Operations Breakout Debrief

presented to
MTF

presented by
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Panel Members & Moderators

- Panel Members:
  - Jim Sturrock, FHWA
  - Yi-Chang Chiu, University of Arizona
  - Peter Vovsha, PB America
- Moderators:
  - Jim Sturrock, FHWA
  - Andrew Velasquez, URS Corporation
  - David Stroud, PB America

Focus Areas


- Identify current practice and desired approaches
- Discuss activities, basic issues, products, and data for operational analysis through each development phase
  - Planning
  - PD&E
  - Design
- Discuss situational aspects for operational modeling
- Recommendations for standard of practice in multi-resolution model

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FDOT Process and Policy Q&A


- What Measure Of Effectiveness (MOE) criteria and values confirm the Express Lanes are feasible/viable? If not viable, how should the future implementation of tolled managed lanes be preserved? e.g., implement HOV?
  - Criteria
    - Traffic Engineering – Throughput, Speed, Travel Times, Corridor Reliability
    - Financial - Price, Revenue, ROI
    - MOEs should be tied back to purpose and need of the project
  - If not viable
    - Consider designating as managed lane but not operating as such
    - Possibility for general purpose to managed lane conversion, refer to DOT policy and MAP 21

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FDOT Process and Policy Q&A


- When do operations get involved with determining feasible access points?
  - Early on - Evaluate in the planning process and refine through project development
  - Sketch Planning Techniques – Lane Change Requirement, Market Share, Bottleneck Avoidance, Multimodal Connections, Municipality Access
  - PD&E, Design – Use simulation tools to evaluate operational performance

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FDOT Process and Policy Q&A


- Data Requirements - In what project development step is it desirable to have Origin and Destination Survey data ? Stated Preference Survey data? Other data?
  - Begin up to one year prior to initiating project development
  - New Techniques – GPS Assisted Route Data, Cell Phone Probe Data (AirSage)
  - Behavioral OD has longer shelf life, than trip based OD
  - Continuous smaller sample size OD survey instead of one large effort
  - Repository of FDOT Stated Preference Survey

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FDOT Process and Policy Q&A


- What should be the demand inputs for express lane operational analysis using micro-simulation?
  - Depends on the robustness of the demand model for the region.
  - In priority order:
    - Activity Based Demand Model (ABM) with DTA
    - Trip Based Demand Model, DTA – Improve route choice in demand model then apply static demand to DTA
    - Trip Based Demand Model, non-DTA – Corridor Time of Day Model, Micro-Simulation Based Lane Choice Model

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FDOT Process and Policy Q&A


- Would you recommend FDOT establish a life-cycle travel demand model and micro-simulation model philosophy? e.g. models created for tolled-managed lanes in the project development planning step pass-on for enhancement and use in subsequent project development steps?
  - District recognize the importance of warehousing data and models
  - Consider data accuracy and time spans
  - Recommendation is for multi-resolution modeling in Florida

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FDOT Process and Policy Q&A

- Pricing policies can be traffic maximization or revenue maximization
- Traditional approach has been to use traffic maximization for operational analysis
- Which pricing policy should be analyzed in the operational analysis at PD&E and Design levels traffic maximization or revenue maximization,?
- Pricing policy operational impacts are:
  - Revenue Maximization – Less traffic in express lanes and more traffic in general purpose lanes.
  - Traffic Maximization – More traffic in express lanes and less traffic in general purpose lanes
  - Both matter for operational analysis

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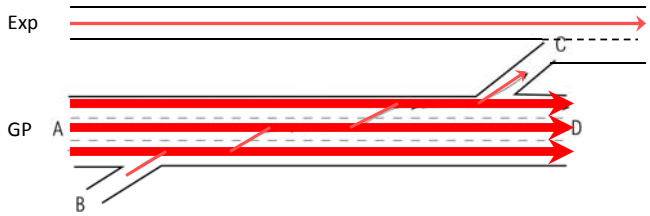
Weaving Operation Analysis

Express Revenue Max:
•Lower Express Volume
•Higher GP Volume



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•Higher Express Volume
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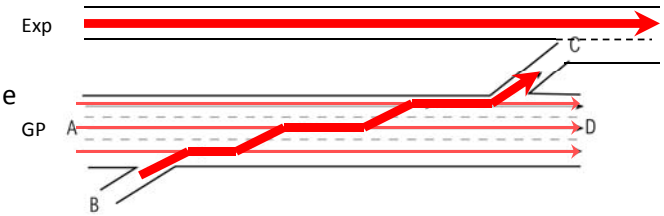

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Traffic & Revenue Suggestions


	Traditional Activities	Traffic and Revenue Supporting Express Lane Projects			
		Issues	Products	Data	Revenue Tools ★
MPO	Regional Planning Studies	Needs & Cost Feasible	Revenue Estimate	Statewide or National Emperical, pricing policy	MPO Model with minor adjustments and updates & Spreadsheet
FDOT	Project Planning Studies	Financial feasibility	Planning-Level T&R estimates, tolls and toll rates, bonding capacity and project alternatives	Traffic count, pricing policy, and any other readily available data	MPO Model with minor adjustments and updates
FDOT	Project Development and Environmental Studies (NEPA)	T&R implications of various alternatives, leading to selection of a preferred alternative; some details for that alternative	Preliminary T&R estimates based on time of day characteristics and observed travel patterns	Traffic counts by time of day, travel surveys, pricing policy, and other model improvements	Project validated version of the MPO model with time of day and other features
FDOT	Design Studies	Detailed analysis of the designed project	Comprehensive T&R suitable for investment decisions, (detailed forecast of toll, traffic and revenue); risk analysis	Traffic counts, travel survey, VOT, VOC, reliability, and independent SE forecasts	T&R model for the project with toll diversion

★Assumes Managed Lane Modeling Applications for FSUTMS implemented

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Traffic Analysis Suggestions


	Traditional Activities	Traffic Operations Analysis Supporting Express Lane Projects				
		Issues	Products	Data	Demand Input ★	Operational Tools
MPO	Regional Planning Studies	Lane call analysis for general purpose/express lanes; Location of ingress/egress points	Planning Study, Level of Service and volume/capacity ratios; Express Feasibility Rpt	Regional ConOps, Access Locations, Traffic: Off Peak Pd, Peak Pd, Peak Hr Traffic	Regional MPO Model	Generalized Tables & Spreadsheets or Microsimuation If Available
FDOT	Project Planning Studies	Lane call analysis for general purpose/express lanes; Location of ingress/egress points	Concept Traffic Report; Level of Service and volume/capacity ratios	Regional ConOps; Access Locations, Off Peak Pd, Peak Pd, Peak Hr Traffic, Origin-Destination Data, Speed Data	Regional MPO Model; Meso DTA Model	Regional: HCS-HCM Corridor: HCS-HCM, Microsimulation
FDOT	Project Development and Environmental Studies	Complete freeway facilities analysis including operating conditions at ingress/egress points	Traffic Technical Memorandum; Level of Service; Density, Travel Speed, System-wide Delay, Throughput, Reliability	Corridor ConOps;Traffic counts; Origin-Destination Data; Speed Data	Project Validated Demand Model; Meso DTA Model	Microsimulation
FDOT	Design Studies	Refined corridor analysis based on feedback from T&R study and design refinements	Interstate System Access Report; Level of Service; Density, Travel Speed, System-wide Delay, Throughput, Reliability	Corridor ConOps;Traffic counts; Origin-Destination Data; Speed Data	Project Validated Demand Model;Meso DTA Model; Corridor TOD Model	Microsimulation

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Concept of Operations


- ConOps Document – a living document that evolves over time as decisions are made in feasibility, planning and design as work progresses.

- Tolled Managed Lane Items to Address
  - Purpose and need
  - Goals & objectives
  - Current conditions/characteristics of facility & area
  - Physical design standards, e.g., project limits, number of lanes, access point locations, access type(s),
  - Pricing alternatives to be assessed
  - Operational policies, e.g., occupancy rates, hours of operation, toll-setting,
  - Multi-modal components. e.g., BRT, transit, park-n-ride
  - Institutional, legislative, approvals & arrangements