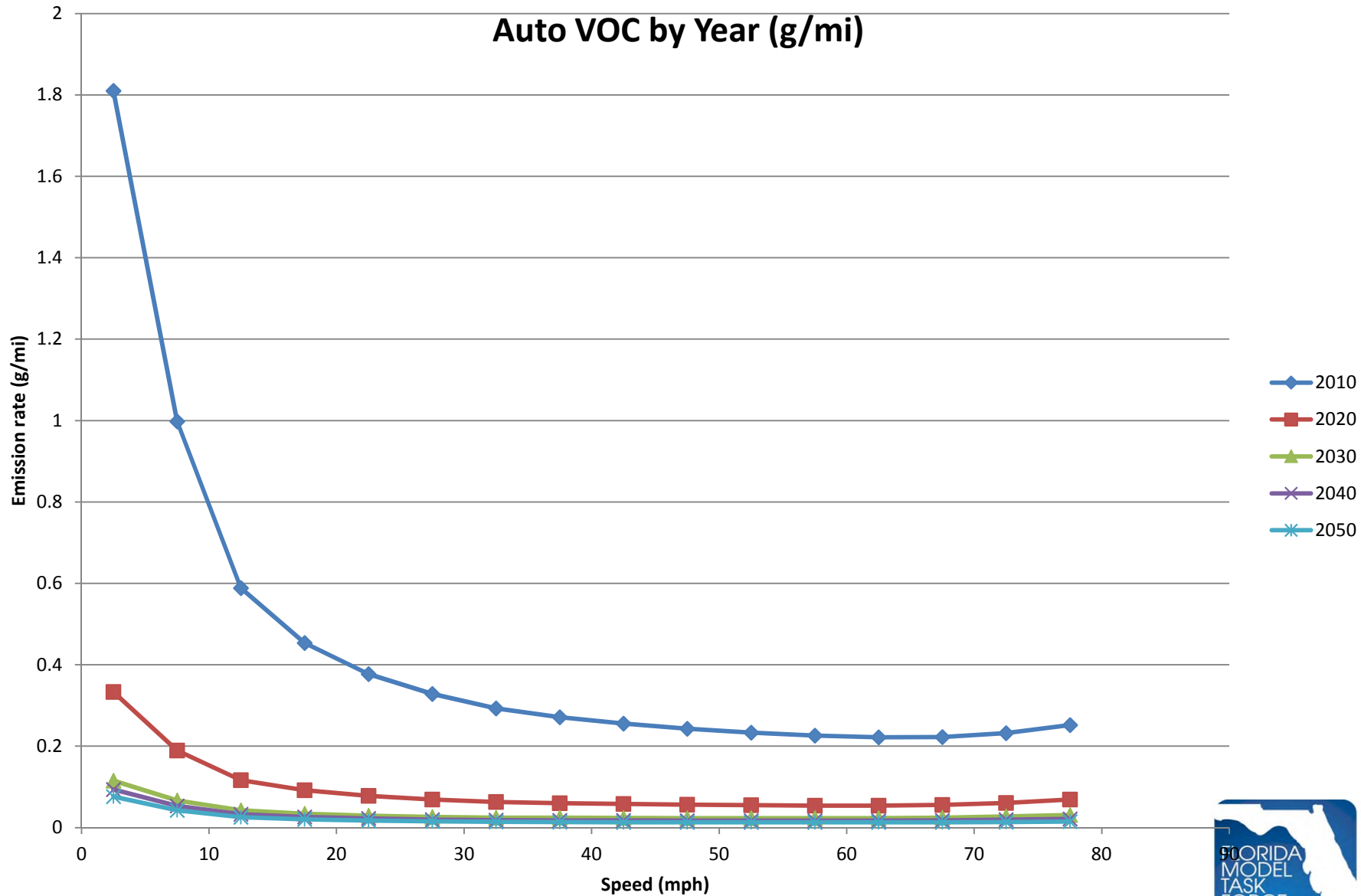
WORKS FOR:

- SERPM region
- User-defined Subarea

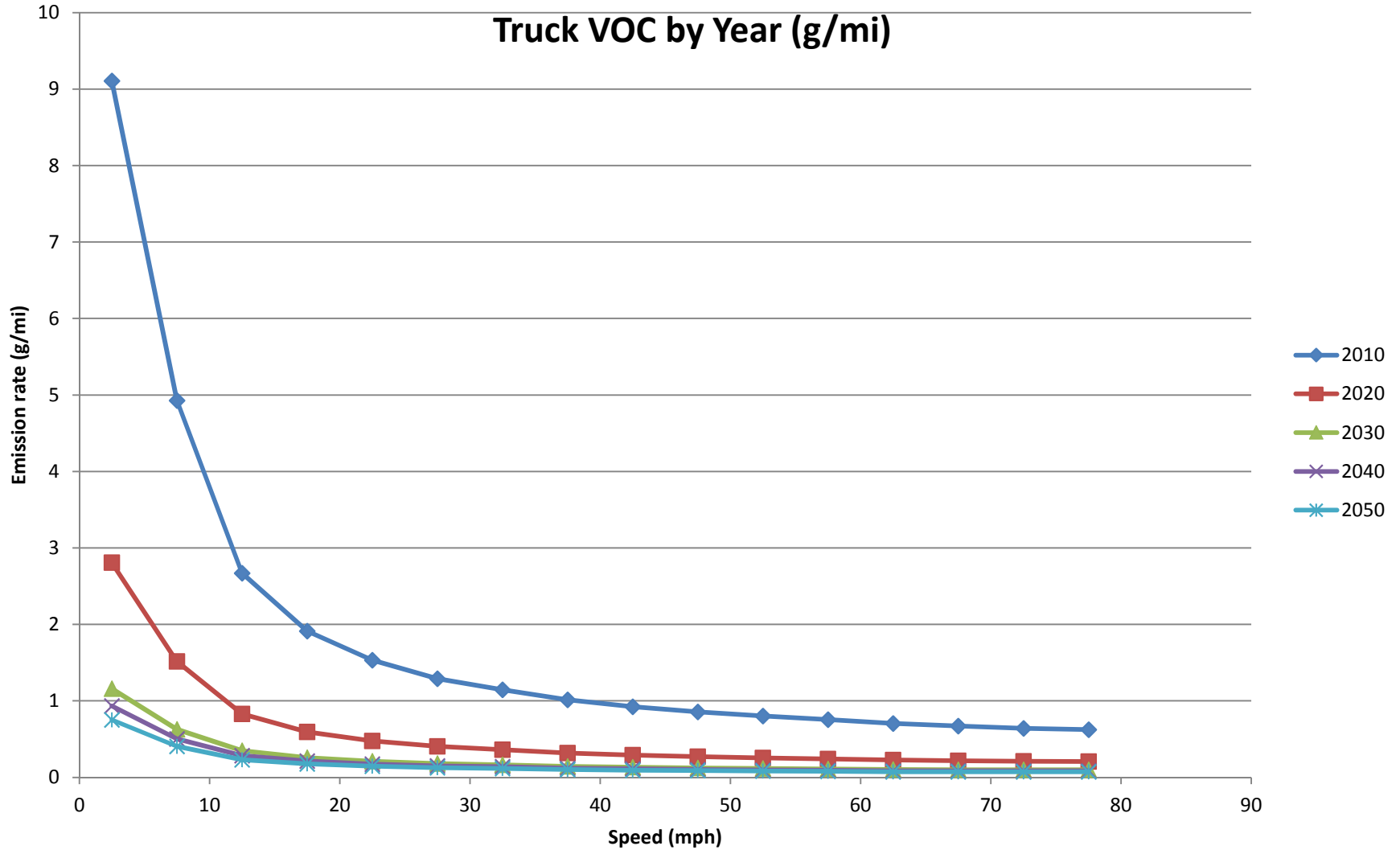
Process:

- Interpolate rates
- Calculated pollution burden for every link on the basis of load and speed
- Create summaries

RATES FROM MOVES



RATES FROM MOVES

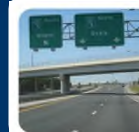


RATES FROM MOVES



- Similar rates for:
 - CO
 - CO₂
 - NO_x
 - PM10
 - PM2.5

Summary report by daily burden and pollutant



----- DAILY MOBILE SOURCE BURDEN (TONS) -----						
LOCATION	CO	NOx	VOC	CO2E	PM 10	PM 2.5
Palm Beach	187.68	47.37	10.59	16,683.42	3.22	1.85
Broward	234.81	46.98	12.55	19,296.90	3.34	1.62
Miami Dade	298.91	62.00	17.43	25,775.82	5.36	2.50
District 4	422.49	94.36	23.14	35,980.32	6.56	3.47
District 6	298.91	62.00	17.43	25,775.82	5.36	2.50
S7 REGION	721.40	156.36	40.56	61,756.14	11.92	5.97

Report by time period, county, District (4 and 5), area type, and facility type



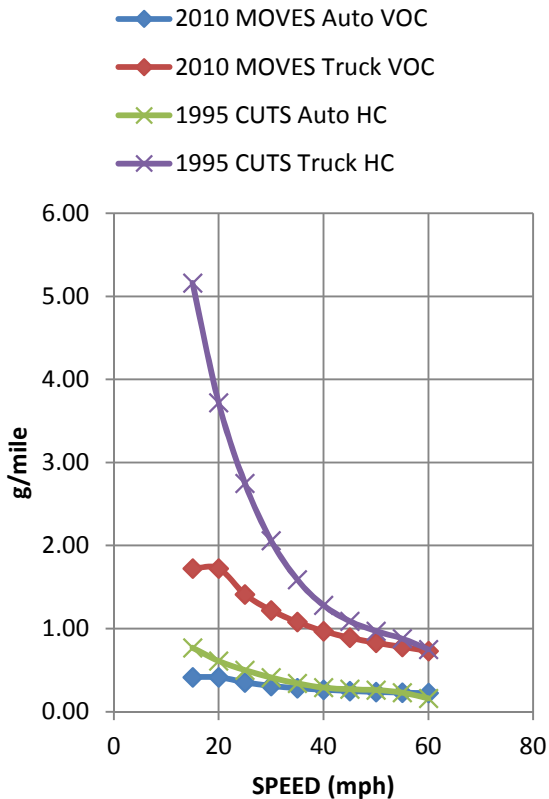
For each Time Period, Pollutant, Location

----- AM PEAK CARBON MONOXIDE MOBILE BURDEN (TONS) -----								
COUNTY = Palm Beach								
ATYPE	Freeway	UninterRd	HiSpdArt	LowSodCol	Ramps	HOV	Toll	TOTAL
1	0	0	0.19	0.12	0	0	0	0.31
2	0	0	0.10	0.12	0.00	0	0	0.22
3	1.26	0	2.28	0.46	0.16	0.25	0	4.42
4	5.99	0.55	15.39	1.65	0.62	1.17	2.48	27.85
5	0.14	1.94	0.83	0.17	0.02	0.02	0.76	3.87
Total	7.38	2.49	18.79	2.52	0.80	1.45	3.24	36.67

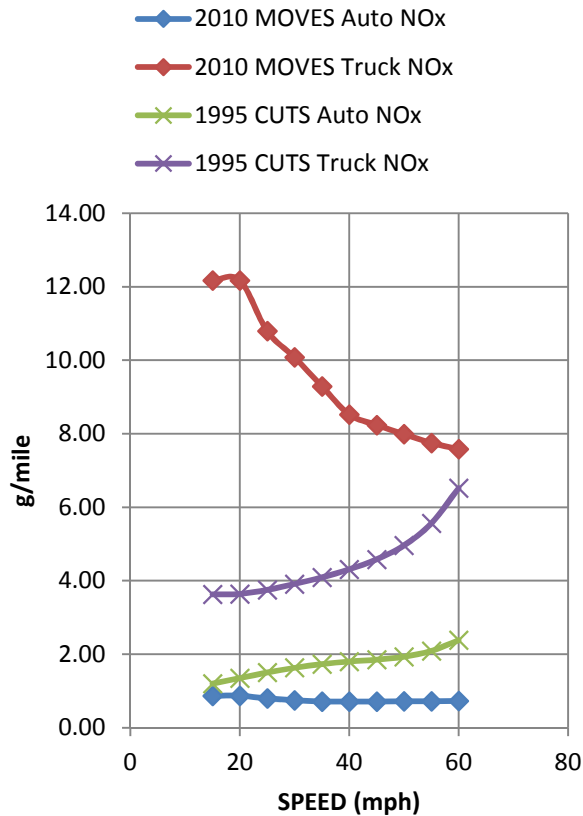
Comparison To 1995 CUTS Rates*



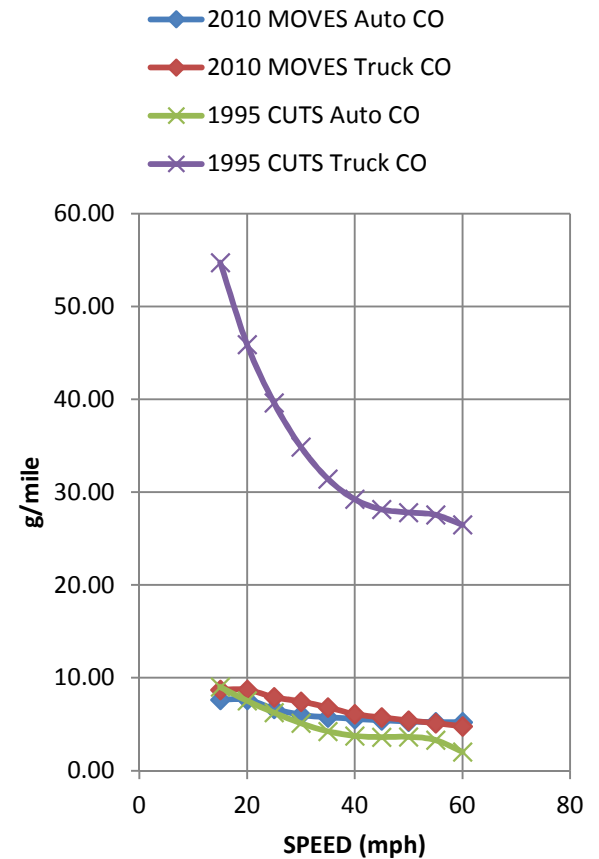
2010 MOVES VOC vs 1995 CUTS HC Emission Rates



2010 MOVES NOx vs 1995 CUTS NOx Emission Rates



2010 MOVES CO vs 1995 CUTS CO Emission Rates



CUTS=Characteristics of Urban Transportation Systems (FHWA), using in FDOT HEVAL.

