Enhancing MPO Travel Models with Statewide Model Inputs: An Application from Wisconsin

Presentation Outline

- Wisconsin Travel Models
  - Principles & Goals
  - New Wisconsin Models
  - Systems & Synchronization
- Enhancing MPO Models with Statewide Inputs
  - Methodology
  - Examples
  - Results
  - Next Steps
Principles & Goals

- Key model partnerships
  - 2 large regions
  - 11 MPOs
  - 2 small urban areas
  - WisDOT Regional Offices
  - Consultant Community
- More robust AADT estimates
- Realistic design inputs
- Anticipate emerging growth
- Consistency between models

Wisconsin Statewide Model

- 1,642 in-state zones
- 175 border state zones
- 47 zones representing US, Canada, and Mexico
- 200,000 links and 95,000 nodes
- Traditional 4-step process – person trip based
- Transit, freight and long distance trip components
Wisconsin Statewide Model

Wisconsin Models

- Madison
- Appleton
- Oshkosh
- Fond du Lac
- Sheboygan
- Green Bay
- La Crosse
- Eau Claire
- Janesville
- Beloit
- Wausau
- Stevens Point
- Wisconsin Rapids
Wisconsin Regional Models

Statewide & MPO Model Relationships

- Networks, zones, and socio-economic data
- Standardized model architecture and processes
- MPO models receive external station data from Statewide model
- MPO model forecasts supersede Statewide forecasts in the MPO planning area
- All models integrated with TAFIS
Traffic Analysis Forecasting Information System (TAFIS)

- SAS-based forecasts utilizing historic data
- Produces and warehouses AADT estimates for analysis
- Utilizes Box-Cox regression method for Interstate, US and Wisconsin State highways

Synchronized Models

- Statewide Model
- MPO Model
Synchronized Models

- Statewide model provides AADT estimates to MPO model
- Statewide model completed October 2005

Synchronized Models

- MPO models provide AADT estimates to enhance Statewide model
- MPO models completed November 2005
Synchronized Models

Source Data for:
- WisDOT Metamanager System
- Regional Analysis
- WisDOT Corridor Management
- Traffic Impact Analysis

Establishing MPO External Values

- Trend forecasts present limitations (i.e., changes in environment)
- Statewide model provides a forecast for MPO external locations
- Methods for reconciling differences at external stations needed
- Expert panel input required
Methodology

- Expert Panel
  - Urban and regional planners
  - WisDOT modelers
  - Consultants

- Compare 5 data sets at 204 MPO external stations
  - TAFIS direct output
  - TAFIS growth applied to AADT count
  - Statewide model E+C forecast
  - Annualized 1.5% growth rate
  - Manual overrides

Examples

Madison, Dane County

Station Location

Madison, Dane County
Examples

Model 11 at Site 13051 in DANE County
USH 12 BTWN STH 78 & FRONTAGE RD MAZONANE TNSHP

Preliminary Forecast Results

Madison, Dane County

Station Location

Examples

Model 11 at Site 13032 in DANE County
USH 51 1.0 MI NE OF CTH W BRISTOL TNSHP

Preliminary Forecast Results

Madison, Dane County

Station Location
Results

Summary of MPO Model External Station Data Sources

<table>
<thead>
<tr>
<th>Forecast Category</th>
<th>External Stations</th>
<th>Percent</th>
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</thead>
<tbody>
<tr>
<td>TAFIS Projection</td>
<td>6</td>
<td>2.9%</td>
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<tr>
<td>TAFIS Growth Rate</td>
<td>41</td>
<td>20.1%</td>
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<tr>
<td>Statewide Forecast</td>
<td>85</td>
<td>41.7%</td>
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<tr>
<td>Annualized 1.5 %</td>
<td>70</td>
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<tr>
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<tr>
<td><strong>Total</strong></td>
<td><strong>204</strong></td>
<td><strong>100.0%</strong></td>
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</tbody>
</table>

Future Considerations & Next Steps

- Reduce reliance on expert panel
- Increase TAFIS coverage (for MPO links not currently included)
- Utilize Statewide model for additional socio-economics growth scenarios
- Develop GIS methodology to flag deviations between forecasts
Thank you!

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