

TRAVEL DEMAND MODELING: BUILD OUT ANALYSIS

Workshop Session
Comprehensive Plan Steering Committee

December 15, 2008
James City County, Virginia

Purpose of Workshop

- 1. *Take stock of impacts of implementing zoning or Comp Plan***
- 2. *Inventory concerns***
- 3. *Begin process of alternatives development and analysis***
- 4. *Articulate expectations***

AGENDA

1. Review Of Travel Demand Modeling
2. Key Assumptions in Build Out Analysis
3. Socioeconomic Data Summary
4. Forecast Volumes & Deficiencies
5. Questions and Answers

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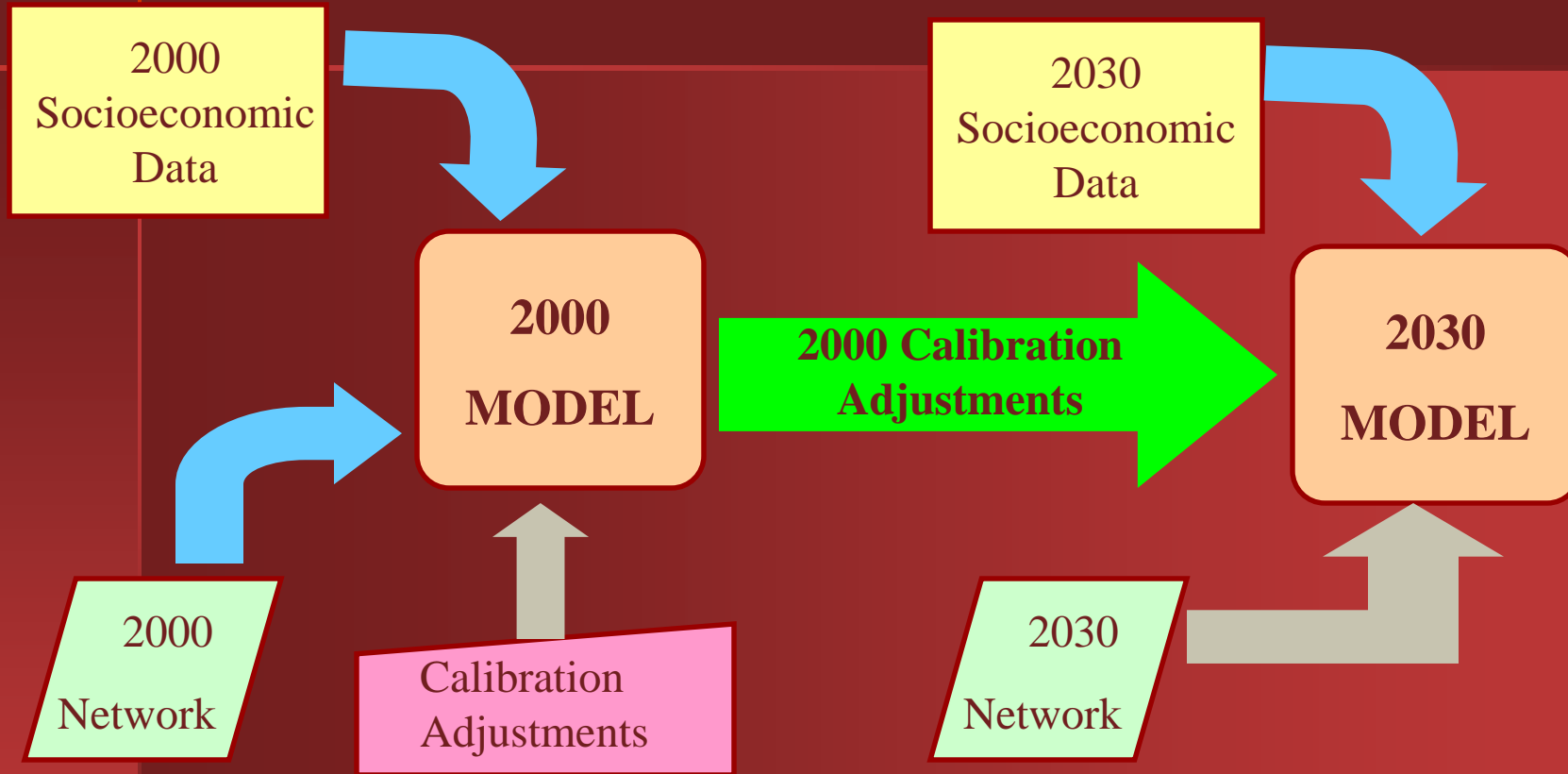
Jurisdictional Process

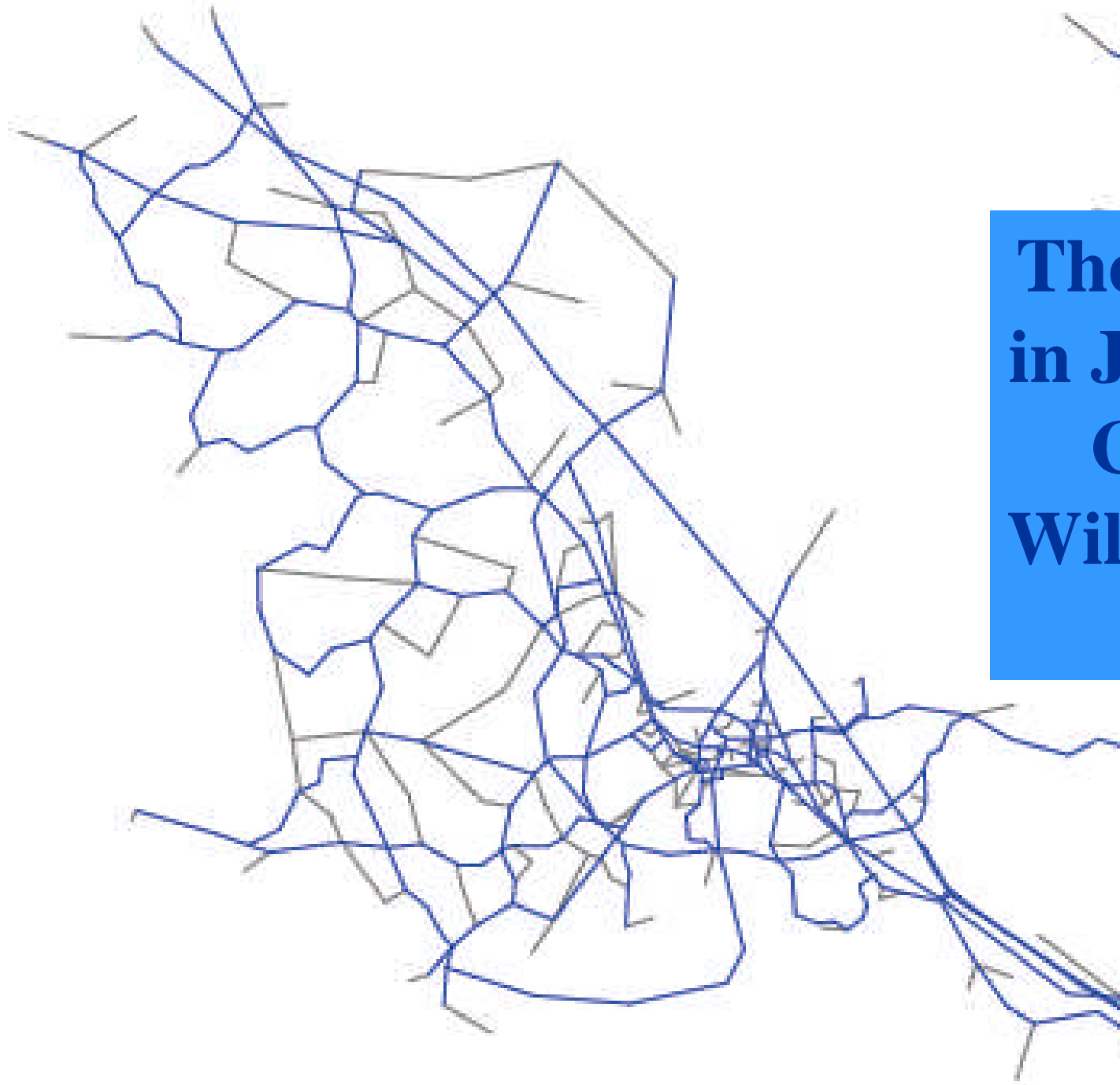
- ***Static – Subset of Regional Plan***
- ***Focuses on Major & Local Facilities***
- ***Suitable for Local Application***
- ***Insensitive to Site Land Use***
- ***Low Level of Funding Commitment***

MODELING PROCESS

- **GENERATION** - DRIVEN BY SOCIOECONOMIC DATA
- **DISTRIBUTION** - BASED ON GRAVITY MODEL APPLICATION
- **MODE SPLIT** – CONSIDERS TRANSIT
- **ASSIGNMENT** - BALANCE OF TRAVEL TIME BASED ON CAPACITY

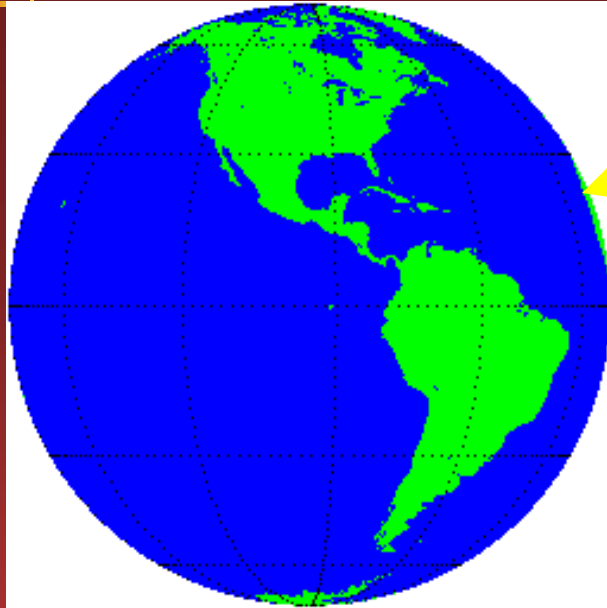
Regional Forecasting Process





The Network in James City County / Williamsburg Area

GRAVITY MODEL



**ATTRACTION INCREASES WITH SIZE AND
DECREASES WITH DISTANCE**

GRAVITY MODEL

- **Zones with higher numbers of attraction variables (employment) have a stronger tendency for trip attraction than those with lower numbers.**
- **The tendency of a zone to attract trips decreases with the travel time from that zone to other zones.**
- **New facilities redistribute trips and diversions volumes will not equal diversions from existing facilities.**

TRIP ASSIGNMENT

The process of routing (channeling) trips between one zone and other zones over the network.

- Begins with free flow conditions
- Considers effects of traffic congestion in an iterative process
- Final assignments reflect travel under both congested and uncongested conditions

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Key Assumptions in Build Out Analysis

1. **Development potential determined based on collaborative URS – County Staff analysis**
2. **Only County socioeconomic data expanded to build out. Other jurisdictions and external stations held at 2030 forecast levels**
3. **The network includes funded improvements – reconstruction of Ironbound Rd (Strawberry Plains – Longhill Connector)**
4. **Market dynamics & environmental constraints have not been considered**

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Socioeconomic Data

	<u>Population</u>	<u>Total Employment</u>	<u>Retail Emp.</u>
2000	48,102	26,517	4,757
2007	61,739	30,078	N/A
2030*	95,300	47,400	7,600
Build Out Zoning	114,207	67,626	37,491
Build Out Com Plan	176,725	57,098	31,104

***HRPDC Forecast**

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Forecast Volumes & Deficiencies

Build Out by Zoning

- Three roads exhibit volumes exceeding 40,000 ADT (Monticello Ave, Pocahontas Trl & Richmond Rd)
- No roads below arterial class exhibit volumes above 30,000 ADT
- Improvements are clustered in 4 developed areas (Centerville, Monticello, Jamestown Rd, Pocahontas Trl)

Forecast Volumes & Deficiencies

Build Out by Zoning – Overall Conclusion
Considering the overstatement of retail employment levels that artificially inflate forecasts, the forecasted deficiencies are consistent with development patterns. The most severe deficiencies are forecast to occur on Longhill Road and along commercial corridors

Forecast Volumes & Deficiencies

Build Out by Comp Plan

- Most of the marginal increase (67% of increase over zoning alternative) is focused in and around Stonehouse
- Major volume growth along Centerville Road
- 29% of the difference is a product of widening Route 60 (Rochambeau – Croaker)

Forecast Volumes & Deficiencies

Comprehensive Plan Issue

- County Comp Plan & Zoning can accommodate extensive retail commercial expansion
 - Site specific control using SUP process
 - Provide flexibility for a level of risk in the market place
 - Define “appropriate” conditions for commercial development in the Comp Plan

Forecast Volumes & Deficiencies

Issue of Concern

What should happen to tracts that are either zoned for or planned for retail development if market does not develop?

What would be appropriate alternative uses and why would they be appropriate?

What is Next

- Develop more detailed model
 1. Split TAZ's to smaller areas
 2. Add new roadways where appropriate
- Develop alternative land use management policies
 - Change existing recommendations
 - Supplement existing policies
- Allocate growth based on logit model
- Evaluate transportation impacts

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