MACOG 2035 TP
Socio-economic
Land Use Model

Purdue Road School
March 2007

Outline

• Steps to updating the 2035 TP
• Socio-economic data compilation
• Socio-economic land use model
• Model outputs
• Pros and Cons
• Urban and Rural Uses
## 2035 TP Update Process

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## Socio-economic Data

- Socio-economic data drives the results of the travel demand forecasting (TDF) model
- 7 critical data factors for TDF model:
  - Population
  - Households
  - Income
  - Autos per household
  - Retail employment
  - Non-retail employment
  - School enrollment
2035 TP Segmentation

- Plan is divided into 5-year increments:
  - 2005
  - 2010 (2009)
  - 2015
  - 2020
  - 2025
  - 2030
  - 2035

- Divided for socio-economic growth calculations/total controls
- For projects these represent ‘open to traffic’ dates
- Also represent air quality conformity dates

What We Know...

- Base year – 2000 Census Transportation Planning Package (CTPP) at TAZ level
- 5-year segment data projections through 2035 (STATS Indiana, Woods & Poole) at county level
What We Need…

- To allocate growth for these 7 critical data factors for each TAZ by 5-year segments through 2035
**Allocation Methodology**

- The methodology needs to:
  - Replicate choice of residential location
  - Have good geographic resolution to aggregate data for model input
  - Provide quantity projection for future years
  - Meet time and resource limitations

**Zero-population Growth Areas**

- 500’ x 500’ grid
  - Assuming maximum growth at 10 houses
- Eliminate
  - Water bodies/Flood plains
  - Soils identified as not suitable for septic systems and that do not have water and sewer access
  - Areas meeting/exceeding 10 houses per grid
  - Consideration for cultural factors
  - Grids identified as other growth areas

(Source: SJAPC, ECPC)
Potential Growth Areas 2015

Potential Growth Areas 2020
Potential Growth Areas 2025

Potential Growth Areas '30 & '35
Allocating Growth

• Weighted Factors:
  – Local Knowledge – Regional Meetings
  – Access to Sewer/Water
  – Current Zoning
  – Income Index
  – Distance to Economic Corridors
  – School Index

Local Knowledge Areas 2005
Local Knowledge of All Areas

Sewer and Water Areas 2005
Sewer and Water Areas 30-35

Current Zoning Map
Income Index Map

Economic Corridors 2005
Michiana Area Council of Governments

ArcGIS Model Process

1. Determine Potential Growth Areas
2. Distribute Population Growth

Repeated for each 5-year Increment

4. Generate Socio-economic Outputs
3. Aggregate Population Growth to TAZs

Michiana Area Council of Governments

TAZ Population Through 2035

- Allocation to all areas not identified as zero growth using weighted factors
- Grids that were built out were taken out from the potential growth areas during each iteration and appear in white
Population Growth Map 2005

Population Growth Map 2010
Population by TAZ 2005

Population by TAZ 2010
Population by TAZ 2015

Population by TAZ 2020
Population by TAZ 2035

Households Through 2035

- Calculated from population at TAZ level
- Assume that the average persons/HH will remain similar in 2035 as it was in 2000 in each TAZ
**HH Income Through 2035**

- Calculated based on historical trend at TAZ level
- The growth rate between 1990 and 2000 is applied to each TAZ

**Autos/HH Through 2035**

- A regression function generated by Census 2000 data
- Based on HH Income of each TAZ
**Employment Through 2035**

- Calculated for retail and non-retail employment
- Similar to methodology used for population allocation but simplified to TAZ level of analysis

**School Enroll. Through 2035**

- IDOE school enrollment data from the 2002-2003 SY
- The increase rate of population aged between 5 and 19 of each county is applied to calculate school enrollment growth
Pros and Cons...

• Pros:
  – Comprehensively replicate the process of choice of residential location
  – Geographic analysis that incorporates most recent information available
  – Meet the total controls of each county
  – Visual capability for public review
  – Meet the time and resource limitations
  – Some level of interaction with transportation projects
  – Interaction between analysis years

• Cons:
  – Although the geographic analysis is based on 500’ x 500’ grids, the results should be analyzed on a larger scale
  – The accuracy relies on the inputs, which are based on the best planning assumptions
  – Population forecast is more reliable than other factors
  – The Delphi Method does not always correctly predict future developments
  – Did not incorporate some economic aspects, such as real estate market
Urban and Rural Uses

- MACOG developed Rural TDF Model for Marshall County in 2006
- Used similar socio-economic allocation methodology in rural areas

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More detailed information is available at:
http://www.macog.com/macoghom/transportationplanning/2030TP.htm