Presentation Overview

• Background & Study Goal
• Issue & Needs Identification
• Development of Themed Alternatives
• Development of Hybrid Alternatives
• Selection of Preferred Alternative(s)
• Implementation Strategy
Background

- Study included in Metro COG’s Unified Planning Work Program in 2006 at the request of the Minnesota Department of Transportation (Mn/DOT) and North Dakota Department of Transportation (NDDOT);

- Intent of the Study evolved greatly, changing from “bypass/perimeter system” study to a “system operations/management” study;

- Project Kicked off in December of 2007 and was completed in January of 2011; completed in two distinct phases

- Total Cost: $185,000 (not including MPO internal labor)
Study Partner Roles

**Study Review Committee** – Mn/DOT, NDDOT, Metro COG, local units of government

**Metro COG** – Direct and coordinate work, establish study guidelines and schedule, communicate with SRC member agencies

**ATAC** – Perform traffic analysis using Travel Demand Model and VISSIM model, provide model output summary to Metro COG, SRF, and SRC

**SRF Consulting Group** – Develop proposed system actions and screening criteria, evaluate analysis results, provide feedback to SRC
Study Goal

• Establish a preferred set of actions that will provide acceptable operations on the Fargo-Moorhead Interstate System under year 2025 conditions.

• Actions may include:
  • Physical improvements
  • Operational changes
  • Travel demand management
Overview of Interstate Interchanges

40+ Miles of Interstate
24 Interchanges
Population Growth Projections

Figure 1 - Fargo Moorhead MSA Estimated and Projected Population

<table>
<thead>
<tr>
<th>Jurisdictions</th>
<th>Population</th>
<th>Population Change</th>
<th>Population Projections</th>
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</thead>
<tbody>
<tr>
<td>Fargo</td>
<td>74,111</td>
<td>90,599</td>
<td>104,002</td>
</tr>
<tr>
<td>Moorhead</td>
<td>32,258</td>
<td>32,177</td>
<td>36,388</td>
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<tr>
<td>West Fargo</td>
<td>12,257</td>
<td>14,940</td>
<td>23,520</td>
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<tr>
<td>Dilworth</td>
<td>2,562</td>
<td>3,001</td>
<td>3,808</td>
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<tr>
<td><strong>Urban Total</strong></td>
<td>121,258</td>
<td>140,717</td>
<td>167,688</td>
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| Metro Cass     | 86,598 | 105,539 | 127,522 | 20.9% | 22.2% | 20.8% | 130,030 | 140,710 | 149,690 | 157,780 | 165,090 | 171,510 |
| Rural Cass     | 16,439 | 17,599 | 20,192 | -1.7% | 6.8% | 14.7% | 20,520 | 22,430 | 24,650 | 26,800 | 28,610 | 29,580 |
| **Cass Total** | 102,874 | 123,138 | 147,714 | 16.6% | 19.7% | 20.0% | 150,550 | 163,140 | 174,340 | 184,680 | 193,700 | 201,190 |

| Metro Clay     | 34,877 | 35,178 | 40,166 | 7.1% | 0.8% | 14.2% | 40,810 | 45,360 | 48,480 | 51,520 | 54,320 | 56,860 |
| Rural Clay     | 15,565 | 16,120 | 18,522 | -2.0% | 3.6% | 14.9% | 18,820 | 18,650 | 19,800 | 20,960 | 22,190 | 23,410 |
| **Clay Total** | 50,442 | 51,299 | 58,688 | 2.2% | 1.6% | 14.6% | 59,630 | 64,010 | 68,280 | 72,480 | 76,580 | 80,270 |

| **MSA Total**  | 153,269 | 174,367 | 206,402 | 11.4% | 13.7% | 18.4% | 210,180 | 227,150 | 242,620 | 257,160 | 270,210 | 281,460 |

Population Source: U.S. Census Bureau
Projection Source: Mckinsey Demographic Research
Note: 2009 Population Projections within Figure 1 are based on the 'High Growth' Forecast as set forth within the 2006 Demographic Forecast for the Fargo-Moorhead Metropolitan Statistical Area

**Metropolitan Area: 34% growth in population**

**2010 METROPOLITAN PROFILE**

FARGO MOORHEAD METROPOLITAN COUNCIL OF GOVERNMENTS_AUGUST 2010
Population Increase of 58,000 between 2010 and 2035

30,000 New HH between 2010 and 2035
Issue Identification

- Phase I of the Study allowed Metro COG to engage stakeholders and the public to identify a host of significant issues regarding Interstate Operations within the FM Metropolitan Area;

- Identification of issues was based primarily on existing conditions;

- Prioritization of Issues was done after forecast conditions were analyzed (Phase II)
Issue Identification *(prioritized list)*

- **Operations/Level of Service:** Bi-state interstate; differing perspectives on operations; need to ensure coordination and continuity;

- **Transportation Funding:** Reliability of funding (MN); new philosophy to expansion (ND); balance local vs. state needs (metro);

- **East-West (Red) River Crossings:** Inadequate arterial capacity across the Red River (State line);
Issue Identification *(prioritized list)*

- **Corridor Identification & Preservation:** Work to preserve future arterial capacity to support regional movements; look at beltway/perimeter system; alternate routes, etc.

- **Intelligent Transportation Systems/Regional Traffic Operations:** Deploy ITS so to support interstate operations; detection, surveillance, etc. TOC development.

- **Transportation Demand Management:** Focus on strategies/programs to reduce demand: transit, flex scheduling, etc.
Transitioning Phase I to Phase II

• Linking Issues to Strategies
  – Identifying Issues
  – Developing Strategies

• Development & Screening of Themed Alternatives
  – Strategies applied throughout network
  – Evaluation of impacts on operations hot spots

• Analysis of Hybrid Alternatives & Selection of Preferred Alternative
  – Combination of effective elements from Themed Alternatives
  – Determine investments needed to provide acceptable operations
Traffic Modeling

Phase I
- Developed VISSIM 2008, 2015, and 2025 models
- VISSIM models supported by Metro COG Regional TDM

Phase II
- Built upon 2025 VISSIM Model
- Worked closely with Metro COG TDM Model
Phase I of the Interstate Operations Study developed a 2015 and 2025 network model.

The 2015 network for the Interstate Operations Study included only those projects currently programmed in the Metropolitan Transportation Improvement Program (TIP).

The 2025 modeled network was “agreed to in cooperation” between Metro COG, Mn/DOT, and NDDOT for planning purposes.
2025 Base Network Conditions
Base Condition

Updated 2025 Model Results
**Study Process**

<table>
<thead>
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<th>Themed Alternatives</th>
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<tr>
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<tr>
<td>ITS/TOC</td>
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<td>Ramp Metering</td>
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<td>Arterial/Off-System Improvements</td>
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<tr>
<td>Red River Crossing Capacity</td>
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<td>Capacity/Physical Improvements</td>
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Themed Alternative 1
Land Use Modifications/Transit/TDM

**Goal:** Reduce peak traffic demand on Interstate System through land use changes, transit improvements, and TDM measures.

**Implementation:**
- Comprehensive Demand Management Program
- Flexible Scheduling for Major Employers supported through incentive programs (E.g. NDSU, MSUM, BCBS, Innovis, Merit care, etc.)
- Expanded transit services (E.g. cross-town/high frequency routes)
Themed Alternative 2
ITS/Incident Management

**Goal:** Employ technology to improve traffic operations on the interstate system through improved flow of real-time information and coordinated responses to emergencies

**Implementation:**

- Installation of cameras and loop detector systems
- Coordination with public safety agencies
- Deployment of communications infrastructure and technologies; and,
- Development of coordinated responses to freeway incidents as well as weather emergencies and event conditions
**Goal:** (1) Break up entering platoons on interstate on ramps; and, (2) increase travel time to reduce short trips using interstate

**Implementation:**

- Installation of ramp meters for on ramps to interstate
- Widening of entrance ramps to accommodate 2-lane queuing
- Additional detection to monitor performance
Themed Alternative 4 
Off-System Improvements

Goal: Improve travel time on parallel arterial facilities to provide and alternative to interstate travel and reduce demand volumes

Implementation:
• Signal timing and coordination improvements
• Spot intersection geometric improvements
• High-speed corridor developed along 76th Ave alignment
Themed Alternative 5
New Red River Crossing Near I-94

Goal: Relieve traffic demand on I-94 over the Red River by providing alternative river crossing facilities and increased capacity

Implementation:
• Construct new bridges and improve terminal intersections to accommodate additional traffic
• New Red River crossings on the 13th Ave/12th Ave and 32nd Ave/40th Ave alignments
Themed Alternative 6
Capacity/Physical Improvements

**Goal:** Improve interstate operations through physical improvements ranging from traditional to innovative and low to high cost

**Implementation:**

- Interstate construction projects to provide additional capacity, grade separation and freeway access
- Traditional capacity improvements including new through lanes, auxiliary lanes, ramp capacity, and grade separations
- Low-cost innovative improvements including ramp closures near tri-level interchange
- High-cost innovative improvements including grade separations and access restrictions near tri-level interchange
## Study Process

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<th>Hybrid Alternatives</th>
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<tr>
<td>Red River Crossing Capacity</td>
<td></td>
</tr>
<tr>
<td>Capacity/Physical Improvements</td>
<td>Minimum required to provide acceptable operations</td>
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Analysis Method

- **Regional Travel Demand Model**
  - Evaluate impacts of alternatives on traffic volumes

- **Simulation Model**
  - Evaluate peak hour Level of Service on Interstate

- **Cost Comparison**
  - Planning level cost estimates developed to provide comparison between Hybrid Alternatives
Conclusions and Recommendations

- Selection of Preferred Alternative
- Prioritization and Implementation
- Final Report available on Fargo-Moorhead Metro COG Website
Prioritization and Implementation

1. Establish a Transportation Management Organization (TMO) to oversee efforts to improve land use planning, transit service expansion, and travel demand management.

2. Continue transition to develop a regional traffic operations center (TOC), deploy ITS infrastructure, and develop incident management plans.

3. Construct capacity and physical improvements on the interstate system as operational conditions indicate needs.

4. Perform more detailed study of ramp meter implementation and develop implementation plan for installation and operation of ramp meters.
Linking Interstate Operations to the Metropolitan Planning Process

• Integrate Interstate operations into required elements of the metropolitan planning process

• Metro COG, NDDOT, Mn/DOT need to formalize discussions regarding Interstate operations

• Discussions regarding Interstate funding (project needs and priorities) need to be elevated within the TIP/STIP development process
Linking Interstate Operations to the Metropolitan Planning Process

- Complete Traffic Operations Incident Management Strategy; and work to foster greater coordination regarding protocols to manage Interstate traffic
- Analyze local arterial roadway system to ensure system is maximized in meeting local/regional mobility needs
- Conduct a more detailed analysis of ramp metering
- Develop to a Congestion Management Program (Per CFR)
- Ensure interstate justification process is strictly followed regarding new access to the Interstate
Linking Interstate Operations to the Metropolitan Planning Process

- Evaluate the long term need for an Interstate bypass route; and develop in concept in next LRTP

- Use update of Metro COG and NDDOT ITS Plans to identify strategies regarding Interstate Operations; build off existing success/deployments

- Use update of Transit Development Plan to identify strategies aimed at a 5% travel reduction by 2025
Questions? Other Comments?
Thank you!