North Shore Alternatives Analysis
September 2011
Agenda

- Study Area
- Study Process and Progress to Date
- Long List Alternatives Considered
  - Alignment and Stations
  - Evaluation Criteria from Long List to Short List
  - Summary of Long List Alternative Analysis
  - Cost Refinements since February
- Short List of Alternatives
- Next Steps
Study Area

North Shore Alternatives Analysis

MTA New York City Transit
Study Process

Define Project Purpose, Need, Goals and Objectives → Fatal Flaw Screening → Long List Screening → Short List Screening → Select LPA and Complete Alternatives Analysis → We are here

Project Goals:
1) Improve Mobility
2) Preserve and Enhance the Environment, Natural Resources, and Open Space
3) Maximize Limited Financial Resources for the Greatest Public Benefit

Environmental Impact Study → Preliminary Engineering → Final Design Construction Operation
Activities to Date

- Defined Project Purpose, Need, Goals and Objectives
- Identified potential alternatives
- Fatal Flaw Screening eliminated Ferry Alternative
- Evaluated remaining list of alternatives (Long List)
- Results presented to public in February 2011
- Re-evaluated light rail maintenance options
- Alternatives retained for Short List:
  - Transportation Systems Management (TSM)
  - Electric Light Rail to West Shore Plaza
  - Busway to West Shore Plaza
Light Rail Alternative

Alignments & Stations

New York City Transit

North Shore Alternatives Analysis
Busway Alternative

Alignments & Stations
Evaluation Criteria

- **Goal 1: Improve Mobility**
  - Total New Stations Served
  - Provide transit access for the transit-dependent and transit-reliant
  - Travel time Arlington to St. George
  - Provide improved transit access to the Teleport

- **Goal 2: Preserve and Enhance the Environment, Natural Resources, and Open Space**
  - Number of potential impacts to wetlands (avg. acres)
  - Potential hazardous material sites impacted or acquired (avg. acres)
  - Number of residential/business property impacts
  - Number of potential impacts to parklands (avg. acres)
  - Level of emissions of transit mode
  - Potential adverse impacts to waterfront

- **Goal 3: Maximize Limited Financial Resources for the Greater Public Benefit**
  - Estimated capital cost
  - Net annual operating and maintenance costs
  - Compatibility with NYCT equipment and operations
  - Make use of existing capacity in ROW and infrastructure
  - Implementation Period
## Comparison of Alternatives

<table>
<thead>
<tr>
<th>Alternative</th>
<th># of Stations</th>
<th>Travel Time</th>
<th>Potential Environmental Impacts</th>
</tr>
</thead>
<tbody>
<tr>
<td>Transportation Systems Management (TSM)</td>
<td>All Existing</td>
<td>N/A</td>
<td>Least impacts</td>
</tr>
<tr>
<td>Heavy Rail to Arlington</td>
<td>9</td>
<td>15 min.</td>
<td>Some impacts</td>
</tr>
<tr>
<td>Electric Light Rail to Arlington</td>
<td>9</td>
<td>13 min.</td>
<td>Some impacts</td>
</tr>
<tr>
<td>Diesel Light Rail to Arlington</td>
<td>9</td>
<td>15 min.</td>
<td>Some impacts</td>
</tr>
<tr>
<td>Electric Light Rail to West Shore Plaza</td>
<td>15</td>
<td>21 min.</td>
<td>Some impacts</td>
</tr>
<tr>
<td>Diesel Light Rail to West Shore Plaza</td>
<td>15</td>
<td>22 min.</td>
<td>Most impacts</td>
</tr>
<tr>
<td>Busway to West Shore Plaza</td>
<td>8 new on busway w/ existing stops beyond busway</td>
<td>23 min.</td>
<td>Some impacts</td>
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</table>
# Costs: Revised O&M and Capital

<table>
<thead>
<tr>
<th></th>
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</thead>
<tbody>
<tr>
<td>Transp. Systems Management (TSM)</td>
<td>$5.2m</td>
<td>-$1.1m</td>
<td>$37m</td>
<td>No change</td>
</tr>
<tr>
<td>Heavy Rail to Arlington</td>
<td>$9.8m</td>
<td>No change</td>
<td>$474m</td>
<td>+$9m</td>
</tr>
<tr>
<td>Electric Light Rail to Arlington</td>
<td>$5.8m</td>
<td>No change</td>
<td>$477m</td>
<td>-$45m</td>
</tr>
<tr>
<td>Diesel Light Rail to Arlington</td>
<td>$8.7m</td>
<td>No change</td>
<td>$434m</td>
<td>-$45m</td>
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<tr>
<td>Electric Light Rail to WSP</td>
<td>$9.5m</td>
<td>No change</td>
<td>$581m</td>
<td>-$45m</td>
</tr>
<tr>
<td>Diesel Light Rail to WSP</td>
<td>$13.7m</td>
<td>No change</td>
<td>$514m</td>
<td>-$45m</td>
</tr>
<tr>
<td>Busway to WSP</td>
<td>$6.1m</td>
<td>-$1.0m</td>
<td>$352m</td>
<td>No change</td>
</tr>
</tbody>
</table>
• Capital costs for the light rail alternatives originally reflected construction of a new full maintenance facility in Arlington.

• Upon review, modifications are possible to the existing Staten Island Railway shop (Clifton) so light rail vehicles can be maintained there.

• The modifications are less costly than a full shop.

• Arlington would still need to have a car wash, body shop, and fueling for diesel light rail.
Costs: Present Value Analysis

- Present value analysis is a way to add and compare costs that will be incurred at different points in time.
- Allows consideration of long-term total costs vs. short-term capital costs.
- For analysis purposes, assumed capital costs until 2020 and then operating and maintenance costs for 20 years.

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## Summary of Short List Alternatives

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- TSM: Required by federal guidelines to serve as a baseline
- Electric Light Rail: Offers one-seat ride from St. George to West Shore Plaza in mixed traffic on South Ave and a dedicated transitway along the north shore. May be more compatible than heavy rail with potential plans for connecting services.
- Busway: Offers one-seat ride from St. George to West Shore Plaza. Flexible destinations as multiple routes would use busway. Lowest cost among the transitway alternatives.
## Time Savings for Riders

### LRT and Busway Alternatives

### Travel Time Savings Comparisons (min)

<table>
<thead>
<tr>
<th>Trip Origin (to St. George)</th>
<th>Current Bus Travel Time</th>
<th>TSM Travel Time</th>
<th>Busway Travel Time</th>
<th>LRT Travel Time</th>
</tr>
</thead>
<tbody>
<tr>
<td>Arlington</td>
<td>39</td>
<td>38</td>
<td>14</td>
<td>13</td>
</tr>
<tr>
<td>WSP</td>
<td>56</td>
<td>55</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>Port Richmond</td>
<td>16</td>
<td>16</td>
<td>9</td>
<td>8</td>
</tr>
<tr>
<td>Manor Rd/Forest Ave</td>
<td>25</td>
<td>25</td>
<td>13</td>
<td>24</td>
</tr>
</tbody>
</table>

- TSM alternative offers Traffic Signal Prioritization (TSP) at intersections resulting in 5-second increments of time savings. Limited overall impact for riders.
- Busway riders would save 43-64% on travel time from these study area locations.
- LRT riders would save 50-67% on travel time from these study area locations. Riders will require transfers from non-alignment locations, such as Manor/Forest to LRT.
Next Steps

Short List Screening: Further Analysis of Short List Alternatives

- Ridership Forecasts
- Refinement of Service Plans
- Traffic Analysis around station sites and on South Avenue
- Supplemental Environmental Data Collection
- Conceptual Engineering
- Cost Refinements
Join the project mailing list:

MTA New York City Transit
ATTN: North Shore Alternatives Analysis Analysis
2 Broadway, 17th Floor, Room A17.70
New York, NY 10004

or Email: NSAA@Zetlin.com