ELToD Model v2.0.1
Overview of an Approach to Forecasting Express Lanes Traffic

presented by
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Statewide Express Lanes

[Map of Florida with express lanes highlighted]
What are Express Toll Lanes?

“Priced Managed Lanes”

• Tolled lanes within an existing facility.
• Operations managed with dynamic pricing.
• Toll rates based on congestion levels.

Traffic Forecasting Approach

Data Collection
- Land Use Review
- Stated Preference Survey
- Origin-Destination Study

Travel Demand Model
Step 1a: feed sub area trip matrix
Step 1b: feedback ELToD Toll rates
Adjusted Demand
Step 2

ELToD Model
Managed Toll Lanes Traffic Forecast

Microsimulation
15-min Traffic Estimate
• **What is ELToD?**
  - Stand alone highway assignment Express Lanes modeling tool
  - Expansion of current Florida standard modeling practice
  - Traffic allocation analysis for express toll lanes projects
  - Implements dynamic tolling
• RSG
• BCC
• AECOM (Conshohocken, PA office)
• Turnpike
• FDOT/Central Office
• FIU
ELToD capabilities

- Utilize available regional model network and facility attributes
- Corridor specific
- Toll choice module with value of time & reliability incorporated
- Dynamic pricing component
- Flexible toll policy
- Flexible toll input values (min, max, trip, gantry)
- Volume-delay curve to calculate congestion (Akcelik or BPR)
- Multiple trip table input options (up to 24 time intervals)
- Trip distribution by direction
- Short run times
• Computes choice of general purpose or express toll lanes.
• Based on Stated Preference Survey Data in the Miami Area (I-95 Express: Phase 1).
• 400,000 vehicle records.
• Study results revealed unexpected user behavior.
• Entropy parameter introduced (unreliability for GU lanes).
ELToD Input: Data

• Stated Preference Survey
  – Value of Time, Value of Reliability

• Origin-Destination Survey (e.g. Bluetooth Data)
  – Trip Table, Trip Patterns, Speed

• Speed Data
  – Field Study, Bluetooth, INRIX

• DRI Review
  – Land use impacts of significant developments
ELToD Input: Model Subarea

Region

Corridor

Origin-Destination Trip Matrix
ELToD is a Corridor Subarea Assignment Model
ELToD Output

Defined by facility type, hourly time interval, direction, project segment

- Traffic volumes
- Average toll rates
- Express Lanes shares
- TOD distribution
- Travel times
- Speeds
- Volume-to-capacity ratios
### Output Summary

#### ELTOD Model Version 2.0.1

**Last Updated:** 8/4/14 2:17 PM

**Output Dir:** C:\ELTOD Model\ELTOD_Test_Projects_and_Data\250-3FRA\Model\20140731\Case1\250-3FRA

**Detail File:** 250-3FRA

#### Volume

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<th>GU Lane Volume</th>
<th>Collector Lane Volume</th>
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#### Toll and Revenue Distribution

#### GU and XL Volume TOD Percent (SB)

#### GU and XL Volume TOD Percent (NB)
ELToD is a “Tool for Express Toll Lanes Forecasting”

• What are the reasons for using this model?
  – Provide feedback to the travel demand model
  – Adds consistency in Florida to Express Lanes modeling
  – Produce hourly express lanes traffic and toll rate forecasts
  – Flexible tolling assumptions
  – Alternative ingress/egress scenario tests
  – Model methodology is transferable to new projects

• Next steps for implementation – Thomas Hill
ELToD Team @ Florida’s Turnpike

- Jack Klodzinski
- Lihe Wang
- Xiao Cui