




Operational Methods for Managed-Lane Toll Analysis

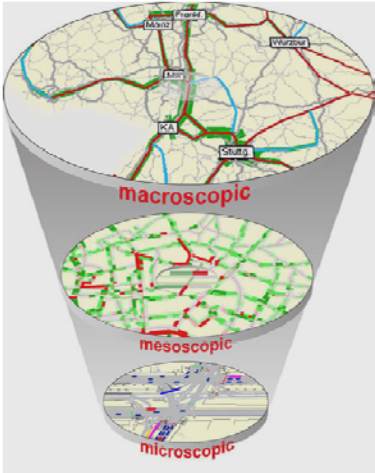


John Lewis
Cambridge Systematics, Inc.



Operational Methods for Managed-Lane Toll Analysis

- Modeling Framework
- Why Operational Methods?
- Risk Factors



2

Managed-Lane Modeling Practice Workshop

Modeling Framework

- Iterative process between Demand model and Operational model
- Regional Diversions in Demand Model
- Dynamic Route Choice in Microsimulation Model between ETL and GP lanes

3

Managed-Lane Modeling Practice Workshop

I-405: Modeling Framework

4

Managed-Lane Modeling Practice Workshop

I-405 Eastside Corridor Express Toll Lanes

- WSDOT's Option 4: 40+ mile system
 - Four variations of discounts/exemptions:
 - HOV 2+ travels free
 - HOV 3+ travels free
 - HOV 3+ exempt during peak periods and HOV 2+ exempt during off-peak periods
 - All HOV discount of \$1.00 in 2014 (sensitivity test only)
 - Toll setting
 - Dynamic pricing (based on actual traffic conditions)
 - Variable pricing (posted rates based on historical conditions)
 - Flat pricing (price is the same all day)
 - Operational Objective
 - Maintain 45 mph in Managed Lanes

5

Managed-Lane Modeling Practice Workshop

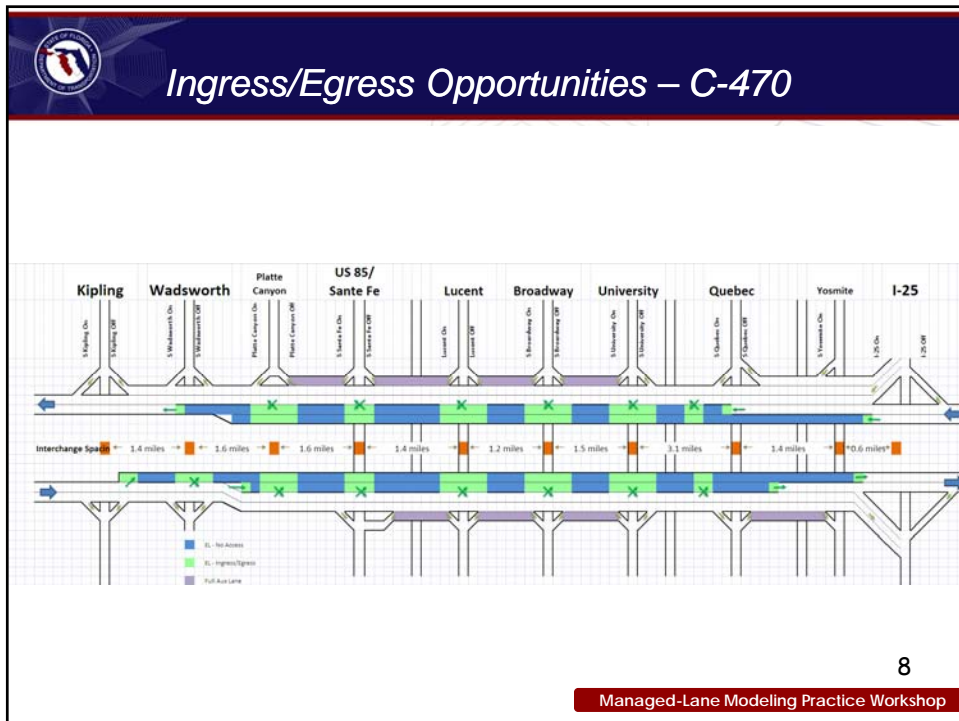
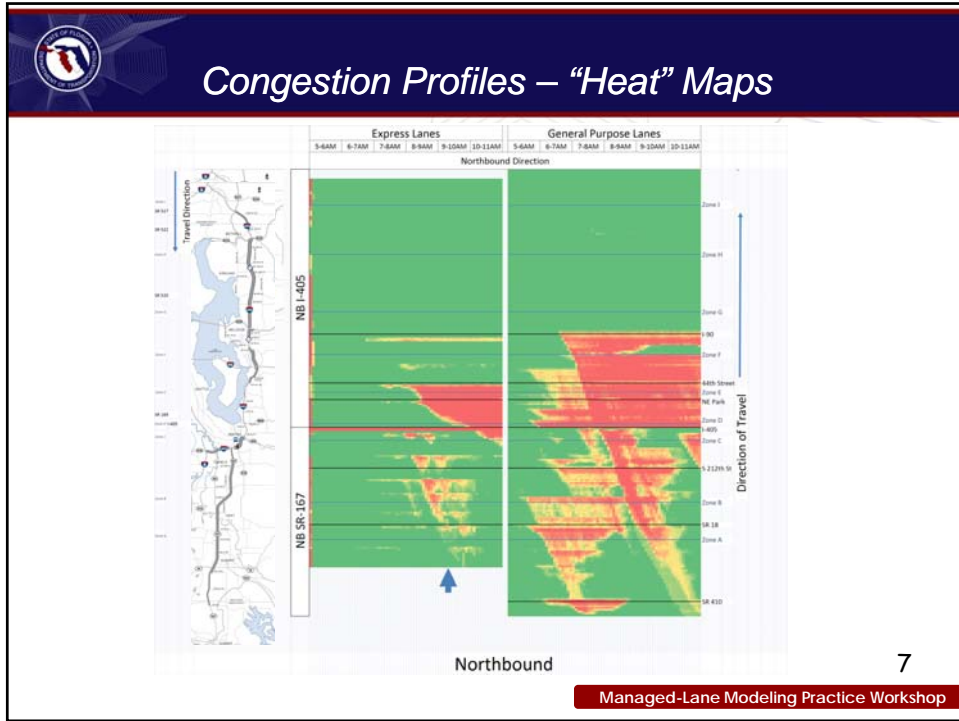
C-470 Managed Lanes

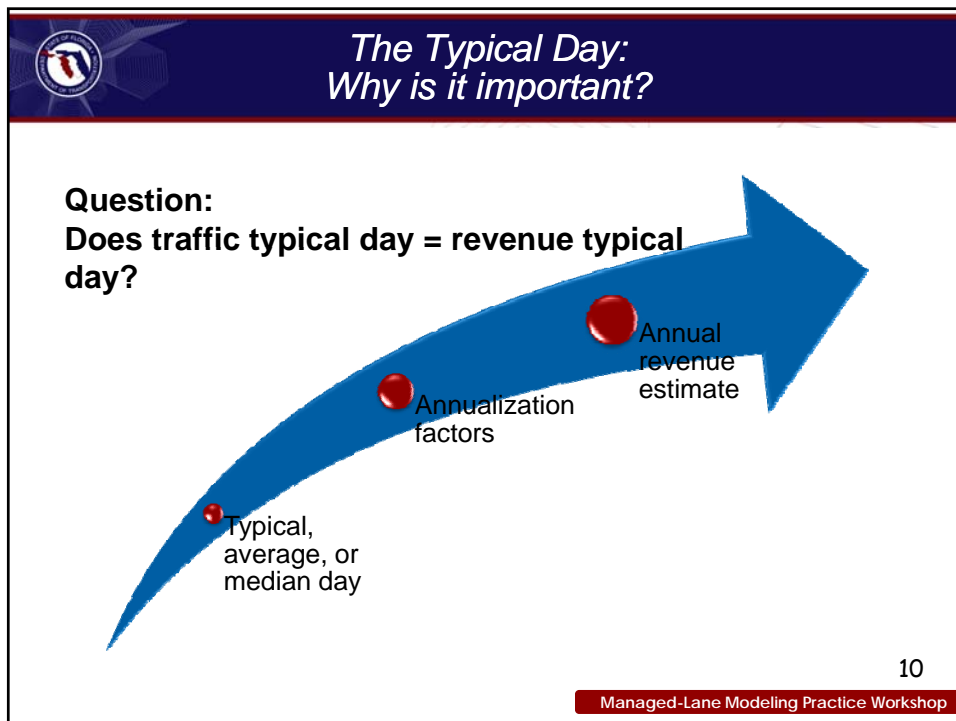
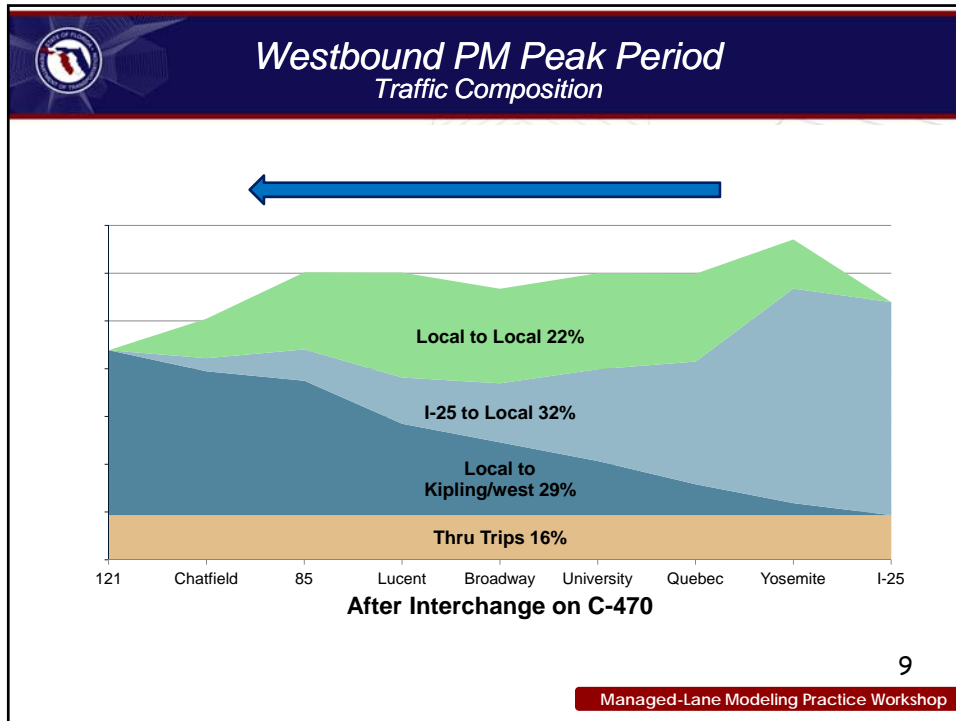
- 13 mile system
 - 24/7 Operation
 - All Vehicles Tolled
 - Time-of-Day pricing (rates to be determined based on demands)

Segment 1

6

Managed-Lane Modeling Practice Workshop





Relationship of Typical Day to Annual Revenue on SR 167 in 2010

- Reasonable to expect that the rank of traffic volume would be similar to the rank of revenue on a given day
 - But it's not →
- Adds uncertainty to calculating annual revenue from a typical day of traffic
- Operational models can help to address this
- Risk analysis can quantify risk

11

Managed-Lane Modeling Practice Workshop

Risk Factors and Range of Assumed Values

Year	Risk Factors		
	Percent of corridor vehicles with transponders	Corridor Traffic Growth: <i>Difference from PSRC Forecast</i>	Value of Time: <i>Difference from 2011 Survey</i>
2014 Phase 1	20% 45%	Not tested	-25% 0% +25%
2018 Phase 2	20% 45% 100%	Not tested	-25% 0% +25%
2030	100%	-10% 0% +10%	-25% 0% +25%
2040	100%	0%	0%

12

Managed-Lane Modeling Practice Workshop

