Route 1 Multimodal Alternatives Analysis

Public Meeting #2
March 26, 2014
## Agenda

<table>
<thead>
<tr>
<th>Activity</th>
<th>Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Welcome</td>
<td>6:00 – 6:15 pm</td>
</tr>
<tr>
<td>Presentation, Q&amp;A</td>
<td>6:15 – 7:00 pm</td>
</tr>
<tr>
<td>Share your ideas</td>
<td>7:00 – 8:00 pm</td>
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</tbody>
</table>
1. What is the Route 1 Multimodal Alternatives Analysis?
Multimodal Alternatives Analysis

An **alternatives analysis** is a study that examines different options to address a transportation problem.

**Multimodal** means that a range of different transportation types will be evaluated.
Purpose and Need

Purpose:
Provide improved performance for transit, bicycle and pedestrian, and vehicular conditions and facilities along the Route 1 corridor that support long-term growth and economic development.

Needs:
• Attractive and competitive transit service
• Safe and accessible pedestrian and bicycle access
• Appropriate level of vehicle accommodation
• Support and accommodate more robust land development
## Project goals

**GOAL 1:** Expand attractive multimodal travel options to improve local and regional mobility

**GOAL 2:** Improve safety; increase accessibility

**GOAL 3:** Increase economic viability and vitality of the corridor

**GOAL 4:** Support community health and minimize impacts on community resources
2. What is the context for this study?
Project Corridor

Connection to Huntington Metro

Route 1

Route 123/ Woodbridge VRE

Route 1 Multimodal Alternatives Analysis

VDOT
Planned Improvements

- **High Capacity Transit Proposed**
- **Interchange Improvements to Begin Construction in 2015**
- **Widen Route 1 to Achieve Consistent 6-Lane Road Cross Section and Expand Median**
- **VDOT Environmental Assessment 6-Lane Road Cross Section with Bicycle and Pedestrian Paths**
Other Related Studies

- 2035 & 2040 Constrained Long Range Plan (TPB, 2013)
- Fairfax County Transit Network Plan (Fairfax, ongoing)
- Momentum (Metro, 2013)
- Regional Transit System Plan (Metro, 2014)
- Fort Belvoir Master Plan (DOD, ongoing)
- Route 1 Transit Centers Plan (Fairfax, ongoing)
The Life of a Corridor Transportation Plan

Transportation System Planning → Identify Need for Corridor Investment

Multimodal Alternatives Analysis

We are here

Recommend and Adopt Locally Preferred Alternative

Environmental Documentation and Concept Engineering

Implementation Plan and Funding Commitments

Engineering → Construction
Outcome of the Current Study

• A recommended multimodal transportation plan for implementation in the Route 1 corridor

• The recommended plan will have three elements:
  – **Transit**: Mode and alignment
  – **Vehicular**: Number of automobile travel lanes
  – **Bike/Ped**: Facilities and location
3. What have we learned from you to date?
What We’ve Learned From You: Survey

• The most important transportation needs on Route 1 are **public transit** and **improved traffic flow**

• The most important improvements to **encourage walking** on Route 1:
  – More sidewalks
  – More destinations within walking distance
  – Marked crosswalks on busy streets

• The most important improvements to **encourage biking** on Route 1:
  – Bike paths separated from car traffic (#1 rating)
  – Bike lanes on Route 1 (#2 rating)
  – More destinations in my neighborhood
Key Themes:

• **Create destinations** on Route 1, not a throughway

• Understand how the Route 1 transit service connects to the region, not just destinations on the corridor

• Ensure that **Fort Belvoir is a key participant** as we look to the future. The travel impacts from Ft. Belvoir are very significant

• Create **safe pedestrian and bicycle conditions**, also ADA compliance

• Factor in stream protection and **environmental quality**
Outreach Methods

- Committee Meetings (technical, elected, community)
- Public Meetings
- Social Media
- News Ads and Press Release
- Flyers and Fact Sheets
- Metro Station and Bus Stop Outreach and Posters
- Community Event Booths
- Bilingual
- On-Line and On-Corridor
- Targeted Efforts to Engage Diverse Populations
Goals of Today’s Meeting

**Key takeaways:**
- Alternatives to be evaluated
- Land use and transportation planning for the corridor are linked
- Potential implementation sequence for corridor improvements

**We want to feedback from you on:**
- The alternatives
- Most important evaluation factors
4. How have participant input and technical analysis shaped the alternatives?
Arriving at Recommended Multimodal Alternative: How do we choose one?

Key Evaluation Factors:
- Transit system performance
- Bicycle and pedestrian network improvements
- Traffic operations
- Implementation/ability to phase project
- Financial feasibility
- Capacity to meet current and future needs
- Right-of-Way and impacts on community resources

Identify goals and objectives
Develop evaluation factors
Perform technical analysis
Evaluate alternatives
Step 1: Identify the best transportation options

Range of Alternatives
- TRANSPORT
  - METORAIL
  - MONORAIL
  - LIGHT RAIL
  - BUS RAPID TRANSIT
  - ENHANCED (RAPID) BUS
  - STREETCAR
  - EXPRESS (SKIP-STOP) BUS
  - LOCAL BUS

Initial Alternatives
- VEHICULAR
  - EXPANDED LANES
  - CONVERTED LANE
  - CONSISTENT VEHICLE LANES
  - EXISTING VEHICLE LANES

Refined Alternatives
- BICYCLE AND PEDESTRIAN
  - MINIMUM
  - OPTIMAL STANDARD
  - ENHANCED BUFFERED
  - ENHANCED MULTIUSE PATH
  - ENHANCED SHARED

Route 1 Multimodal Alternatives Analysis

Office of Intermodal Planning and Investment
Step 2: Combine options into multimodal alternatives

Multimodal Alternatives for Detailed Evaluation

Detailed Evaluation

Recommended Alternative

Complete Technical Analysis + Evaluate Alternatives against Goals and Objectives
Vehicular Travel Lanes Alternatives

- **Existing Lanes**
- **Expanded Lanes:**
  Three or four lanes, depending on location along the corridor
- **Converted Lanes**
- **Consistent Lanes**

**Key Evaluation factors:**
- Level of Service (LOS)
- Volume-to-Capacity (V/C)
- Right of Way (ROW) impacts

**Other, qualitative factors:**
- Maintaining existing speeds
- Minimizing lane transitions
- Reducing pedestrian crossing distance/time
Consistent, 6 vehicular lanes along the entire corridor

1. Recommendation from prior studies and plans (VDOT and Fairfax County Comprehensive Plan)

2. Technical evaluation based on traffic and right-of-way analysis

3. Confirmed findings with VDOT
Bicycle and Pedestrian Alternatives

Sidewalk + bike lane

Sidewalk + bus/bike lane

Sidewalk + buffered bike lane

Multiuse path (bike and ped)

Key Evaluation factors:
- Safety and comfort for cyclists of all abilities
- ROW impacts

Measures and factors:
- Bicycle compatibility index and Bicycle Level of Service
- Possible to implement incrementally / flexible over time
Bicycle and Pedestrian Recommendation

10-foot Multiuse Path (both sides of street)

1. Technical evaluation based on trade-offs among accessibility, safety, and required right-of-way

2. Note: implementation of recommended section varies along corridor
Transit Evaluation: Overview

1. Screened a wide range of transit alternatives based on basic project requirements to arrive at four initial alternatives.

2. Analyzed **four transit alternatives** to identify the most promising for further evaluation.
Initial Alternatives

Four Initial Transit Alternatives:

- Enhanced Bus
- Bus Rapid Transit (BRT)
- Light Rail Transit (LRT)
- Metrorail
How do we refine the initial alternatives for further evaluation?

1. Quantitative Key Indicators:
   • Ridership
   • Estimated Capital Cost
   • Estimated O&M Cost
   • Cost per Rider

2. Land Use Analysis
Four Refined Alternatives for Further Evaluation

Alternative 1: Bus Rapid Transit 1- Curbside

Alternative 2: Bus Rapid Transit 2- Median

Alternative 3: Light Rail Transit

Alternative 4: Metrorail- BRT Hybrid
Alternative 1: Bus Rapid Transit 1 – Curbside

BRT operates in dedicated curbside lanes from Huntington to Pohick Road North.
Alternative 1: Bus Rapid Transit 1 – Curbside

BRT operates in mixed traffic between Pohick Road North and Woodbridge.
Alternative 2: Bus Rapid Transit 2 - Median

BRT operates in median in dedicated lanes in Fairfax County; transitions to mixed traffic in Prince William County.
Alternative 3: Light Rail Transit (Median)

Light Rail operates in median in dedicated lanes for entire corridor
Alternative 4: Metrorail- BRT Hybrid

Metrorail operates underground from Huntington to Hybla Valley; Transfer to BRT service at Hybla Valley to Woodbridge
Alternative 4: Metrorail- BRT Hybrid

BRT operates in dedicated lanes from Hybla Valley, and transitions to mixed traffic in Prince William County.
## Key Indicators: Refined Transit Alternatives

<table>
<thead>
<tr>
<th></th>
<th>Bus Rapid Transit 1- Curbside</th>
<th>Bus Rapid Transit 2- Median</th>
<th>Light Rail Transit- Median</th>
<th>Metrorail/BRT Hybrid</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Average Weekday Ridership (2035)</strong></td>
<td>15,200</td>
<td>16,600</td>
<td>18,400</td>
<td>26,500* (BRT 10,600; Metro 22,900)</td>
</tr>
<tr>
<td><strong>Conceptual Capital Cost</strong></td>
<td>$500 M</td>
<td>$780 M</td>
<td>$1.20 B</td>
<td>$1.57 B</td>
</tr>
<tr>
<td><strong>Annual O&amp;M Cost</strong></td>
<td>$18 M</td>
<td>$17 M</td>
<td>$24 M</td>
<td>$31 M</td>
</tr>
<tr>
<td><strong>Cost Per Rider</strong></td>
<td>$12</td>
<td>$15</td>
<td>$21</td>
<td>$18</td>
</tr>
</tbody>
</table>

* Corridor ridership, excluding transfers between Metrorail and BRT portions

** Assumes Annualized Capital Cost + Operating Costs divided by total boardings (2035)
Note: FTA Cost Effectiveness measure averages current (2015) and horizon year (2035) costs and boardings
Arriving at a Preferred Alternative

Evaluate the Alternatives based on:

• How well does each alternative address the Project Goals and Objectives?

• Which alternatives are most competitive for Federal funding?
Example Measures: Goals and Objectives

- Ridership
- Travel time
- Safe bike/ped facilities
- Traffic
- Capital and operating costs

- Cost effectiveness
- Ability to spur economic development
- Impacts on Right of Way and environmental resources
- Decrease in Vehicle Miles Traveled
Federal Transit Administration: New Starts Small Starts Funding Evaluation Criteria

**Overall Project Rating**

- **Project Justification**
  - Mobility Improvements
  - Environmental Benefits
  - Congestion Relief
  - Cost-Effectiveness
  - Economic Development
  - Land Use

- **Local Financial Commitment**
  - Current Condition
  - Commitment of Funds
  - Reliability/Capacity

**Overall Project Rating**

- 50%
- 50%
5. How does land use relate to the alternatives?
Transportation Investment helps to increase economic viability and vitality of the corridor

Population growth + Employment growth = Demand for new residential units and commercial space

Land use planning + Transportation investment = Support high quality community development
Example: Cleveland, OH (Bus Rapid Transit)

- Pedestrian-oriented, higher concentration development
- Larger tax base
- Increased travel demand
Example: Charlotte, NC (Light Rail)

- Pedestrian-oriented, higher concentration development
- Larger tax base
- Increased travel demand
Example: Arlington, VA (Metrorail)

- Pedestrian-oriented, higher concentration development
- Larger tax base
- Increased travel demand
Land Use: Three Growth Scenarios

Scenario 1: “Base Land Use Scenario” = 2035 MWCOG regional forecast

Scenario 2: What is a reasonable growth expectation for a corridor that invests in high-quality transit (BRT or LRT)?

Scenario 3: How much do population and employment need to increase to achieve density levels typically supportive of Metrorail?

Beacon Hill: Bird’s Eye View Today

Source: Bing Maps
Beacon Hill: Land Use Scenario One (2035 COG Projection)
Beacon Hill: Land Use Scenario One
(2035 COG Projection)
Beacon Hill: County Comprehensive Plan
(Envisioned “build-out” level of development)
Beacon Hill Station: Scenario Three
(Growth and development that would support Metrorail)
Beacon Hill: Bird’s Eye View Today
Beacon Hill: Scenario Two Bird’s Eye View
6. How do communities fund major transportation investments?
Comparison of Route 1 Alternatives with Other Regional Transit Projects

**Capital Cost**

$3 Billion
- Silver Line Phase 1 (Metro) $2.9 B
- MDOT Purple Line (LRT) $2.4 B

$2 Billion
- Alternative 4- Metro/BRT Hybrid ($1.6 B)
- Alternative 3- LRT ($1.2 B)

$1 Billion
- Alternative 2 BRT - Median ($750 M)
- Alternative 1 BRT - Curbside ($500 M)

$500 Million
- Norfolk Tide (LRT) $316 M

$50 Million
- Broad Street (BRT) $50 M
Project Funding Examples: MDOT Purple Line

16-mile / 21-station LRT line along exclusive and shared ROW
Operation expected to begin late 2020
$2.4 billion

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<thead>
<tr>
<th>Funding Source</th>
<th>Type</th>
<th>Share (YOE)</th>
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<tbody>
<tr>
<td>Federal</td>
<td>New Starts</td>
<td>$0.9 B (38%)</td>
</tr>
<tr>
<td>Regional</td>
<td>n/a</td>
<td>-</td>
</tr>
<tr>
<td>State</td>
<td>MD Transportation Trust Fund (TTF)</td>
<td>$0.7 B (28%)</td>
</tr>
<tr>
<td>Other</td>
<td>-Federal TIFIA with financing by private sector</td>
<td>$0.7 B (31%)</td>
</tr>
<tr>
<td></td>
<td>-Private equity &amp; borrowed funds</td>
<td>$0.1 B (3%)</td>
</tr>
<tr>
<td>Total Cost</td>
<td></td>
<td>$2.4 B</td>
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</table>
Project Funding Examples: MWAA Silver Line Phase 1 & Phase 2

Phase 1: 11.7 miles / 5 stations … Phase 2: 11.4 miles / 6 stations + yard
Phase operation expected to begin in 2014; Phase 2 in 2018
$5.5 Billion

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Type</th>
<th>Phase I (YOE)</th>
<th>Phase II (YOE)</th>
<th>Total Share (YOE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>New Starts</td>
<td>$900 M</td>
<td></td>
<td>$900 M (16%)</td>
</tr>
<tr>
<td>State</td>
<td>DRPT</td>
<td>$252 M</td>
<td>$323 M</td>
<td>$575 M (11%)</td>
</tr>
<tr>
<td>Local</td>
<td>Fairfax County</td>
<td>$400 M</td>
<td>$484 M</td>
<td>$884 M (16%)</td>
</tr>
<tr>
<td></td>
<td>Loudoun County</td>
<td></td>
<td>$264 M</td>
<td>$264 M (5%)</td>
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<tr>
<td>Other</td>
<td>MWAA (Aviation)</td>
<td></td>
<td>$225 M</td>
<td>$225 M (4%)</td>
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<tr>
<td></td>
<td>MWAA (Dulles Toll Road)</td>
<td>$1.4 B</td>
<td>$1.3 B</td>
<td>$2.6 B (48%)</td>
</tr>
<tr>
<td>Total Cost</td>
<td></td>
<td>$2.9 B</td>
<td>$2.6 B</td>
<td>$5.5 B</td>
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</table>
## Project Funding Examples: Richmond Broad Street Rapid Transit

7.6-mile / 13-station BRT line on existing streets
Operation expected to begin 2017

$50 Million

<table>
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<tr>
<th>Funding Source</th>
<th>Type</th>
<th>Share (YOE)</th>
</tr>
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<tbody>
<tr>
<td>Federal</td>
<td>Small Starts</td>
<td>$25 M (50%)</td>
</tr>
<tr>
<td>State</td>
<td>DRPT</td>
<td>$17 M (34%)</td>
</tr>
<tr>
<td>Local</td>
<td>City</td>
<td>$8 M (15%)</td>
</tr>
<tr>
<td></td>
<td>County</td>
<td>$0.4 M (1%)</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td><strong>$50 M</strong></td>
<td></td>
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</table>
Project Funding Examples: Norfolk TIDE Light Rail

7.4-mile / 13-station LRT line on rail right of way and existing streets
Operation initiated 2011
$316 Million

<table>
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<tr>
<th>Funding Source</th>
<th>Type</th>
<th>Share (YOE)</th>
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<tr>
<td>Federal</td>
<td>FTA New Starts</td>
<td>$129 M (41%)</td>
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<td></td>
<td>Other Federal</td>
<td>$74 M (23%)</td>
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<td></td>
<td>Total Federal</td>
<td>$200M (64%)</td>
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<tr>
<td>Regional</td>
<td>n/a</td>
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<tr>
<td>State</td>
<td>Commonwealth of Virginia</td>
<td>$62 M (20%)</td>
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<td>Local</td>
<td>City of Norfolk</td>
<td>$54 M (17%)</td>
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<td><strong>Total Cost</strong></td>
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<td><strong>$316 M</strong></td>
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7. What are the next steps?
Stepping back – Purpose of the study:

- Recommend a program of road, bike and pedestrian improvements, and a high-quality transit alternative to be carried forward for implementation

- Consider project funding options

- Determine the appropriate level of environmental documentation
Continued Solutions: This study will serve as a tool to:

- Identify short-term and long-range improvements along Route 1
- Plan infrastructure that supports future growth in the corridor
- Define an ultimate Route 1 concept configuration
- Better define how Route 1 fits into the regional transportation plan
- Define multi-modal approach for Route 1 and seek out funding and implementation opportunities
8. We need your feedback!
APPENDIX
### Vehicular Lane Evaluation

<table>
<thead>
<tr>
<th>Alternative</th>
<th>Intersection Performance</th>
<th>Right of Way Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Expanded</td>
<td>No intersections with LOS E or worse</td>
<td>Significant ROW impacts</td>
</tr>
<tr>
<td>Consistent</td>
<td>3 intersections with LOS E or worse</td>
<td>Moderate ROW impacts</td>
</tr>
<tr>
<td>Converted</td>
<td>10 intersections with LOS E or worse</td>
<td>Few ROW impacts</td>
</tr>
</tbody>
</table>

**Other, qualitative factors:**
- Desire to maintain existing speeds (45 mph)
- Minimize lane transitions that contribute to travel delays
- Minimize pedestrian crossing distance/time
## Bicycle and Pedestrian Evaluation

<table>
<thead>
<tr>
<th></th>
<th>In-street bike lane and sidewalk</th>
<th>Shared bus/bike lane and sidewalk</th>
<th>Buffered bike lane and sidewalk</th>
<th>Multiuse path</th>
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<tbody>
<tr>
<td><strong>Legend for ratings:</strong></td>
<td></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>![Up arrow]</td>
<td>![Up arrow]</td>
<td>![Up arrow]</td>
<td></td>
</tr>
<tr>
<td>Improves walk &amp; bike access to destinations</td>
<td>![Up arrow]</td>
<td>![Up arrow]</td>
<td>![Up arrow]</td>
<td></td>
</tr>
<tr>
<td>Provides access along full corridor</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Provides safety and comfort given high auto speeds and volumes</td>
<td>![Down arrow]</td>
<td>![Down arrow]</td>
<td>![Up arrow]</td>
<td></td>
</tr>
<tr>
<td>In-street bike lane not recommended for 45 mph+</td>
<td>![Down arrow]</td>
<td>![Down arrow]</td>
<td>![Up arrow]</td>
<td></td>
</tr>
<tr>
<td>Requires additional right-of-way</td>
<td>![Down arrow]</td>
<td>![Up arrow]</td>
<td>![Down arrow]</td>
<td></td>
</tr>
<tr>
<td>Requires some new ROW</td>
<td>![Down arrow]</td>
<td>![Up arrow]</td>
<td>![Down arrow]</td>
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</tbody>
</table>

*Note: The legend indicates whether the rating compares more favorably (up arrow) or less favorably (down arrow).*
Transportation Investment helps to increase economic viability and vitality of the corridor

Population growth + Employment growth = Demand for new residential units and commercial space

Land use planning + Transportation investment = Support high quality community development
Summary of Land Use Scenarios

- **Scenario One** (2035 COG projections)
  Compare transportation alternatives in light of projected growth levels

- **Scenario Two** (growth above 2035 projections)
  What is a reasonable growth expectation for a corridor that invests in high-quality transit (BRT or LRT)?

- **Scenario Three** (Metrorail supportive)
  How much do population and employment need to increase to achieve density levels typically supportive of Metrorail?
Scenario 1

- **Scenario One**  
  (2035 COG projections)
  
  Compare transportation alternatives in light of projected growth levels
Scenario 2

- **Scenario Two** (growth above 2035 projections)

What is a reasonable growth expectation for a corridor that invests in high-quality transit (BRT or LRT)?
Scenario 3

- **Scenario Three (Metrorail supportive)**
  - How much do population and employment need to increase to achieve density levels typically supportive of Metrorail?
Beacon Hill: Land Use Scenario One
(2035 COG Projection)
Beacon: Land Use Scenario Two (additional growth increment)
Beacon Hill: County Comprehensive Plan
Scenario 3: Beacon Hill Station
Study Schedule

- **2013**
  - JUN: Kick Off
  - JUL: Data Collection
  - AUG: Purpose and Need
  - SEPT: Multimodal Alternatives Development & Evaluation
    - Traffic Impact Analysis and Travel Demand Modeling
  - OCT: Land Use Assessment and Economic Impact Analysis
  - NOV: Funding Analysis
  - DEC:

- **2014**
  - JAN: Public Meeting
  - FEB: Public Meeting
  - MAR: Public Meeting
  - APR: We are here
  - MAY:
  - JUN:
  - JUL: Recommend LPA

Route 1 Multimodal Alternatives Analysis
## Project Justification Criteria

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Economic Development</td>
<td>Transit supportive plans and policies; plans to preserve affordable housing</td>
</tr>
<tr>
<td>Mobility Improvements</td>
<td>Total project boardings; transit-dependent ridership is weighted 2x</td>
</tr>
<tr>
<td>Cost Effectiveness</td>
<td>Annualized cost per annual linked trip on the project</td>
</tr>
<tr>
<td>Land Use</td>
<td>Quantitative analysis of station area development, proportion of legally binding affordability</td>
</tr>
<tr>
<td>Environmental Benefits</td>
<td>Environmental benefits are monetized and compared to the annualized costs</td>
</tr>
<tr>
<td>Congestion Relief</td>
<td>Project sponsors will receive a medium rating until further guidance is released</td>
</tr>
</tbody>
</table>

## Financial Commitment Criteria

<table>
<thead>
<tr>
<th>Category</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current Condition</td>
<td>(capital and operating)</td>
</tr>
<tr>
<td>Commitment of Funds</td>
<td>(capital and operating)</td>
</tr>
<tr>
<td>Reasonableness of Assumptions and Financial Capacity</td>
<td>(capital and operating)</td>
</tr>
</tbody>
</table>
# Evaluation Criteria: Project Goals and Objectives

<table>
<thead>
<tr>
<th>Goals and Objectives</th>
<th>Multimodal Measures</th>
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<tbody>
<tr>
<td><strong>GOAL 1: Expand attractive multimodal travel options to improve local and regional mobility</strong></td>
<td></td>
</tr>
<tr>
<td>Increase transit ridership</td>
<td>Transit ridership</td>
</tr>
<tr>
<td>Improve transit to reduce travel times</td>
<td>Transit travel time, Automobile travel time</td>
</tr>
<tr>
<td>Increase transportation system productivity</td>
<td>Total person throughput</td>
</tr>
<tr>
<td>Improve bicycle and pedestrian networks</td>
<td>Continuous sidewalk and bike pathway</td>
</tr>
<tr>
<td>Integrate with other transit service</td>
<td>Connections to existing and planned transit</td>
</tr>
<tr>
<td><strong>GOAL 2: Improve safety; increase accessibility</strong></td>
<td></td>
</tr>
<tr>
<td>Provide accessible pathways</td>
<td>Continuous sidewalk and bike pathway</td>
</tr>
<tr>
<td>Reduce modal conflicts</td>
<td>Separate facilities for separate modes</td>
</tr>
<tr>
<td>Improve pedestrian crossings</td>
<td>Average pedestrian delay to cross, Adequate pedestrian refuges</td>
</tr>
<tr>
<td>Maintain traffic operations</td>
<td>Traffic LOS</td>
</tr>
<tr>
<td><strong>GOAL 3: Increase economic viability and vitality of the corridor</strong></td>
<td></td>
</tr>
<tr>
<td>Support higher activity levels</td>
<td>Accommodate 2035 density (growth scenarios)</td>
</tr>
<tr>
<td>Investments are financially feasible to construct and operate</td>
<td>Project costs, cost effectiveness, Allows incremental implementation</td>
</tr>
<tr>
<td>High-capacity transit facilities at appropriate locations</td>
<td>Serves low-income residents, value added to adjacent properties</td>
</tr>
<tr>
<td><strong>GOAL 4: Support community health and minimize impacts on community resources</strong></td>
<td></td>
</tr>
<tr>
<td>Minimize negative impacts to the natural environment</td>
<td>ROW impacts on environmental and historic resources</td>
</tr>
<tr>
<td>Contribute to improvements in regional air quality</td>
<td>Change in VMT</td>
</tr>
<tr>
<td>Increase opportunities for bicycling and walking</td>
<td>Continuous sidewalk and bike pathway</td>
</tr>
</tbody>
</table>
Project Funding Examples: Lynx Blue Line Extension Charlotte, NC

9.3-mile / 11-station LRT line along exclusive ROW
Operation expected to begin 2017
$1.16 billion

<table>
<thead>
<tr>
<th>Funding Source</th>
<th>Type</th>
<th>Share (YOE)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Federal</td>
<td>New Starts</td>
<td>$580 M (50%)</td>
</tr>
<tr>
<td>Regional</td>
<td>Charlotte Area Transit System</td>
<td>$250 M (26%)</td>
</tr>
<tr>
<td>State</td>
<td>NC DOT</td>
<td>$299 M (26%)</td>
</tr>
<tr>
<td>Local</td>
<td>City of Charlotte City/In-kind ROW</td>
<td>$18 M (2%) $13 M (1%)</td>
</tr>
<tr>
<td><strong>Total Cost</strong></td>
<td></td>
<td><strong>$1.16 Billion</strong></td>
</tr>
</tbody>
</table>