Highway Transitway Corridor Study
CTS Research Conference | May 21, 2014
2030 Transportation Policy Plan

- Transitway modes on highways:
  - Highway bus rapid transit (BRT), plan identified 6 total Highway BRT transitways but was not specific to where
  - Express bus corridors with Transit Advantages
- Possible synergy between highway and transit investments
2030 Transportation Policy Plan

- Highway transit advantages:
  - Bus-only shoulders
  - Managed lanes

- Regional experience:
  - I-35 W South BRT (Orange Line)
  - Cedar BRT (Red Line)
What was the purpose of the study?

• Determine transit demand for all-day, frequent Highway BRT service
• Better understand Highway BRT demand in multiple regional corridors and the range of potential costs and potential benefits
• Include analysis in future transit and highway studies
Which corridors were studied?

8 corridors for concept plan development:

- TH 212
- TH 169
- I-394
- I-94 West
- TH 65
- TH 36
- I-35 E North
- I-35 E South

Considerations:

- Express bus corridors
- MnPASS corridors
- Corridors identified by local stakeholders
What is Highway BRT?

- Fast, frequent, all-day service that serves high-demand regional population, employment, and transit nodes in highway corridors
- Cost-effective by using or adapting existing infrastructure
- Competitive travel times to suburban job centers
All-Day Frequent Service Examples

Light Rail
Operates in high-demand corridors in exclusive rail guideway

Arterial BRT
Operates in high-demand urban corridors in mixed-traffic

Highway BRT
Operates in high-demand highway corridors using highway infrastructure
Station Types

Online

Inline

Offline
What was studied for each corridor?

- Existing travel conditions
- Transit market analysis
  - Helped identify segments with highest Highway BRT potential and initial station locations
- Concept plans with capital investments, operating costs, and ridership
- Evaluation criteria
Transit Market Analysis

Figure 4: Potential Station Location Future Population Magnitudes

Figure 5: Potential Station Location Future Employment Magnitudes
Transit Market Analysis
What guided our evaluation?

Five Goals

1. Provide mobility benefits and respond to trip patterns/needs and deficiencies for markets identified in the purpose and need
2. Provide affordable, effective transportation improvements
3. Meet 2030 *Transportation Policy Plan* ridership goals
4. Seamlessly integrate with existing systems and provide valuable regional connections
5. Support area development plans, forecast growth assignment, redevelopment potential
Interstate 35E North
Highway 169
## Evaluation Measures

<table>
<thead>
<tr>
<th>Measure</th>
<th>I-94</th>
<th>TH 65</th>
<th>I-35E North</th>
<th>TH 36</th>
<th>I-35E South</th>
<th>TH 169</th>
<th>TH 212</th>
<th>I-394</th>
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</thead>
<tbody>
<tr>
<td><strong>GOAL 1</strong></td>
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<tr>
<td>1. Transitway Total ridership (Year 2030)</td>
<td>13,700</td>
<td>1,200</td>
<td>3,400</td>
<td>11,400</td>
<td>5,700</td>
<td>12,000</td>
<td>3,800</td>
<td>14,400</td>
</tr>
<tr>
<td>2. Growth in guideway total ridership (from 2030 No Build to 2030 Build)</td>
<td>4,400</td>
<td>600</td>
<td>3,100</td>
<td>9,300</td>
<td>4,200</td>
<td>8,600</td>
<td>1,400</td>
<td>7,900</td>
</tr>
<tr>
<td>3. Off-peak hour ridership and reverse-commute direction (Year 2030)</td>
<td>33% / 37%</td>
<td>56% / 30%</td>
<td>21% / 3%</td>
<td>32% / 24%</td>
<td>41% / 32%</td>
<td>40% / 35%</td>
<td>47% / 43%</td>
<td>39% / 44%</td>
</tr>
<tr>
<td>4. Transit-reliant ridership (Year 2030)</td>
<td>45%</td>
<td>26%</td>
<td>35%</td>
<td>35%</td>
<td>38%</td>
<td>33%</td>
<td>29%</td>
<td>37%</td>
</tr>
<tr>
<td>5. Minority residents in the service area (US 2010 Census)</td>
<td>52.1%</td>
<td>18.4%</td>
<td>45.7%</td>
<td>29.9%</td>
<td>21.4%</td>
<td>21.2%</td>
<td>17.0%</td>
<td>17.3%</td>
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<tr>
<td><strong>GOAL 2</strong></td>
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<td><strong>GOAL 3</strong></td>
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<tr>
<td>7. Station-to-Station Service ridership (Year 2030)</td>
<td>5,400</td>
<td>800</td>
<td>2,500</td>
<td>9,300</td>
<td>4,000</td>
<td>7,800</td>
<td>600</td>
<td>6,600</td>
</tr>
<tr>
<td>8. New transit riders (Year 2030)</td>
<td>1,400</td>
<td>700</td>
<td>500</td>
<td>1,300</td>
<td>1,200</td>
<td>2,000</td>
<td>300</td>
<td>1,600</td>
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<tr>
<td><strong>GOAL 4</strong></td>
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<tr>
<td>9. 2010 Trips with the Build Alternative</td>
<td>2,600</td>
<td>400</td>
<td>1,300</td>
<td>5,200</td>
<td>2,500</td>
<td>4,600</td>
<td>400</td>
<td>3,600</td>
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<tr>
<td>10. Connections to existing or planned high-frequency transitways</td>
<td>1</td>
<td>1</td>
<td>0</td>
<td>2</td>
<td>3</td>
<td>2</td>
<td>1</td>
<td>0</td>
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<tr>
<td><strong>GOAL 5</strong></td>
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<tr>
<td>11. Forecast growth in population</td>
<td>3%</td>
<td>8%</td>
<td>6%</td>
<td>9%</td>
<td>6%</td>
<td>15%</td>
<td>25%</td>
<td>7%</td>
</tr>
<tr>
<td>12. Forecast growth in employment</td>
<td>28%</td>
<td>14%</td>
<td>19%</td>
<td>13%</td>
<td>15%</td>
<td>19%</td>
<td>18%</td>
<td>8%</td>
</tr>
</tbody>
</table>
Evaluation Measures

• Setting Evaluation Thresholds
  – Methodology 1: Percentages were scored based on the range of corridor values
    45 (high) – 26 (low)/3 = 6

    High: ≥ 39-45
    Medium: 33-39
    Low: ≤ 33
Evaluation Measures

• Setting Evaluation Thresholds
  – Methodology 2: Raw values were broken into three quantiles
    \[ \frac{14,400 (\text{high})}{3} = 4,800 \]
    High: \( \geq 9,600 - 14,400 \)
    Medium: 4,800-9,600
    Low: \( \leq 4,800 \)
Evaluation Measures

• Setting Evaluation Thresholds
  – Methodology 3: Cost-effectiveness based on FTA breakpoints

  High: ≤$4.00
  Medium: $4.00 – 8.00
  Low: ≥$8.00
How do the corridors compare?

### Goal 1: Provide mobility benefits and respond to trip patterns/needs and deficiencies for markets identified in the purpose and need.
- **1. Guideway total ridership**
  - I-94: ●
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

- **2. Growth in guideway total ridership**
  - I-94: ○
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

- **3. Off-peak hour ridership and reverse-commute direction**
  - I-94: ●
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

- **4. Transit-reliant ridership**
  - I-94: ○
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

- **5. Minority residents in the service area**
  - I-94: ○
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

### Goal 2: Provide affordable, effective transportation improvements.
- **6. Cost effectiveness**
  - I-94: ○
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ●
  - I-35E South: ○
  - Hwy 169: ●
  - Hwy 212: ○
  - I-394: ●

### Goal 3: Meet Transportation Policy Plan (TPP) ridership goals.
- **7. Station-to-station ridership**
  - I-94: ○
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

- **8. New transit riders**
  - I-94: ○
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

### Goal 4: Seamlessly integrate with existing systems and provide valuable regional connections.
- **9. 2010 Trips with the build alternative**
  - I-94: ●
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

- **10. Connections to existing or planned high frequency transitways**
  - I-94: ○
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

### Goal 5: Support area development plans, forecast growth assignment, redevelopment potential.
- **11. Forecast growth in population**
  - I-94: ○
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

- **12. Forecast growth in employment**
  - I-94: ○
  - Hwy 65: ○
  - I-35E North: ●
  - Hwy 36: ○
  - I-35E South: ●
  - Hwy 169: ○
  - Hwy 212: ○
  - I-394: ●

**KEY TO SYMBOLS**
- ● Strongly supports goal (3 points)
- ○ Supports goal (2 points)
- ○ Does not support goal (1 point)
### How do the corridors compare?

<table>
<thead>
<tr>
<th>Potential Rating</th>
<th>Corridors</th>
</tr>
</thead>
<tbody>
<tr>
<td>High</td>
<td>• Highway 36</td>
</tr>
<tr>
<td></td>
<td>• Highway 169</td>
</tr>
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<td></td>
<td>• I-394</td>
</tr>
<tr>
<td></td>
<td>• I-94</td>
</tr>
<tr>
<td>Moderate</td>
<td>• I-35E South</td>
</tr>
<tr>
<td>Low</td>
<td>• Highway 65</td>
</tr>
<tr>
<td></td>
<td>• I-35E North</td>
</tr>
<tr>
<td></td>
<td>• Highway 212</td>
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What were some of the key findings of the study?

Infrastructure Design:
• Station types
• MnPASS lanes

Transit Service Design:
• Service frequency and express service demand

Local Planning and Design:
• Pedestrian environment at stations and development patterns
Questions