

Data Needs for DTA

as Applied to a Managed Lane Procedure

presented to
Model Task Force

presented by
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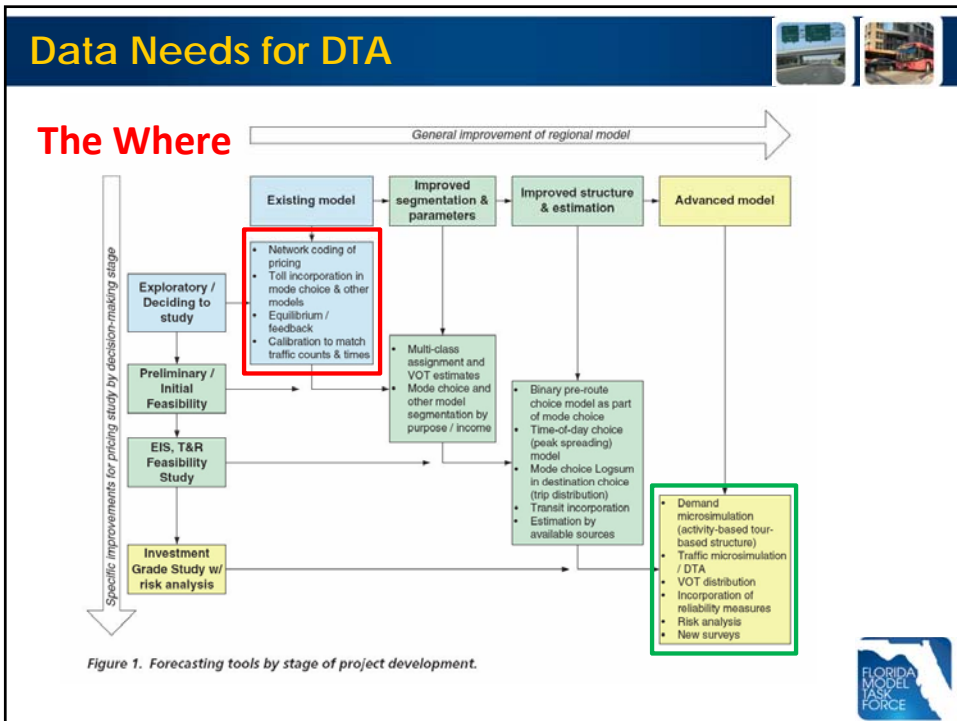
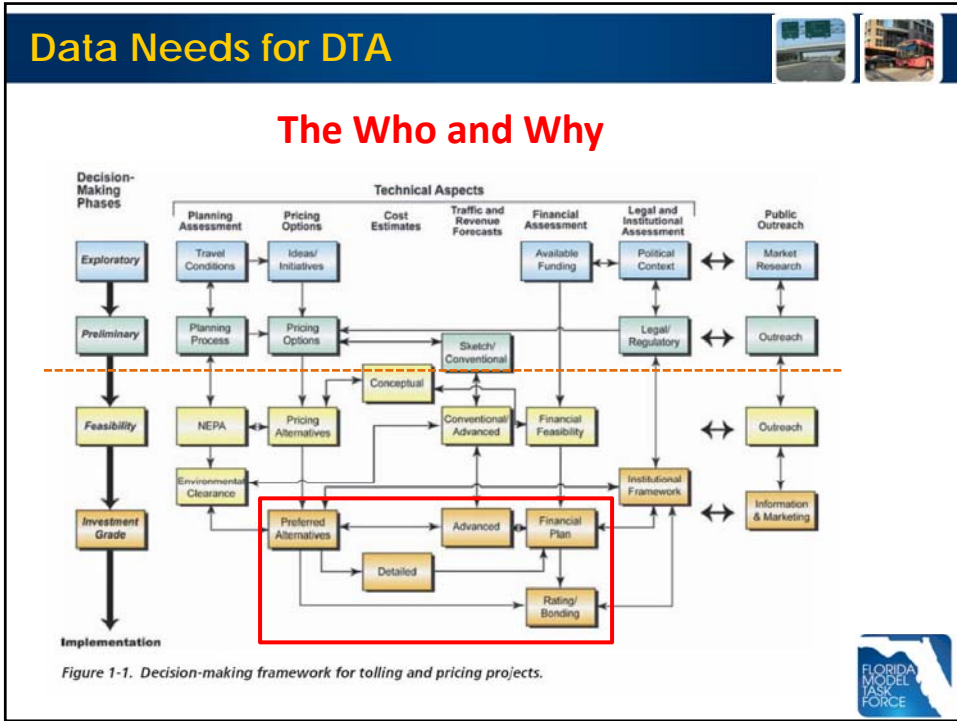


Data Needs for DTA




- All managers ask this series of questions when addressing a spending plan or budget for a needed project.
 - Who?
 - What?
 - Where?
 - When?
 - Why?
 - How much?






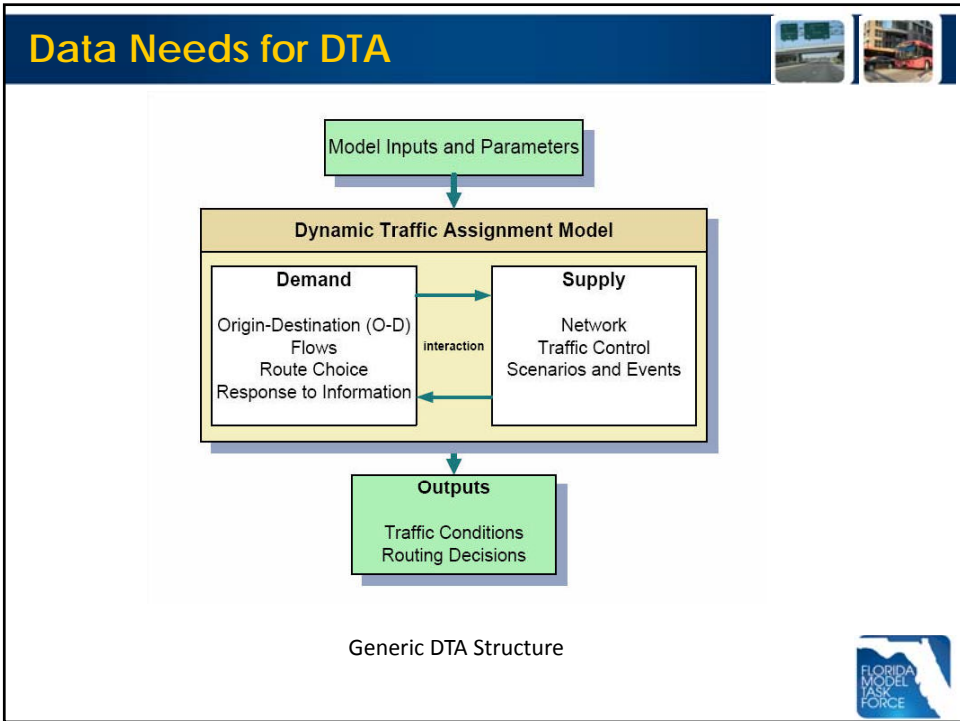
Data Needs for DTA



Dynamic Traffic Assignment models

- Explicit model traffic flow dynamics to ensure direct linkage between travel-time and congestion
- Is best-suited to analyze either
 - Traffic congestion effects at a fine-grained temporal level
 - The many measures that can be taken to address congestion
 - HOV, HOT
 - Peak Spreading
 - Congestion pricing





Data Needs for DTA



The What

DTA Data needs

- O-D demand data
- Network data
- Traffic Control data
- Scenario data
- Model Validation and Calibration data
- Survey data



Data Needs for DTA



- Demand Data
 - Origin-Destination Trip Tables from a existing model
 - Tables should be broken into different periods of the day
 - AM peak, PM peak and Off-peak (Midday, Night)
 - Tables need to maintain the directionality of O-D trips
 - For each period, the Tables need to contain sub-tables by Vehicle class (SOV, HOV, Light Truck, Heavy Truck) by Choice (Toll, Free)



Data Needs for DTA



- Network Data
 - Existing network can be used as a starting point
 - Additional detail needed
 - Number of lanes on each link
 - Acceleration/Deceleration lanes
 - Turn Bays
 - Aux Lanes
 - Defining Allowed and Prohibited Lane movements
 - More Accurate Geography
 - Distances
 - Zone connectors at real physical roadways



Data Needs for DTA



- Traffic Control data
 - Signal timing
 - Fixed
 - Actuated
 - Ramp Meter control
 - Standard Uncontrolled Intersections
 - All-way Stop
 - Two-way Stop
 - Roundabouts
 - Freeway merges, Yield signs



Data Needs for DTA



- Scenario data
 - Parameters used for application of interest
 - Link/segment traffic flow parameters
 - Capacities / Performance functions
 - O-D adjustments
 - Route choice model parameters
 - Historical network travel times





Data Needs for DTA



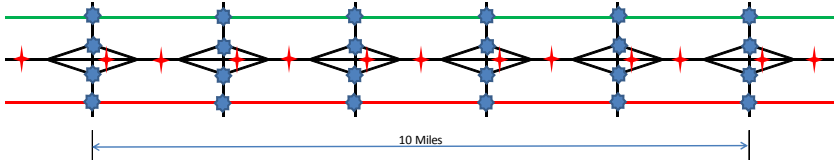
- Model Validation and Calibration data
 - Vehicle counts by lane (detector location)
 - Average vehicle speeds (detector location)
 - Average link/segment density
 - Queue lengths
 - Link or sub-route travel times
 - Intersection turning movement counts
 - **Data collection interval** must be compatible with the desired modeling time interval in the above data
 Example: hourly variations in demand & network performance, then hourly data should be collected.



Data Needs for DTA





Count Collection Locations based on a 10 mile Project Corridor





10 Miles

13 ITS locations, (Red Star)
24 Intersection locations, (Blue Star)




Data Needs for DTA





Survey and Data Collection Needs

Project Stage	Household Interview	Origin-Destination	Stated Preference	Opinion	Highway Speed	Traffic Counts
Exploratory Screening	★					★
Preliminary Feasibility	★	○	○	○		★
Feasibility Evaluation	★	★	○	○	★	★
Investment Grade	★	★	★	○	★	★




Data Needs for DTA



When, How Much?

Traffic Count Collection (Duration: 1 Year)			
	Units	Cost per Unit	Total
ITS Locations	13	\$ 36,000.00	\$ 468,000.00
Intersection Locations	24	\$ 51,000.00	<u>\$ 1,224,000.00</u>
Traffic Count Total			\$ 1,692,000.00

Surveys (Duration: 9 months)		Total
<ul style="list-style-type: none"> • Travel Pattern Surveys ("Revealed Preferences") : <ul style="list-style-type: none"> — Household-Based Travel/Activity Surveys — Origin-Destination Surveys on specific facilities and existing toll roads • Stated Preference Surveys that vary significantly across the following dimensions: <ul style="list-style-type: none"> — Choice Dimensions and Scenario Design — Trip Attributes Relevant for Pricing Studies (VOT, VOR) — Choice Context — Instrument Design — Sampling • Special Survey Types including: <ul style="list-style-type: none"> — Surveys of Commercial Vehicles — Surveys of Visitor Vehicles — Bluetooth Surveys (O-D Patterns, Speeds) 	<ul style="list-style-type: none"> \$ 125,000.00 \$ 175,000.00 \$ 75,000.00 \$ 50,000.00 \$ 60,000.00 	<ul style="list-style-type: none"> \$ 485,000.00
Survey Total		\$ 485,000.00
Grand Total		\$ 2,177,000.00



Data Needs for DTA





Questions ?

