

Background Information on Transportation Analysis

Tysons Corner Study
Fairfax County Planning Commission
Tysons Committee

February 5, 2009

Overview of Travel Demand Modeling For Tysons Corner

- For Tonight:
 - What is a travel demand forecasting model
 - How was the travel demand model applied in this study

Overview of Travel Demand Modeling For Tysons Corner

- What is a Model?
 - A simplified representation of a real-world process or entity
 - In the context of urban transportation planning, a mathematical representation of the transportation system and the processes that generate travel demand

Overview of Travel Demand Modeling For Tysons Corner

- A. 4-Step Travel Demand Model
- B. Customized Tysons Corner Model

Travel Demand Forecast Model

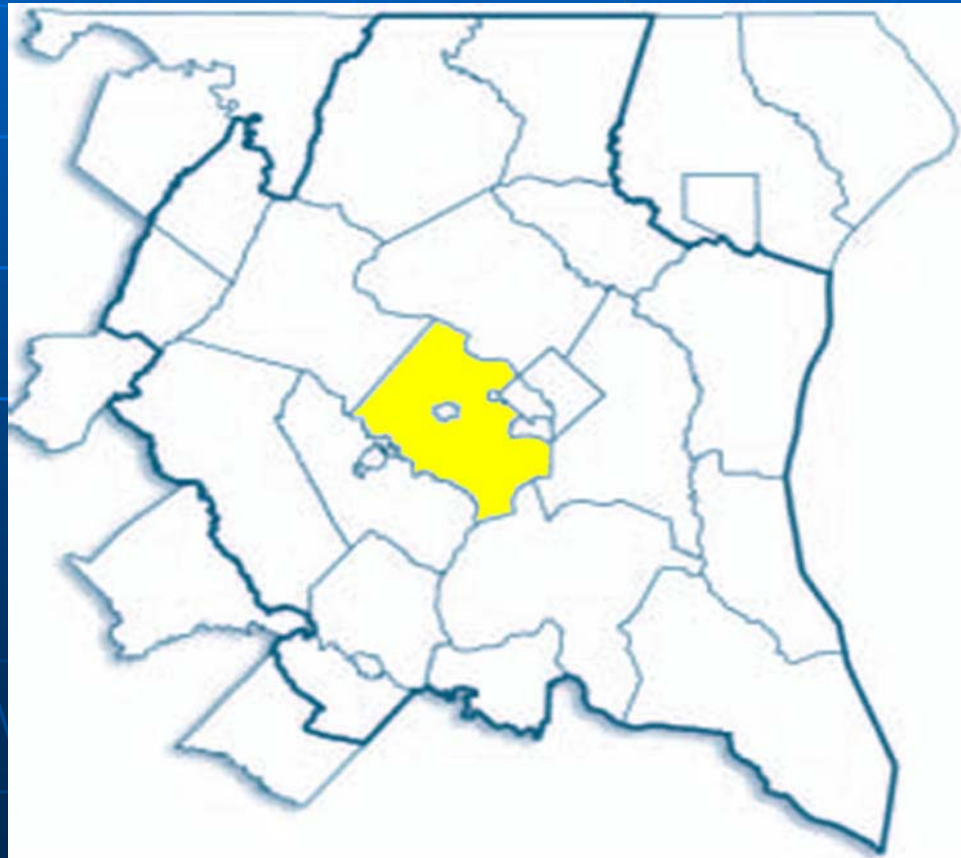
- Future Land-Use
- Future Highway & Transit Facilities
- Impact of Land-Use on the Transportation System

Washington, DC Regional Model

- Council of Governments (COG) Model
- 6,800 square mile area
- 2,000 Zones
- 27,000 road segments
- 600 transit routes

Washington, DC Regional Model

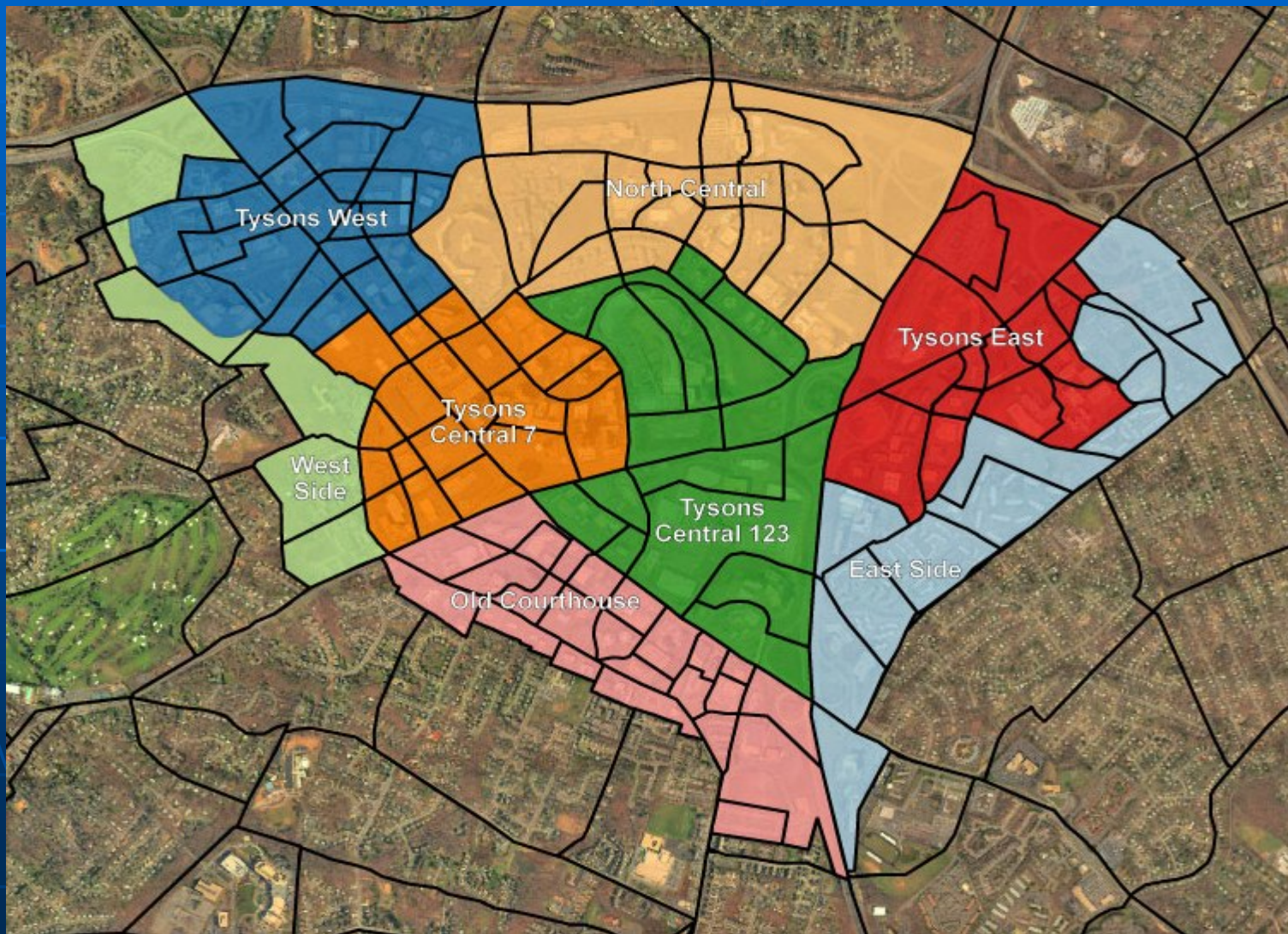
- Extended Region Modeled



Fairfax County Sub-Area Model

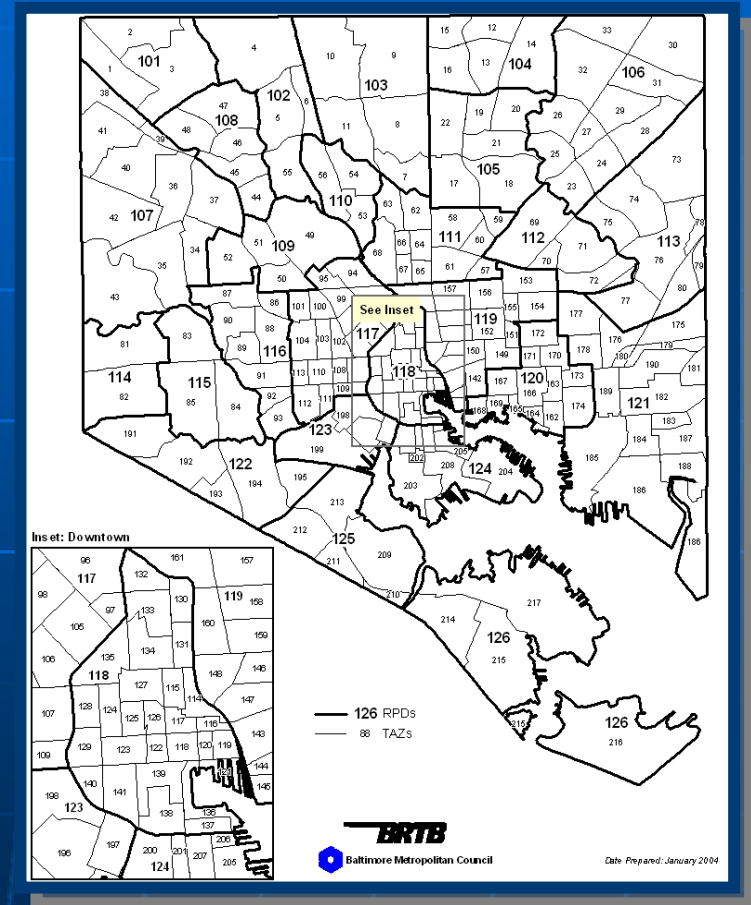
- Based upon and is an extension of MWCOCG travel demand model
- Land area is divided into more (smaller) zones
- Provides more accurate traffic estimates due to more detail on road network

Tysons Districts and Zones

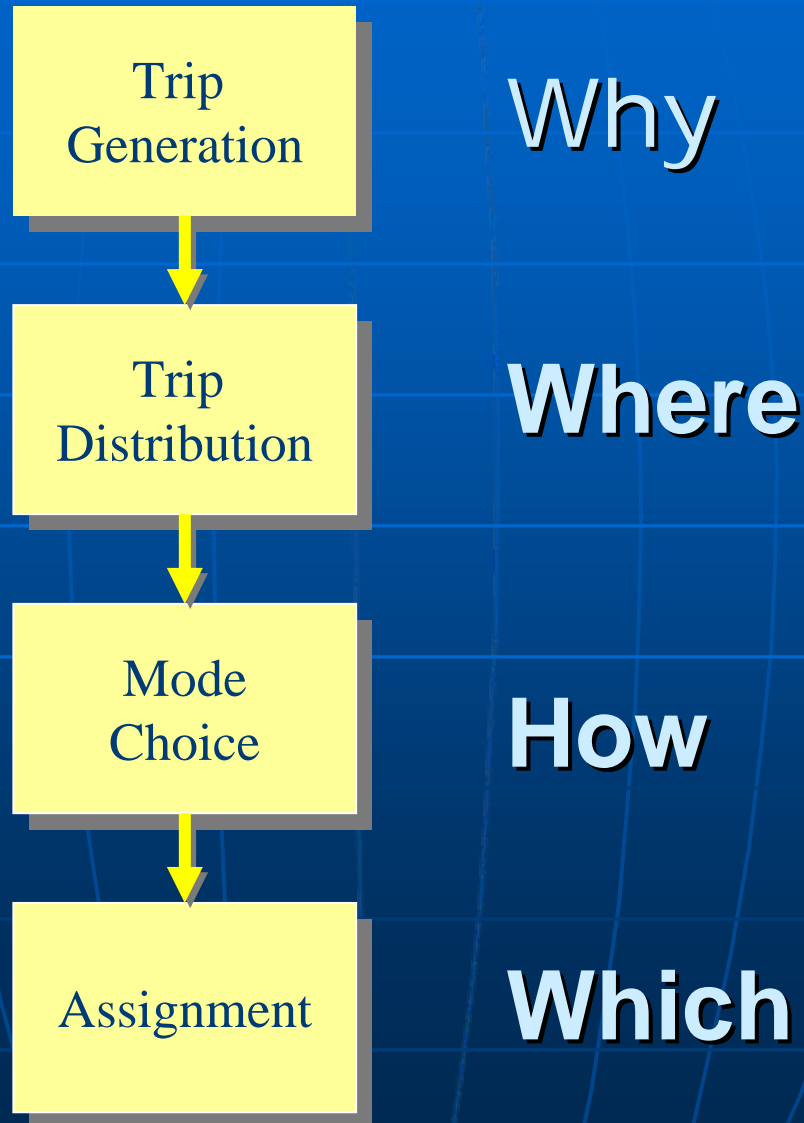


Four Step Model Process

- Basic Inputs at Traffic Analysis Zone (TAZ) level
 - Number of Jobs by Type
 - Number of Households
 - Household Size
 - Vehicles per Household



Four Step Model Process



Trip Generation

How Many Trips are There in the Area?

Work & more
Trips



School Trips



Non-Resident Trips



Shopping Trips



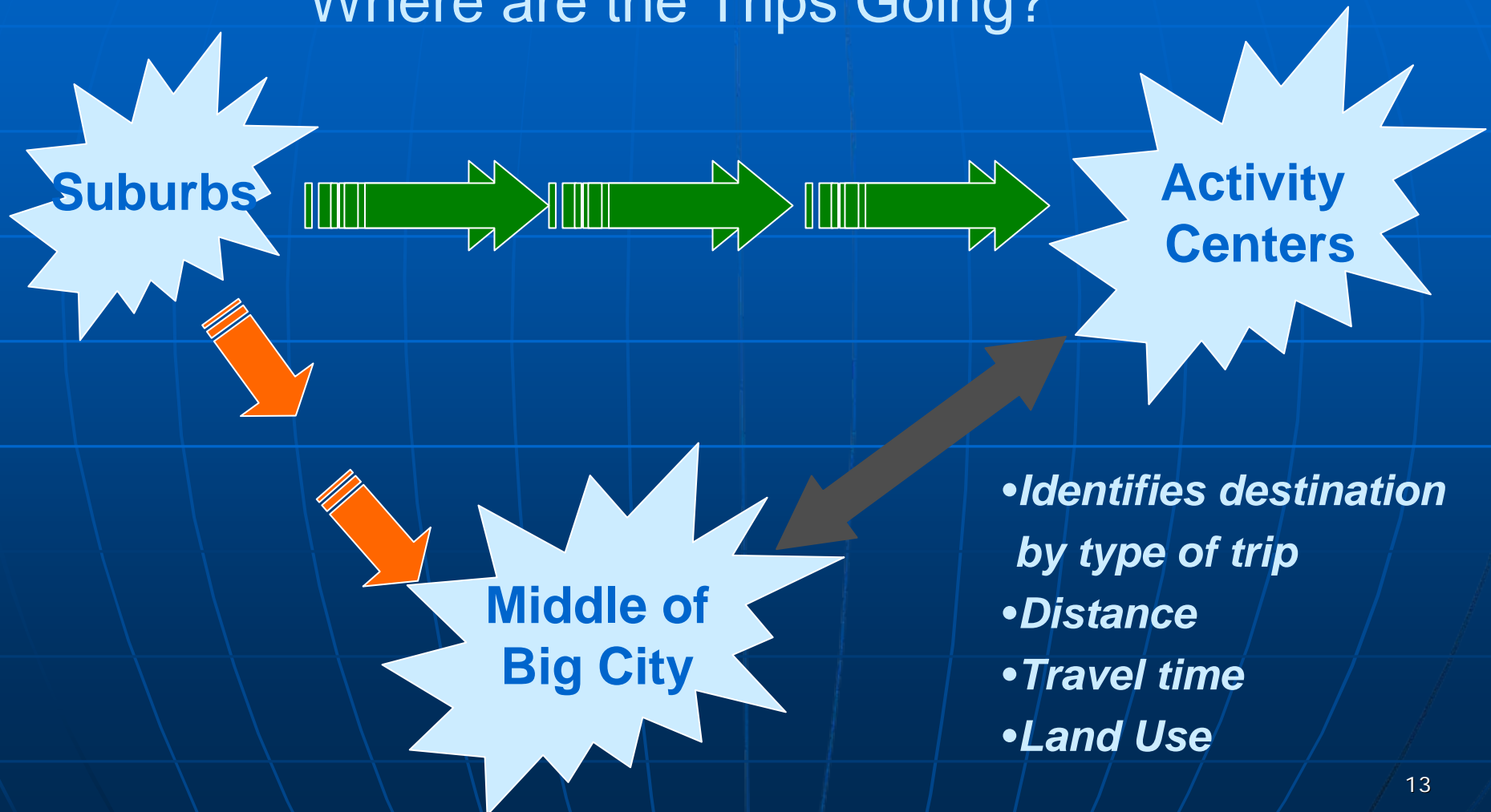
Commercial Vehicle Trips

Trip Generation

- Four Primary Trip Purposes:
 - Home-Based-Work (HBW)
 - Home-Based-Shop (HBS)
 - Home-Based-Other (HBO)
 - Above Two Combined
 - Non-Home-Based (NHB)

Trip Distribution

Where are the Trips Going?



Mode Choice

How do you Travel?



Walk



Transit



Bike



Auto

Traffic Assignment

What path do you use to get there?

- *Highway*
- *Transit*
- *Minimum Path*
- *Congestion*



Model Outputs

- Overall Indication of Travel Patterns
- Number of Trips Produced and Attracted for each Zone in Tysons
 - By Trip Purpose
 - By Mode (Motorized (SOV, HOV)), Transit, Non-Motorized)
- Through trips, Internal trips
- Traffic Volumes

Model Outputs

- What it is Not:
 - Detailed Traffic simulation model of how each road or intersection will function in the future
 - These type of studies more appropriate at development review stage

Other Considerations

- Add-Ons to Model (post-processor)
- Transportation Demand Management (TDM)
 - Development densities, carpool facilities, jobs/housing balance, existing TDM programs, already incorporated into model
 - Enhanced TDM – examined to see if more TDM efforts can shift greater % from SOVs
 - FHWA TDM Model

Other Considerations

- Add-Ons to Model (post-processor)
 - Effect of Density, Diversity, Design, and Destinations (4D's (Smart Growth))
 - Effect of 4D's for work trips captured in model
 - EPA Smart Growth Index
 - Answers question: How many fewer non-work vehicle trips taken due to 4D's

- Questions?