Arterial Transitway Corridors Study:
Results and Conclusions about Arterial Bus Rapid Transit

May 2012
Arterial Transitway Corridors Study Overview

• Corridor Features and Demographics
  – 11 study corridors, 95 route miles
  – Routes: 86,000 daily rides and half of urban local service
  – Corridors: 450,000 people and 460,000 jobs within ½ mile

• Study Structure
  – Focus on development of “Arterial BRT” concept from Met Council TPP
  – Concept/feasibility study led by Metro Transit with SRF Consulting team
  – Technical and Policy stakeholder partners

Key Corridor Challenges

- Slow transit speeds caused by significant signal and boarding delay
- Lack of attractive facilities and identity

<table>
<thead>
<tr>
<th>Challenge</th>
<th>Percentage</th>
</tr>
</thead>
<tbody>
<tr>
<td>Traffic</td>
<td>3%</td>
</tr>
<tr>
<td>Red Light</td>
<td>23%</td>
</tr>
<tr>
<td>Boarding Delay</td>
<td>32%</td>
</tr>
<tr>
<td>Moving</td>
<td>42%</td>
</tr>
</tbody>
</table>

Based on Route 18 NB observation, American Blvd to 5th/Nicollet

1,000 boardings per weekday
4,000 boardings per weekday
Traditional roadway space allocation leads to slower transit speeds...

...but buses carry a large share of people on the road

<table>
<thead>
<tr>
<th>Buses (≤1-5%)</th>
<th>People on buses (20-35%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cars (95+%)</td>
<td>People in cars (65-80%)</td>
</tr>
</tbody>
</table>

Roadway Use: Person Throughput

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Arterial Transitway Corridors Study

ARTERIAL BRT/RAPID BUS CONCEPT
Rapid Bus/Arterial BRT Service Concept

- **Local Service**
  - 8 stops per mile
  - Modest shelters in some locations
  - Continues at reduced frequency

- **Arterial BRT/Rapid Bus Service**
  - **Primary** corridor service
  - Improved frequency
  - 2-3 high amenity stations per mile
  - 98% of existing boardings within 1 stop of station locations
Estimated Travel Time Savings from Rapid Bus

Based on Afternoon Peak Period, Route 18 NB, American Blvd to 5th/Nicollet and Concept Plans
How does Rapid Bus achieve faster service?

Faster Service

- Less Waiting
- Improved frequency
- Better on-time performance

- Signal & Traffic Delay
- Signal priority
- Far-side stops
- Curb extensions

- Boarding Delay
- Pre-pay boarding
- All-door boarding
- Raised curbs

- Fewer Stops
- 2-3 stations per mile
- Serve activity centers
How does Rapid Bus achieve an improved experience?

**Improved Experience**

**Service Reliability**
- Better on-time performance

**Customer Information**
- Real time signs
- Schedule info and wayfinding signs
- On bus information
- Branding

**Transitway Stations**
- Enhanced maintenance
- Security features & station-level lighting
- Heated shelters
- Curb extensions
- Ticket Vending Machines

**Specialized Vehicles**
- Dedicated fleet
- Low floor buses
- Clean emissions
- Unique look

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**Metro Transit**

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Many Station Configurations, All Share Common Look/Identity

Street View With Back Wind Screen
Vehicles in “Rapid Bus” Service in Other Regions
Arterial Transitway Corridors Study

STUDY RESULTS AND EVALUATION
Significant ridership growth even in no-build scenario

Added service needed to meet growing demand

Even stronger ridership growth in build scenarios

With Rapid Bus, corridor ridership will nearly double

Forecasts are total of 11 single-corridor build alternatives (not system forecast of multiple lines). Ridership is for study corridor segments, differs from route-level totals
Estimated Capital and Operating Costs

Rapid Bus Capital Cost Components
Average Study Corridor

- $3-4 million average capital cost per mile
  - Streetcar ($20 to $40 million/mile)
  - Light Rail ($60 to $100 million/mile)
  - Dedicated Busway ($25-$50 million/mile)

- $3.6 million per year/corridor average operating cost increase
  - Added service (2030 Service Plans), maintenance of stations and features
  - Offset by increased revenue

Metropolitan Council

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Evaluation Criteria Draft Results

- 5 Project Goals √ 17 measures, weighted by importance
- Proposed improvements appropriate for all corridors in 2030

*West Seventh corridor implemented limited stop service plan in 2004. Unique feature affects relative Goal 1 performance in evaluation
Readiness Criteria Draft Results

- Used to differentiate “first” corridors amongst 11 good corridors
- Three readiness factors:
  1. Is the corridor going to be studied in the near future in more detail and for other modes?
  2. Does the corridor’s success depend on (or benefit from) connections to an unfunded transitway investment?
  3. Is additional service planning needed to refine rapid bus in the corridor?

<table>
<thead>
<tr>
<th>NEAR-TERM READINESS CRITERIA</th>
<th>Snelling</th>
<th>Lake</th>
<th>American</th>
<th>Central</th>
<th>Broadway</th>
<th>Hennepin</th>
<th>Nicollet</th>
<th>Chicago</th>
<th>West 7th</th>
<th>East 7th</th>
<th>Robert</th>
</tr>
</thead>
<tbody>
<tr>
<td>Will the corridor be studied in the near future in more detail for other modes?</td>
<td>Green</td>
<td>Red</td>
<td>Green</td>
<td>Red</td>
<td>Green</td>
<td>Red</td>
<td>Red</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
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<tr>
<td>Does the corridor’s success depend on connections to an unfunded transitway investment or forecast growth?</td>
<td>Green</td>
<td>Red</td>
<td>Green</td>
<td>Yellow</td>
<td>Red</td>
<td>Green</td>
<td>Red</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
</tr>
<tr>
<td>Is additional planning needed at this time to better develop Rapid Bus and other bus service in the corridor?</td>
<td>Green</td>
<td>Yellow</td>
<td>Red</td>
<td>Red</td>
<td>Green</td>
<td>Green</td>
<td>Red</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
<td>Green</td>
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Preliminary Recommendations - Near Term Corridors

Ready to Implement in Near Term

- Snelling Avenue
- West Seventh Street

Refine Concept Plans, then Implement:

- West Broadway Avenue
- Chicago-Portland Avenue

*Downtown east-west alignment and service plans are key issues for both corridors*
Snelling Avenue Rapid Bus Corridor

- 9.7 miles, 21 stations, 9 peak buses
- $26.8 million capital cost (2011$)
- +$2.7M/annual service cost
- +$1.0M/annual maintenance cost
- 48 minutes, 35 minute running time, 27% faster
- 15’ local, 10’ Rapid/30’ Local
- 3,500 rides 2010, 8,700 rides 2030
- +3,000 rides over 2030 “baseline”
West Seventh Street Rapid Bus Corridor

• 12.2 miles, 18 stations, 9 peak buses
• $25.4 million capital cost (2011$)
• +$0.05M/annual service cost
• +$0.9M/annual maintenance cost

• 36 34 minute running time, 5% faster
  – Running time estimate may be conservative
• 15’ ltd stop 10’ peak/15’ off-peak rapid
• Limited stop service began 2004

Weekday Ridership
• 3,900 rides 2010 7,100 rides 2030
• +1,100 rides over 2030 “baseline”
Preliminary Recommendations - Additional Corridors

• **East Seventh Street**
  – Ongoing study of parallel corridors in Gateway and Rush Line studies
  – Potential extension of *West Seventh* corridor to St. Paul’s near east side
  – Further study and stakeholder input needed

• Incorporate rapid bus mode in upcoming Alternatives Analysis studies for *Nicollet, Central Avenue, Lake Street, Robert Street.*

• Consider rapid bus on *Hennepin Avenue* within broader service restructuring for Southwest Transitway implementation.

• Grow ridership and continue transitway development connecting to *American Boulevard.* Plan for future rapid bus implementation.
Next Steps:

- **Implementation Activities**
  - Select corridor(s) to implement and secure funding
  - Design and engineering phases
    - System: branding, architecture, and vehicle design
    - Corridors: corridor-specific planning and design
Questions?

www.metrotransit.org/rapidbus

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