

Traffic Effect of OSOW An Analytic Approach

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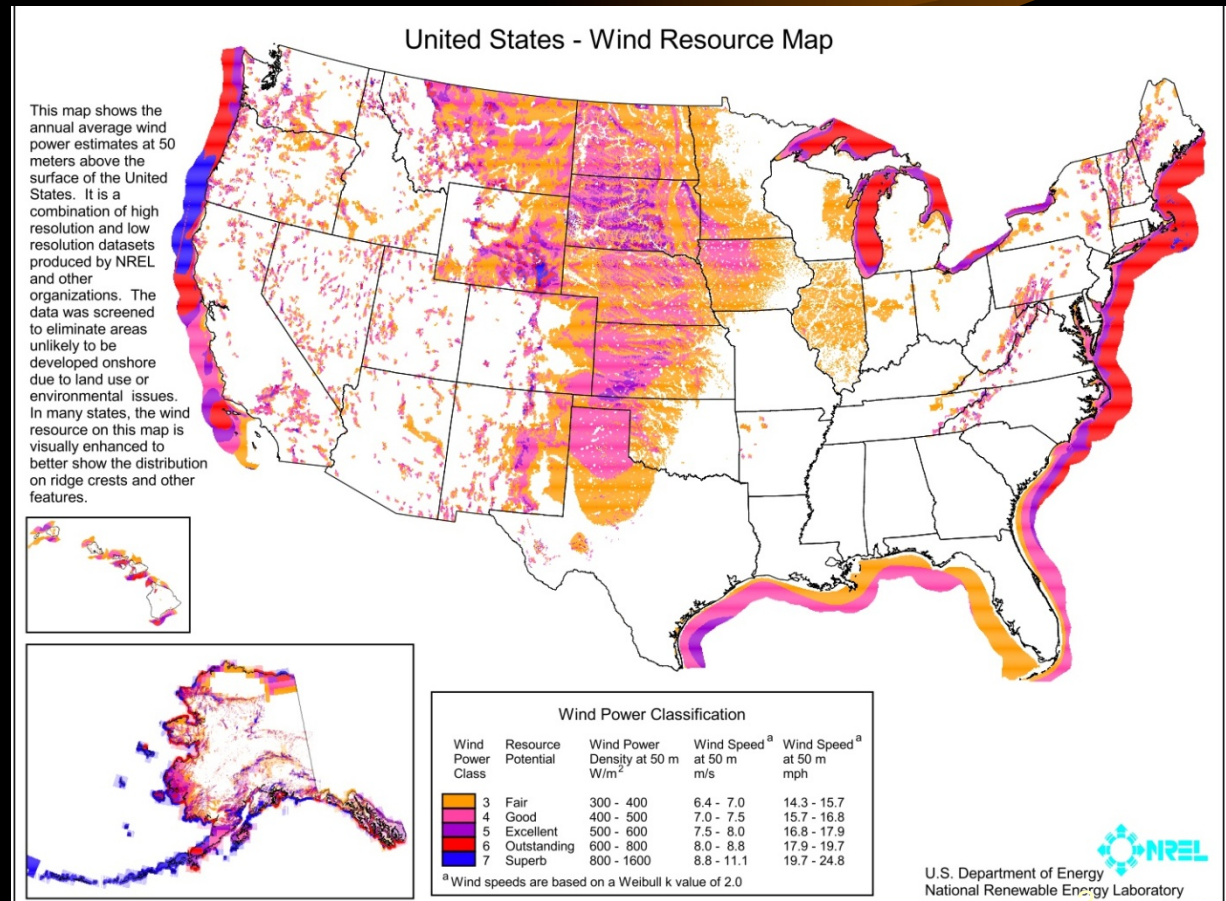


Agenda

- **Background**
- **System Methodology and Results**
 - What hours are the roadway congested
 - 11,000 miles of roadway
 - 24 hours x 7 days
- **System Thresholds**
 - How much congestion to allow before we apply restrictions
 - Microsimulation video

Background: Movement of wind tower components

- Fast growing commodity
- Areas of development in WI, IL, IA and MN



Background:

Movement of wind tower components

- Loads are bigger and heavier
- Require oversize / overweight permits from WisDOT



*Background:
Movement of wind tower components*



System Methodology: Purpose



- What routes and hours of the day do we need to restrict OSOW loads because of congested conditions?
- Achieve a Balance
 - Promote wind energy
 - Safety
 - Tourism industry

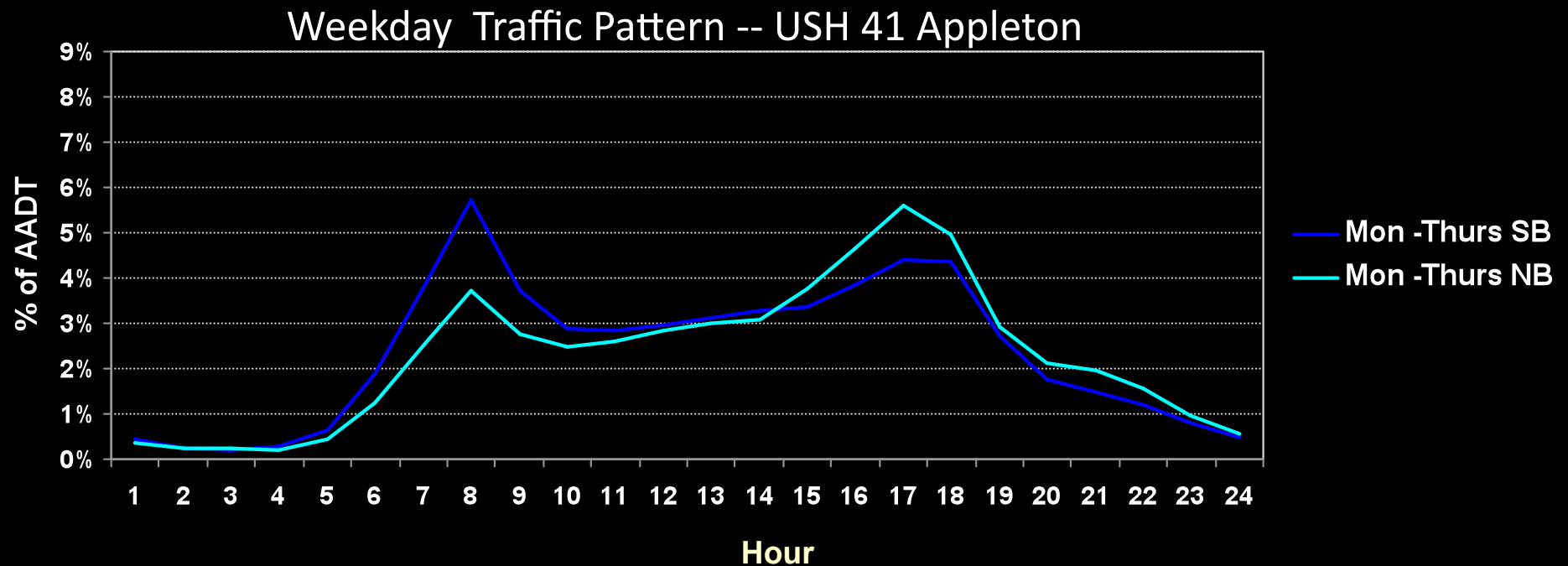
System Methodology: Congestion Measure



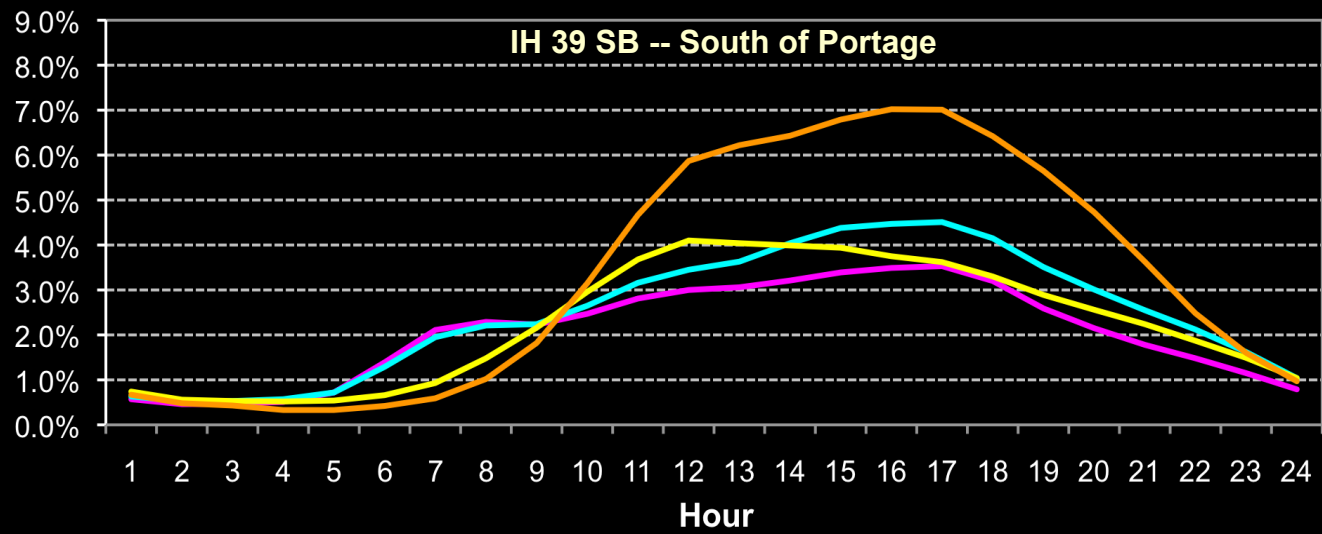
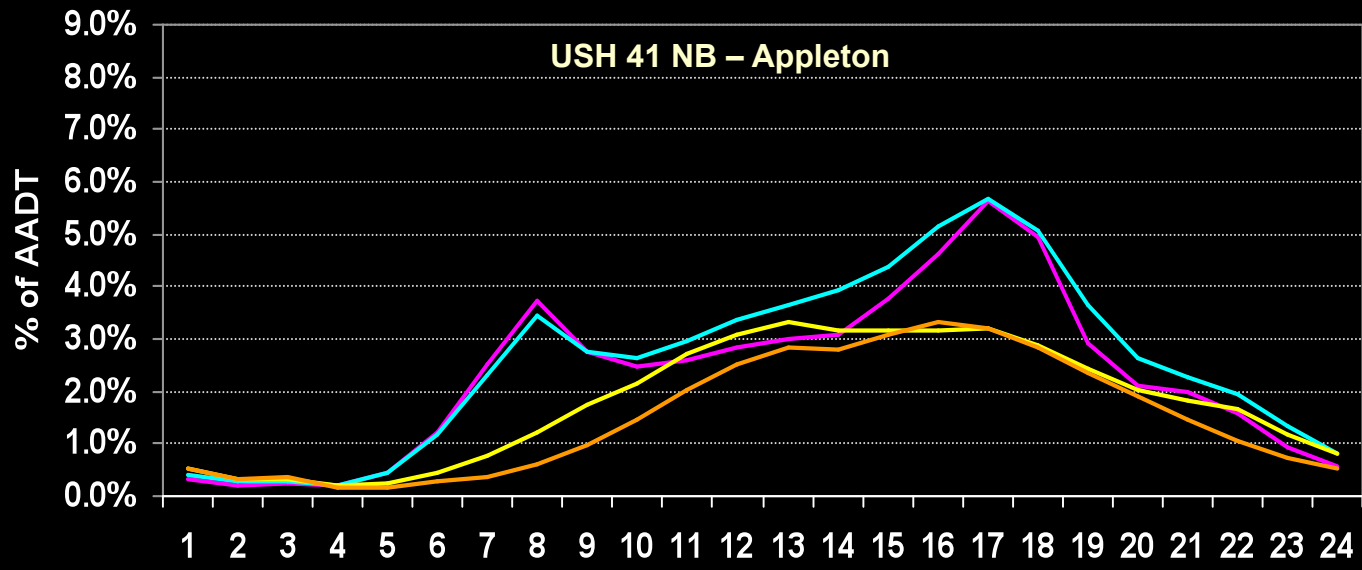
- **Primary Performance Measure to Determine Congested Routes**
- **Level of Service (LOS)**
 - LOS A, B and C – Uncongested (Free Flow to Stable Flow)
 - LOS D – Moderate Congestion (Approaching Unstable Flow)
 - LOS E – Severe Congestion (Unstable Flow)
 - LOS F – Extreme Congestion (Forced or Breakdown Flow)
- **LOS inputs**
 - 1) Hourly auto and truck volumes by direction
 - 2) Capacity of roadway – based on geometric elements

System Methodology: Hourly Volumes

- WisDOT owns 11,000 miles roadway ~6,700 segments
 - 230 Continuous Count Stations – 24,7 Hourly Volumes

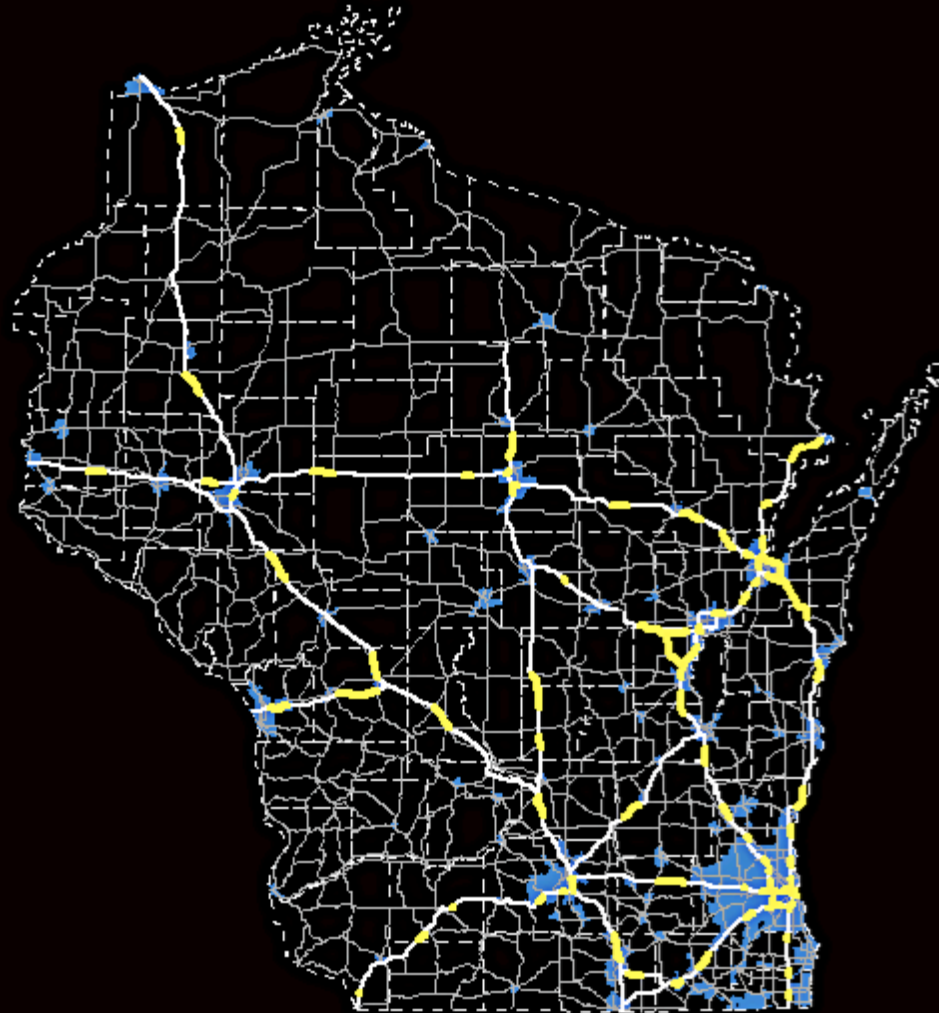


Daily traffic distribution patterns



— Mon-Thur — Friday — Saturday — Sunday

System Methodology: Backbone Routes



System Methodology: Backbone Routes



- Application of Traffic Patterns to BB Routes
 - More coverage of continuous data on BB system
 - 100 continuous count sites applied to 550 segments
 - Higher level of accuracy for BB routes
 - Applied site specific patterns to all BB Routes
 - Segments assigned a continuous count distribution based on the short-term coverage count distribution

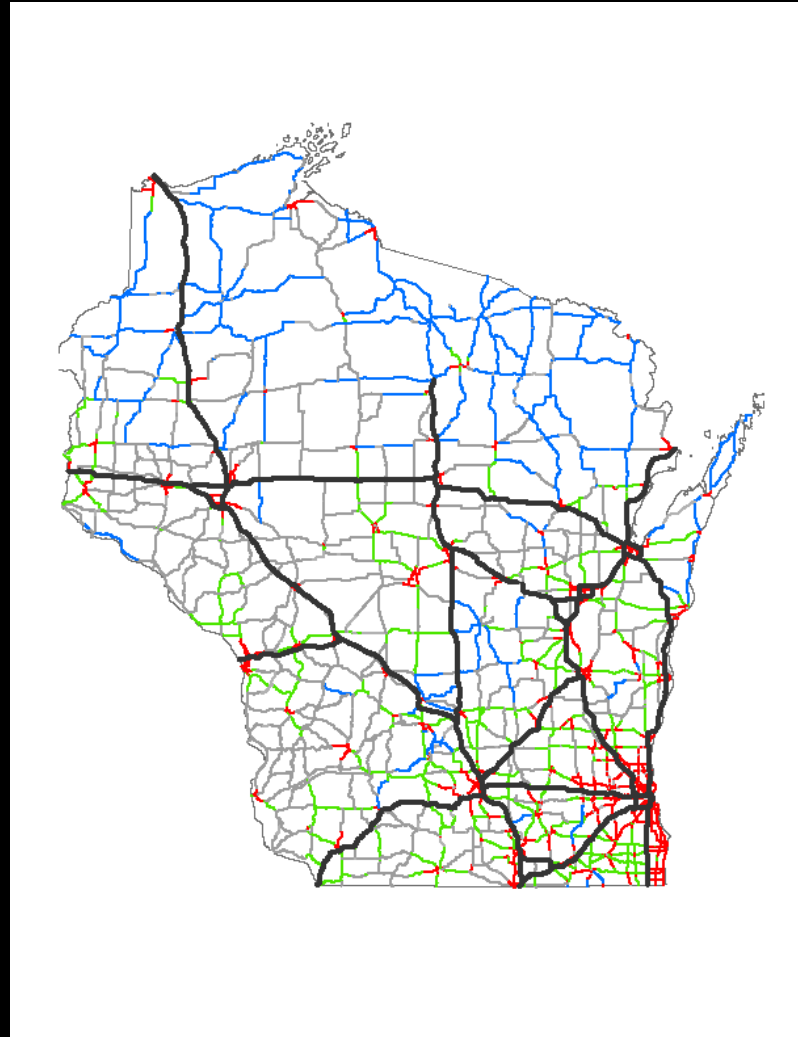
System Methodology: Non-Backbone Routes



- Application of Volume Distribution Patterns to Non-BB Routes
 - Too many segments to apply same methodology as BB routes
 - ~130 continuous count sites to 6150 segments
 - Developed statistically significant averages for routes with similar traffic patterns
 - Urban
 - Rural
 - Recreational
 - Commuter **New**

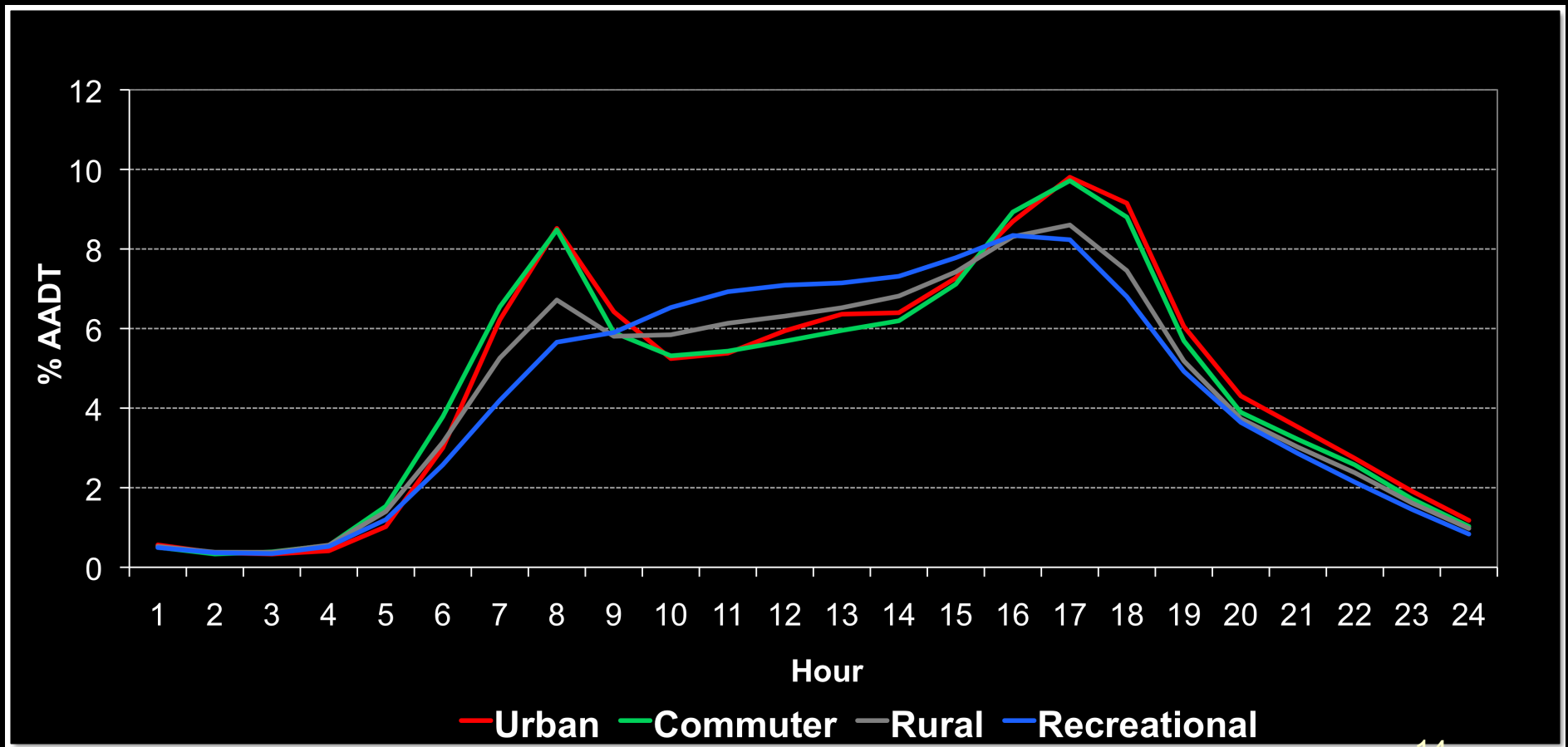
System Methodology: Non-Backbone Routes

- Urban
- Rural
- Recreational
- Commuter



System Methodology: Non-Backbone Routes

Monday - Thursday Traffic Distribution for Both Directions



System Methodology

LOS Thresholds and Capacities

- Used Highway Capacity Manual Methodologies
 - Detailed Geometric Information
 - Developed thresholds for all STH segments using 4 methodologies
 - Mainline freeways
 - Multilane highways
 - Two-lane highways
 - Urban arterials

LOS Example Hourly Volume Thresholds

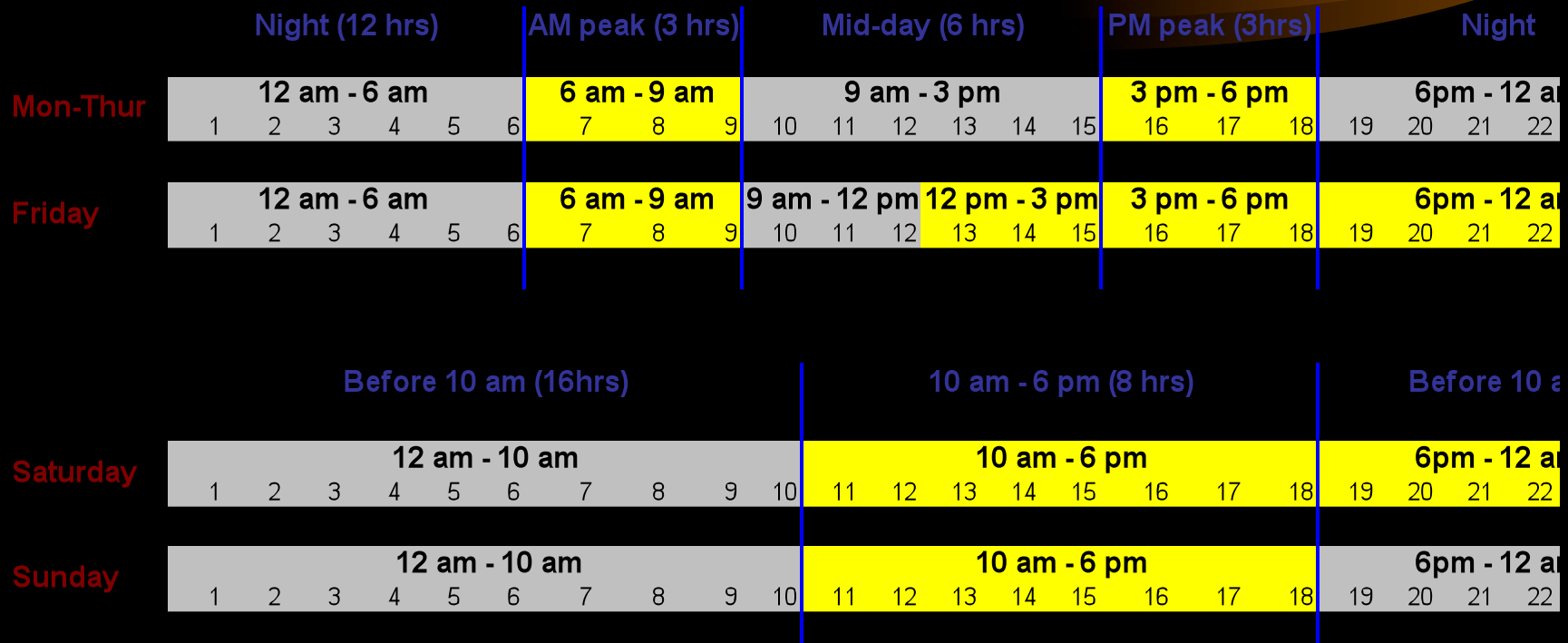
	<i>LOS C/D</i>	<i>LOS D/E</i>	<i>LOS E/F</i>
Rural Freeway 2 lanes/direction, 65 mph, < 1 interchange/mi	3,040	3,940	4,680
Two-Lane Highway 80% passing, 55 mph, 5 access points/mi	900	1,520	2,600

LOS Results

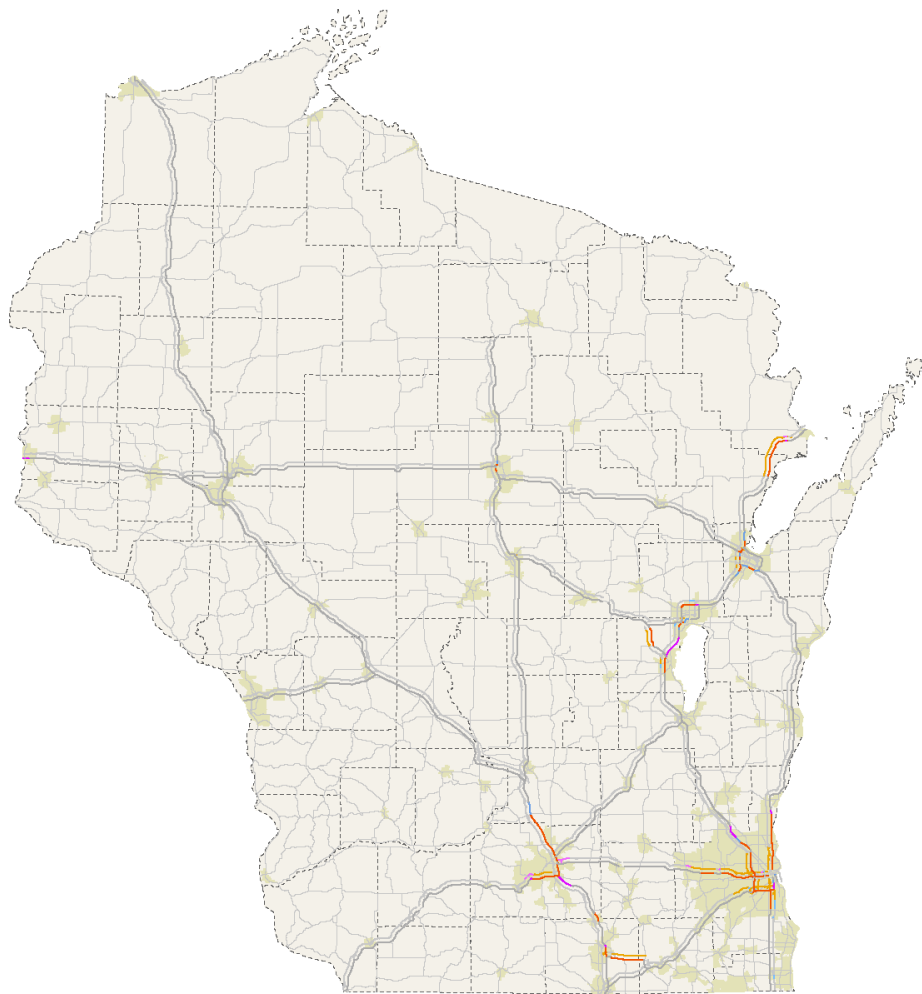


- 24 Hours of LOS for 4 typical days
 - Mon-Thurs.
 - Friday
 - Saturday
 - Sunday
- $24 \times 4 \text{ days} \times 2 \text{ directions} \times 6700 = 1,286,400$
LOS values
- Use GIS maps to summarize and display

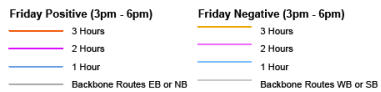
LOS Summary Hours



**2009 Projected Hourly LOS on Backbone Routes
Number of Hours in LOS D or worse
Average Friday -- 3 pm to 6 pm**

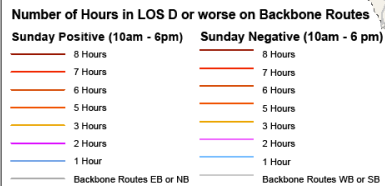


Number of Hours in LOS D or worse on Backbone Routes



Notes:
 1) Hourly Volumes = 2009 AADT * %AADT in each hour
 2) %AADT in each hour is based on April through October data from 2006 and 2007 at continuous traffic count sites.
 3) LOS values should NOT be used for design purposes. The calculations use LOS thresholds based on averages for some input values.
 March 2009
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**2009 Projected Hourly LOS on Backbone Routes
Number of Hours in LOS D or worse
Average Sunday -- 10 am to 6 pm**

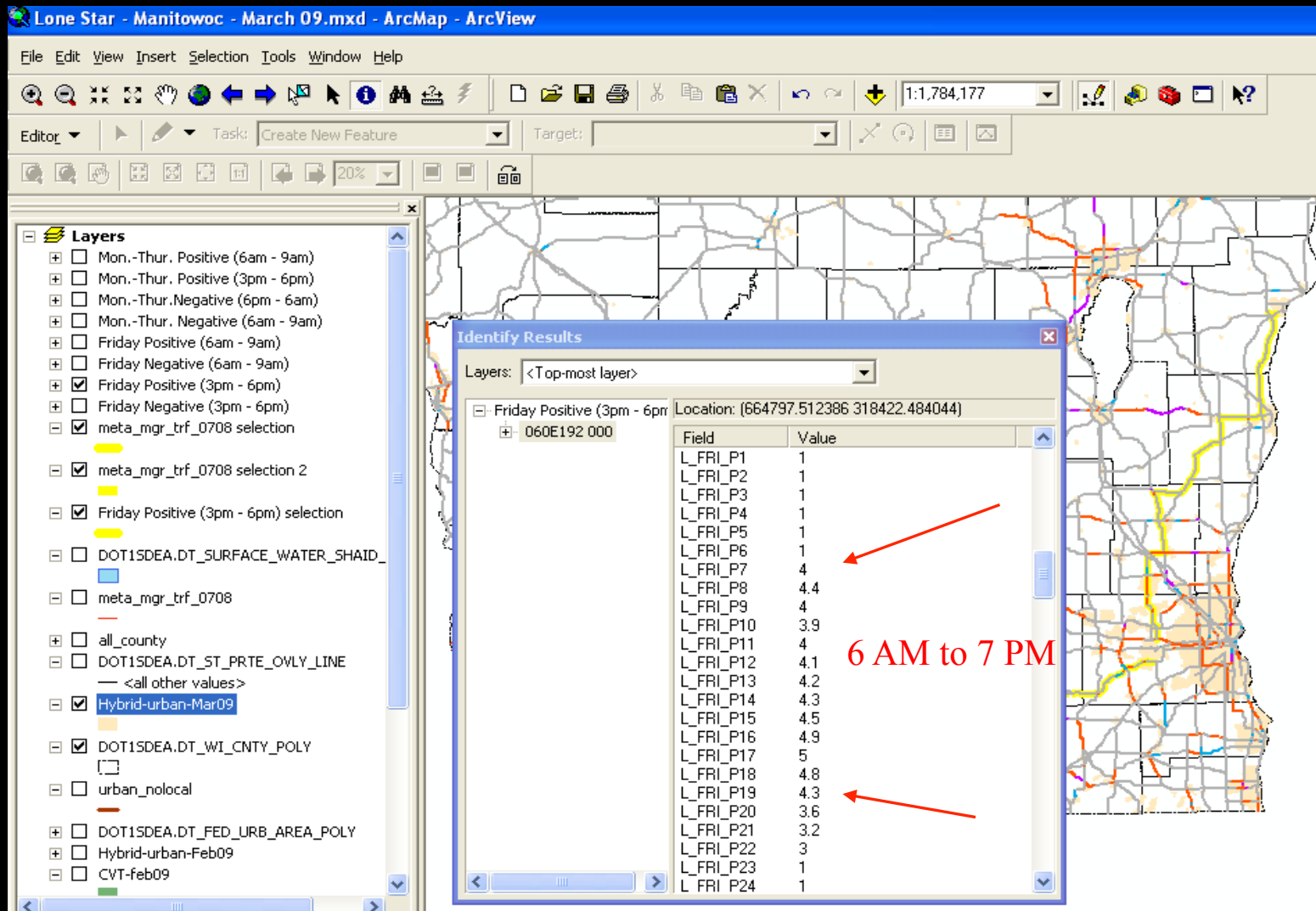


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Route Specific Curfew Hours Determination

STH 60 between Slinger and Jackson



LOS Thresholds



- What LOS is acceptable for Wind Component Loads?
- Starting point is LOS D (moderate congestion)
- LOS video to confirm

Conclusions



- Traffic congestion is limited to certain hours and routes
- OSOW permits potentially can be even more flexible