CHOOSING THE RIGHT TRANSIT MODE FOR YOUR COMMUNITY

Rail~Volution 2012
October 2012
Thomas Brennan
Principal
Transportation Outcomes – What Does Your Community Need?

Regional Connector

Urban Circulator

Neighborhood/Community Connector
What Other Goals are Important?

Catalyze Development

Provide Access to Job Centers

Preserve Open Space

Reduce Household Costs
What are Common Urban Transit Modes?

- Commuter Rail
- Metro / Light Metro
  - Grade Separated
  - Light Rail
  - Street Running
- Rapid Streetcar
- Bus Rapid Transit (Exclusive Lanes)
- Bus Rapid Transit / Rapid Bus (Shared Lanes)
- Frequent Bus
  - Streetcar Circulator
  - Rubber-Tired Circulator

- Regional Connector
- Neighborhood/Community Connector
- Urban Circulator
Why Invest in a Regional Connector?

Connect urban neighborhoods and adjacent communities...
Weighing the Benefits of a Regional Connector

Regional connectors provide fast, reliable service free of congestion...

...but grade separated construction is expensive and time consuming
What are Examples of Regional Connectors?

- Bay Area Rapid Transit (BART)
- LINK Light Rail (Puget Sound)
- UTA FrontRunner Commute Rail
- Bay Area Rapid Transit (BART)
Why Invest in a Neighborhood/Community Connector?

Connect urban neighborhoods and adjacent communities...

Phinney Ave N., Seattle

Metro Rapid, Sylmar to LA
Weighing the Benefits of a Community Connector

Neighborhood Connectors provide frequent and affordable local service...

...but often have limited priority and are subject to congestion.
What are Examples of Community Connectors?

- Rapid Ride Seattle, WA
- Interstate MAX Light Rail, Portland
Why Invest in an Urban Circulator?

Connect residents and visitors to retail, jobs, and regional transit...
Weighing the Benefits of an Urban Circulator

Urban Circulators can catalyze urban development...

...but mixed-traffic operations means slower operating speeds
What are Examples of Urban Circulators?

16th Street Mall Circulator (Denver)

Spokane, WA Electric Trolley Bus (planned)

Portland Streetcar
Keys to Making the Right Mode Choice for Your Community
Put the Passenger First

- Identify the market
- Match service attributes to passenger needs
  - Commuters
    - Value speed and reliability
    - More willing to navigate
  - Downtown Circulation
    - Value transparency, frequency
    - Short trips = acceptance of slow speeds
Match Service Attributes to Customer Needs

- **Speed and Reliability**
  - Corridor design to match performance goals

<table>
<thead>
<tr>
<th>Frequency of Access</th>
<th>Fully Segregated (Metro, Light Rail, BRT)</th>
<th>Partially Segregated (Rapid Bus, Rapid Streetcar)</th>
<th>Mixed Traffic (Local Bus, Streetcar)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&gt; 800 ft</td>
<td>15-30 mph</td>
<td>9-15 mph</td>
<td>6-10 mph</td>
</tr>
<tr>
<td>1 mile &lt;</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
Put the Transit System First

- Local Bus Corridor
- Frequent Transit Corridor
- FTN Node
- Rapid Transit Corridor
- Station/Exchange Node

Distances:
- 400 m
- 800 m

Graphics from TransLink Transit Oriented Communities Design Guidelines
Evaluate the Whole “Modal” Package

Viva BRT, York (Toronto)  
Canada

**frequency**  
*where to viva, when to viva.*

one fare, two services

**when to viva: service timings**

viva is so frequent, it doesn’t need a schedule. viva is simply ready when you are, operating 16 hours a day, 7 days a week.

when viva runs:  
weekdays: 5:00 am to midnight  
peak hours: 6:30 am to 9:00 am | 4:00 pm to 6:30 pm  
saturdays: 6:00 am to midnight | sundays: 8:00 am to midnight
Consider the Land Use Context

- Density is dominant predictor of demand
- Does your transit line
  - Support existing or planned development?
  - Shape future development?

Dense Living + Friendly Streets = Transit Lifestyle
Consider the Land Use Context

Different densities support different modes...

...mix of uses creates all day demand
Consider the Land Use Context

<table>
<thead>
<tr>
<th>Density</th>
<th>Transit Mode Characteristics</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Light Rail</td>
</tr>
<tr>
<td>30 housing / acre</td>
<td>50 emp. / acre</td>
</tr>
<tr>
<td>20 housing / acre</td>
<td>25 emp. / acre</td>
</tr>
<tr>
<td>20 housing / acre</td>
<td>25 emp. / acre</td>
</tr>
<tr>
<td>10 housing / acre</td>
<td>20 emp. / acre</td>
</tr>
<tr>
<td>5 housing / acre</td>
<td>15 emp. / acre</td>
</tr>
</tbody>
</table>

Graphics by Nelson\Nygaard
Consider the Cost

- **$95 M**: MAX Light Rail
- **$81 M**: Link Light Rail
- **$21 M**: Seattle Streetcar
- **$2 - 3 M**: Eugene BRT

Note: This graphic shows generalized cost comparisons for different modes based on projects from around the country.
Consider Life Cycle Costs/Benefits

- Modes with higher capital costs may have higher cost effectiveness over life of project
  - Segregated ROW increases value of scarce operating resources
  - Higher occupancy modes decrease per passenger cost
  - Rail vehicles have longer life & more flexibility to fit urban form

Rail cars and electric trolley buses have longer life spans than diesel buses

Streetcars fit dense urban environments such as transit hubs at grade
Determine a Funding Plan Early

- **FTA Programs**
  - New Starts
  - Small Starts
  - Very Small Starts

- **Local Funding**
  - Local or Regional Tax Measure
  - Local Improvement District
  - Tax Increment Financing
Sample *Mode Decision Framework* from the Seattle Transit Master Plan

City Goal Framework
- Environmental Sustainability
- Economic Vitality
- Safety & Health Benefits
- Livable Neighborhoods

Modes Being Considered
- **RUBBER-TIRE**
  - Local Bus
  - Express Bus
  - BRT
- **RAIL**
  - Streetcar Urban Circulator
  - Streetcar Rapid Transit
  - Streetcar Local Transit
  - Light Rail

Modal Choice Factors
- Passenger Experience
- System Performance
- Energy Use/Emissions Reduction
- Land Use/Economic Impacts
- Safety/Health/Livability Benefits
- Cost-Effectiveness

Passenger Experience Measures
- Speed
- Reliability
- Ride Quality/Comfort
- Multimodal Integration
- Access (distance to stops and quality)
- Accessibility
- Stop/Station Amenities
- Ease of Understanding

System Performance Measures
- Capacity
- Connectivity
- Speed
- Reliability
- Traffic/Parking Impacts

Energy Use/Emissions Measures
- Operational Energy
- Use/Carbon Emissions
- Lifecycle Energy
- Use/Carbon Emissions
- Land Use Impacts
- Potential to Reduce Vehicle Miles Traveled (VMT)

Land Use/Economic Measures
- Ability to Shape Development
- Ability to Shape Pedestrian Environment
- Land Value Benefits/Impacts
- Tax Base
- Parking Impacts

Safety/Health/Livability Measures
- Collisions
- Pedestrian Conflicts/Safety
- Bicycle Conflicts/Safety
- Air Quality
- Noise
- "Placemaking" Potential

Cost Measures
- Operating Cost
- Capital Cost
- Total (Annualized Operating and Capital) Cost
- External (Social) Costs

http://www.seattle.gov/transportation/tmp_bbook.htm
Sometimes the choices are obvious...