Minnesota UPA National Evaluation

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Presentation Overview

- National Evaluation Overview
- Minnesota UPA Projects
- Minnesota Evaluation Process
- Minnesota Evaluation Results
4 ‘T’ Strategies – Tolling, Transit, Telecommuting/TDM, Technology
National Evaluation

- Sponsored by U.S. Department of Transportation (U.S. DOT), Research and Innovative Technology Administration (RITA)
- Assess Impacts of Strategies
- Information to Support Deployment in Other Areas
- Inform Federal Policy and Program Development
- Identify Lessons Learned
- Team Approach – U.S. DOT, Local Partners, National Evaluation Team
National Evaluation Team

- Battelle Memorial Institute – Prime
- Texas A&M Transportation Institute (TTI)
- Center for Urban Transportation Research (CUTR), University of South Florida
- Hubert H. Humphrey School of Public Affairs and Center for Transportation Studies (CTS), University of Minnesota
- Eric Schreffler, ESTC
- Barbara Joy
### Evaluation Analyses

#### USDOT 4 Evaluation Questions

<table>
<thead>
<tr>
<th>A. How much congestion was reduced?</th>
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<td>B. What are the associated impacts of the congestion reduction strategies?</td>
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<td>C. What are the lessons learned?</td>
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<td>D. What is the overall cost/benefit of the strategies?</td>
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#### Evaluation Analyses

1. Congestion
2. Strategy performance
   - a. Tolling
   - b. Transit
   - c. Telecommuting
   - d. Technology
3. Equity
4. Environmental
5. Safety
6. Non-Technical Success Factors
7. Cost/Benefit
Minnesota UPA Partners

- Minnesota Department of Transportation
- Twin Cities Metropolitan Council
- Metro Transit
- Minnesota Valley Transit Authority
- City of Minneapolis
- Hennepin, Ramsey, Dakota, and Anoka Counties
- Hubert H. Humphrey School of Public Affairs
- Transportation Management Organizations
Minnesota UPA Projects

- I-35W HOV Lanes to Dynamic-Priced HOT Lanes
- I-35W New HOT Lanes and Priced Dynamic Shoulder Lane (PDSL)
- 6 New or Expanded Park-and-Ride Lots
- 27 New Buses
- Marquette and Second (MARQ2) Dual Bus Lanes in Downtown Minneapolis
- Real-Time Transit and Traffic Signs
- Driver Assistance for Shoulder-Running Lanes
- eWorkPlace
• Minnesota UPA Kick-off Call – June 4, 2008
• Develop National Evaluation Framework
• Minnesota Evaluation Strategy – Fall, 2008
  – Minnesota Workshop – August 5, 2008
• Minnesota Evaluation Plan – Early 2009
• Minnesota Test Plans – Mid 2009
• First Stakeholder Interviews – Spring 2009
• First Stakeholder Workshop – October 2009
• First Interim Report – July 2010
• Second Stakeholder Interviews – Spring 2011
• Second Interim Report – September 2011
• Second Stakeholder Workshop – December 2011
• Draft Final Report – September 2012
• On-Site Briefing – November 2012
Use Local Data – Thanks to MnDOT, Metro Transit, MVTA, and HHH School

MnDOT – Focus Groups/Interviews – State Patrol, FIRST, and Bus Operators

MnDOT – Telephone Survey of I-35W South Travelers

MnDOT – I-35W MnPASS Customer On-Line Survey

Metro Transit – Onboard Ridership Survey
Contextual Changes During Evaluation Period

- Unemployment Rates ▲▼
- Gasoline Prices ▲▼▲▼
- Parking Rates ▲↔
- Incidents/Weather ↔
I-35W MnPASS HOT Lanes
Tolling Analysis

• Increased Use and Throughput in Corridor
• Some Shift to HOT Lanes from General-Purpose Freeway Lanes and HOVs Remain
• Reduced Violations
• Cofiroute Monthly Reports and Data
• MnDOT Quarterly Reports
Tolling Analysis

I-35W MnPASS HOT Lanes – April 2013

- 9,289 Accounts, 10,732 Transponders
- 2,570-to-3,817 Daily MnPASS Users
- Average Toll – $1.71
- Average Maximum Tolls – $5.00-$8.00
- Monthly Trips – 73,260
- Monthly Revenue – $125,123
I-35W MnPASS Trips by Plaza

Monthly Northbound MnPASS Trips by Plaza

Northbound MnPASS Trips

Month of Operation

- 36th St
- 46th St
- 60th St
- 66th St
- 82nd St
- 90th St
- 98th St
- Black Dog Rd
- Highway 13
### I-35W HOT Lane Use – AM Peak Period

<table>
<thead>
<tr>
<th></th>
<th>4th Quarter 2008</th>
<th></th>
<th>2nd Quarter 2011</th>
<th></th>
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<tbody>
<tr>
<td></td>
<td>Vehicles</td>
<td>%</td>
<td>Vehicles</td>
<td>%</td>
</tr>
<tr>
<td>Total Vehicles</td>
<td>2,068</td>
<td></td>
<td>2,969</td>
<td></td>
</tr>
<tr>
<td>Carpool/Vanpool</td>
<td>1,718</td>
<td>83%</td>
<td>1,784</td>
<td>60%</td>
</tr>
<tr>
<td>Tolled at Black Dog Road</td>
<td>0</td>
<td>—</td>
<td>967</td>
<td>33%</td>
</tr>
<tr>
<td>Transit Buses</td>
<td>47</td>
<td>2%</td>
<td>54</td>
<td>2%</td>
</tr>
<tr>
<td>SOVs (Violators)</td>
<td>303</td>
<td>15%</td>
<td>164</td>
<td>5%</td>
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**Source:** MnDOT Quarterly Reports
Tolling Analysis

• Positive Feedback Bus Operators, State Patrol, FIRST Operators, MnPASS Users
• Work Trips, Trip-Time Reliability, Less Stress
Transit Analysis

- 60-90 Seconds of Travel-Time Savings from Transit Advantage Bypass
- Park-and-Ride Lot Use
- Ridership
Transit Analysis

MARQ2 Experience

• Bus Speeds \(\uparrow\)
• Bus Travel Times \(\downarrow\)
• Trip-Time Reliability \(\uparrow\)
• Consolidate Bus Routes
• Remove Buses from Nicollet Mall
• Positive Feedback Riders and Bus Operators
Transit Analysis

Driver Assistance for Shoulder-Running Buses
- Separate FTA Study
- Positive Feedback from Operators
- Safe Operations
- Increase use of Shoulder
- Slight Increase in Travel Speeds
Telecommuting Analysis

- HHH Analysis
- Telecommuting
- Results Only Work Environment (ROWE)
- Alternative Work Arrangements
- Goal – 2,700 Individuals/500 I-35W Corridor
- 48 Employers, and 4,200 Participants
- Remove 1,000 Peak-Hour Solo Car Trips a Week on I-35W
Technology Analysis

• ATM
  – Increased Throughput
  – Support Congestion Reduction
  – Positive Feedback from State Patrol, FIRST, Bus Operators, and Users
Congestion Analysis

• RTMC Sensor Detection System
• Three Sections
  – Highway 13 to I-494
  – I-494 to 42nd Street
  – 42nd Street to Downtown
• Travel Time, Trip-Time Reliability, Congestion, and Throughput
Congestion Analysis

Before – AM Peak

After – AM Peak
Congestion Analysis

Corridor Travel Times, General-Purpose Lanes Only

- Northbound (a.m. peak): Pre-Deployment 18.9 minutes, Post-Deployment 16.8 minutes
- Southbound (p.m. peak): Pre-Deployment 18.4 minutes, Post-Deployment 15.0 minutes
Congestion Analysis

[Bar chart showing mean peak period travel time in minutes for different sections and directions, with data points for Pre-Deployment and Post-Deployment]
Perception of Congestion

- MnPASS Customers – 56% Travel Easier and Less Congested
- State Patrol, FIRST Operators, and Bus Operators – Congestion Reduced
- Telephone Survey – 52% Travel Easier and Less Congested
- Stakeholder Interviews – Congestion Reduced
Equity Analysis

- All User Groups and Corridor Residents Benefit
- Bus Riders from Other Areas Benefit from the MARQ2 Lanes
- All System Users Benefit From Potential Reinvestments
Environmental and Energy Analysis

- Impacts on Air Quality, the Environment, and Energy Consumption
- Volume and Speed Data from Congestion Analysis
- Emissions Factors using MOBILE6
- Positive Impacts on Air Quality and Reduction in Energy Consumption from HOV to HOT
- Inconclusive Impacts in Other Sections
- Positive Perception on Environmental Impacts for Stakeholders and Media
Safety Analysis

- Crash Rates on I-35W South Statistically Significantly Lower in the Post-Deployment
- More Analysis Over Longer Periods is Needed
- MnPASS Customers and Bus Operators Reported MnPASS Lanes Provide Safe Operating Environment
- No Crashes Reported with MARQ2 Lanes or DAS and Positive Feedback from Operators
Benefit Cost Analysis

- I-35W South
- Included Cost/Benefit of Crosstown Commons Section
- Partial Cost of Park-and-Ride Lots, New Buses, and eWorkPlace
- Benefits – Travel-Time Savings, Safety, Fuel, Emissions
- BCA – $505.6 Million/$83.9 Million = 6.0
Non-Technical Success Factors Analysis

• Role of Five Factors in Success of Minnesota UPA
  – People
  – Process
  – Structures
  – Media
  – Competencies

• Public Support
Print News Media Content Analysis

- 42 Stories
  - 52% Positive
  - 5% Negative
  - 12% Balanced
  - 21% Neutral

- Informing the Public, Rather than Influencing Public Opinion
Non-Technical Success Factors Analysis

- Stakeholder Interviews
  - 43 Individuals in 2009
  - 17 Individuals in 2011
- Stakeholder Workshops
  - October 2009
  - December 2011
Lessons Learned

• Multimodal solutions do work
• Simple solutions (bus by-pass ramp) are as important as major solutions (MARQ2 and MnPASS Lanes)
• Good planning doesn’t just sit on a shelf – it prepares you for opportunities
• Constant and open communications
• Build on strong existing partnerships
• New and expanded partnerships developed
Lessons Learned

- Strong commitment from all agencies at all levels
- Agency personnel liked working with each other
- Deployment and operation – less meetings more doing
- Don’t let perfection get in the way of good
Lessons Learned

- Clear authority and responsibilities – both between and within agencies
- Project manager had decision-making authority – helped ensure time project delivery
- The amount of federal funds, and the threat of losing those funds, were clearly drivers
- Real and meaningful deadlines created motivation – no one wanted to let the team down
Questions