Operations Breakout Debrief

presented to
MTF

presented by
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Panel Members & Moderators

• Panel Members:
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• 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

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
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

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
• 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

• 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
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.

Weaving Operation Analysis

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

Express Traffic Max:
- Higher Express Volume
- Lower GP Volume
### Traffic & Revenue Suggestions

#### MPO
- **Regional Planning Studies**
  - Issues: Needs & Cost Feasible
  - Products: Revenue Estimate
  - Data: Statewide or National
  - Revenue Tools: Empirical, pricing policy, MPO Model with minor adjustments and updates & Spreadsheets

- **Project Planning Studies**
  - Issues: Financial feasibility
  - Products: Planning-level T&R estimates, tolls, and toll rates; linking capacity and project alternatives
  - Data: Traffic count, pricing policy, and any other readily available data
  - Revenue Tools: MPO Model with minor adjustments and updates

- **Project Development and Environmental Studies (PDES)**
  - Issues: TRB Implications of various alternatives, leading to selection of a preferred alternative; some details for that alternative
  - Products: Preliminary T&R estimate based on time of day characteristics and observed travel patterns
  - Data: Traffic counts by time of day, travel surveys, pricing policy, and other model improvement
  - Revenue Tools: Project validated version of the MPO model for the project with all new features

- **Design Studies**
  - Issues: Detailed analysis of the designed project
  - Products: Comprehensive T&R suitable for investment decisions, internal forecast of toll (traffic and revenue); risk analysis
  - Data: Traffic counts, travel survey, VOT, VDC, reliability, and independent M forecasts
  - Revenue Tools: TRB model for the project with all new features

*Assumes Managed Lane Modeling Applications for FSUTMS implemented

### Traffic Analysis Suggestions

#### MPO
- **Regional Planning Studies**
  - Issues: Lane call analysis for general purposes/express lanes; location of ingress/egress points
  - Products: Planning-level, impact of service and volume/capacity ratios, Express Feasibility Report
  - Data: Regional Cordon, Access Points, Express Feasibility Report, Peak Pk, Peak Hr Traffic
  - Revenue Tools: Regional MPO Model,environmental spreadsheets or Microsimulation

- **Project Planning Studies**
  - Issues: Lane call analysis for general purposes/express lanes; location of ingress/egress points
  - Products: Concept Traffic Report; Level of Service and volume/capacity ratios
  - Data: Regional Cordon, Access Points, Express Feasibility Report, Peak Pk, Peak Hr Traffic, Origin-Destination Data, Speed Data
  - Revenue Tools: Regional MPO Model, Mass DOT Model

- **Project Development and Environmental Studies**
  - Issues: Complete freeway facilities analyses including operating conditions at ingress/egress points
  - Products: Traffic Technical Memorandum; Level of Service, Access Points, Traffic Speed, System-wide Delay, Reliability
  - Data: Concept Cordon/Traffic, Access Points, Origin-Destination Data, Speed Data
  - Revenue Tools: Project Validated Demand Model, Mass DOT Model

- **Design Studies**
  - Issues: Refined corridor analysis based on feedback from TRB study and design refinement
  - Products: Interstate System Access Report; Level of Service, Traffic Speed, System-wide Delay, Reliability
  - Data: Concept Cordon/Traffic, Corridor Origin-Destination Data, Speed Data
  - Revenue Tools: Project Validated Demand Model, Mass DOT Model, Corridor TOD Model

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• **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