Potomac Yard Metrorail Station

Location Alternatives Analysis

Potomac Yard Design Advisory Committee
April 21, 2009
Reserved Location

Potomac Yard Metrorail Station Reservation
* Some of this area yet to be transferred from PYD to City
Site Constraints

Wetlands

Potomac Greens

Park Service

CSX Tracks
National Parks Service Easement

CITY OF ALEXANDRIA*
NATIONAL PARK SERVICE

* Some of this area yet to be transferred from PYD to City
FAA Height Restrictions
Walkshed

Approximately 50% of walkshed cannot be developed
Station Design Requirements

- 600 foot long platform (8 car train length)
- 730 feet of level, straight track at the station
- Maximum grade is 4% (4 ft of rise for 100 ft of travel)
- Curved track to accommodate 45 mph train speed
- Redundant elevators for ADA accessibility
- Double cross-over (‘x’ shaped track) for operational flexibility
- Ancillary space for operational requirement
Station Location Alternatives
Alternative A (Reserved Site)
Alternative A

- Side-platform station
- 3.5 million sf of potential development within ¼ mile walkshed, 10.0 million within ½ mile
- Most accessible from east side, access from main market area via pedestrian bridge across CSX
- Requires the least modification of existing facilities
- In-line construction requiring extensive night work and impact to Potomac Greens residents
- Capital costs approximately $140 to $180 million
Alternative A (Reserved Site)
Land Use Analysis
Alternative A (Reserved Site)
Land Use Analysis
Alternative A (Reserved Site)
Land Use Analysis

Total
Undevelopable Area = ~77%
Alternative A (Reserved Site)

Land Use Analysis

¼ Mile
Office: 49%
Residential: 34% (775 Units)
Other: 17%
Total: 3.5 Million Sq. Ft.

½ Mile (excludes ¼ Mile)
Office: 23%
Residential: 66% (2953 Units)
Other: 11%
Total: 6.6 Million Sq. Ft.

Total
Office: 32%
Residential: 55% (3728 Units)
Other: 13%
Total: 10.1 Million Sq. Ft.
Alternative A (Reserved Site)

Land Use Analysis

¼ Mile
Office: 49%
Residential: 34% (775 Units)
Other: 17%
Total: 3.5 Million Sq. Ft.

½ Mile (excludes ¼ Mile)
Office: 23%
Residential: 66% (2953 Units)
Other: 11%
Total: 6.6 Million Sq. Ft.

Total
Office: 32%
Residential: 55% (3728 Units)
Other: 13%
Total: 10.1 Million Sq. Ft.
Alternatives B1, B2 & B3 (northern sites)
Alternative B1

- Moves station 1600 feet north of Alternative A
- Side-platform station
- 5.5 million sf of potential development within ¼ mile walkshed, 14.0 million within ½ mile
- Less accessible from east side, access from main market area via pedestrian bridge across CSX
- Track realignment would require acquisition of right-of-way from National Park Service
- No longer being considered due to NPS impact
Alternative B2

- Moves station 950 feet north of Alternative A
- Side-platform station
- 5.5 million sf of potential development within ¼ mile walkshed, 14.0 million within ½ mile
- Less accessible from east side, access from main market area via pedestrian bridge across CSX
- No right-of-way required from National Park Service for track realignment
- Capital cost approximately $150 to $200 million
Alternative B3

- Moves station 1250 feet north of Alternative A
- Side-platform station
- 5.5 million sf of potential development within ¼ mile walkshed, 14.0 million within ½ mile
- Less accessible from the east side, access from main market area via pedestrian bridge across CSX
- Requires reconstruction of about 6,000 feet of track
- Off-line construction, more efficient construction and less impact to Potomac Greens residents
- Capital cost approximately $140 to $180 million
Alternatives B1, B2 & B3 (northern sites)
Land Use Analysis
Alternatives B1, B2 & B3 (northern sites) 
Land Use Analysis
Alternatives B1, B2 & B3 (northern sites)
Land Use Analysis

Total
Undevelopable Area = ~58%
Alternatives B1, B2 & B3 (northern sites) Land Use Analysis

1/4 Mile
Office: 43%
Residential: 37% (1376 Units)
Other: 20%
Total: 5.6 Million Sq. Ft.

1/2 Mile (excludes 1/4 Mile)
Office: 9.8%
Residential: 80.5% (4416 Units)
Other: 9.8%
Total: 8.2 Million Sq. Ft.

Total
Office: 23%
Residential: 63% (5792 Units)
Other: 14%
Total: 13.8 Million Sq. Ft.
Alternatives B1, B2 & B3 (northern sites)
Land Use Analysis

½ Mile
Office: 43%
Residential: 37% (1376 Units)
Other: 20%
Total: 5.6 Million Sq. Ft.

½ Mile (excludes ¼ Mile)
Office: 9.8%
Residential: 80.5% (4416 Units)
Other: 9.8%
Total: 8.2 Million Sq. Ft.

Total
Office: 23%
Residential: 63% (5792 Units)
Other: 14%
Total: 13.8 Million Sq. Ft.
Alternative C1, C2 (Landbay F Sites)
Alternative C1

- Tunnel & aerial alternatives
- Underground center-platform station
- 10.0 million sf of potential development within ¼ mile walkshed, 14.5 million within ½ mile
- Least accessible from the east side due to distance and need to access via pedestrian bridge across CSX
- Requires construction of about 17,000 feet of track
- Aerial segment north of Four Mile Run severely impacts existing development
- No longer being considered due to impact to existing development
Alternative C2

- Tunnel & aerial Alternative
- Underground center-platform station
- 10.0 million sf of potential development within $\frac{1}{4}$ mile walkshed, 14.5 million within $\frac{1}{2}$ mile
- Least accessible from the east side due to distance and need to access via pedestrian bridge across CSX
- Requires construction of about 9,000 feet of track
- Aerial segment south of the new station negatively impacts Landbays G & H
- Capital costs approximately $410 to $520 million.
Alternatives C1, & C2 (Landbay F Sites)
Land Use Analysis
Alternatives C1, & C2 (Landbay F Sites)
Land Use Analysis
Alternative C1 & C2 (Landbay F Sites)
Land Use Analysis

Total Undevelopable Area = ~80%
Alternative C1 & C2 (Landbay F Sites)

Land Use Analysis

¼ Mile
Office: 15%
Residential: 70% (4750 Units)
Other: 15%
Total: 10.1 Million Sq. Ft.

½ Mile (excludes ¼ Mile)
Office: 44%
Residential: 40% (1393 Units)
Other: 16%
Total: 4.3 Million Sq. Ft.

Total
Office: 24%
Residential: 61% (6143 Units)
Other: 15%
Total: 14.4 Million Sq. Ft.
Alternative C1 & C2 (Landbay F Sites)

Land Use Analysis

\(\frac{1}{4}\) Mile
Office: 15%
Residential: 70\% (4750 Units)
Other: 15%
Total: 10.1 Million Sq. Ft.

\(\frac{1}{2}\) Mile (excludes \(\frac{1}{4}\) Mile)
Office: 44%
Residential: 40\% (1393 Units)
Other: 16%
Total: 4.3 Million Sq. Ft.

Total
Office: 24%
Residential: 61\% (6143 Units)
Other: 15%
Total: 14.4 Million Sq. Ft.
Alternative D (Aerial Option)
Aerial Option
Alternative D

• Aerial Alternative
• Aboveground center-platform station
• 10.0 million sf of potential development within ¼ mile walkshed, 14.5 million within ½ mile
• Least accessible from the east side due to distance and need to access via pedestrian bridge across CSX
• Requires construction of about 8,000 feet of track
• Aerial segment south of the new station negatively impacts Landbays G & H
• Capital costs approximately $230 to $300 million.
Alternative D (Aerial Option)
Land Use Analysis
Alternative D (Aerial Option) Land Use Analysis
Alternative D (Aerial Option)
Land Use Analysis

Total Undevelopable Area = ~80%
Alternative D (Aerial Option)
Land Use Analysis

¼ Mile
Office: 15%
Other: 11%
Residential: 74% (4750 Units)
Total: 9.6 Million Sq. Ft.

½ Mile (excludes ¼ Mile)
Office: 43%
Residential: 34% (1185 Units)
Other: 23%
Total: 4.4 Million Sq. Ft.

Total
Office: 24%
Residential: 61% (5935 Units)
Other: 15%
Total: 14.0 Million Sq. Ft.
Alternative D (Aerial Option)
Land Use Analysis

¼ Mile
Office: 15%
Other: 11%
Residential: 74% (4750 Units)
Total: 9.6 Million Sq. Ft.

½ Mile (excludes ¼ Mile)
Office: 43%
Residential: 34% (1185 Units)
Other: 23%
Total: 4.4 Million Sq. Ft.

Total
Office: 24%
Residential: 61% (5935 Units)
Other: 15%
Total: 14.0 Million Sq. Ft.
Metro Station Location Alternatives
Potomac Yard Development Potential within 1/4 Mile and 1/2 Mile Walksheds

*NOTE: Development for Landbay F was assumed equal (in size and distribution) for each alternative and does not account for likely increases in density for alternatives located within the main body of Potomac Yard.
### Summary of Alternatives

Note: Some station characteristics will require more detailed analysis in future planning phases. They include environmental impacts, detailed architectural and design characteristics, and operating and maintenance costs.

<table>
<thead>
<tr>
<th>Characteristic</th>
<th>A</th>
<th>B1</th>
<th>B2</th>
<th>B3</th>
<th>C1</th>
<th>C2</th>
<th>D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Station Type</td>
<td>At-grade, side platform</td>
<td>Not Viable</td>
<td>At-grade, side platform</td>
<td>At-grade, side platform</td>
<td>In tunnel, center platform</td>
<td>Elevated, center platform</td>
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<tr>
<td>Approximate development within ¼ mile, million square feet</td>
<td>3.5</td>
<td>5.5</td>
<td>5.5</td>
<td>Not Viable</td>
<td>10.0</td>
<td>9.5</td>
<td></td>
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<tr>
<td>Approximate development within ½ mile, million square feet</td>
<td>10.0</td>
<td>14.0</td>
<td>14.0</td>
<td>Not Viable</td>
<td>14.5</td>
<td>14.0</td>
<td></td>
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<tr>
<td>Construction impacts on Metrorail operations</td>
<td>High</td>
<td>High</td>
<td>Medium</td>
<td>Medium</td>
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<tr>
<td>Preliminary estimated capital cost, million 2012 dollars</td>
<td>$140 - 180</td>
<td>$150 - 200</td>
<td>$140 - 180</td>
<td>Not Viable</td>
<td>$410 - 520</td>
<td>$230 - 300</td>
<td></td>
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Discussion and Questions
Comparison of Developable Area Available to Northern Metro Alternative

Approximately 9 acres of developable land is gained by moving the metro station north.