

# Tier 1 Evaluation and Screening of Alternatives

---

## Purpose

By investigating previous studies and working with the MBTA and the Advisory Group, a number of potential alternatives for transit improvements have been identified within the Beyond Lechmere Northwest Corridor Project study area. Combinations of various mode types, including Green Line, Bus Rapid Transit (BRT) and Commuter Rail, have been investigated for providing additional transit service into study area neighborhoods.

The purpose of the Tier 1 Evaluation and Screening of Alternatives is to evaluate the ability of the alternatives to meet broad transportation objectives that have been established for the project. The goal of the Tier 1 Screening is to objectively evaluate the alternatives and identify those alternatives that should be evaluated in more detail.

It is important to note that the concepts for alternatives are general and that specific detail such as routing (tunnels vs. roadway) and final station locations will be evaluated as options to each of the alternatives as they are further developed. The intention of the Tier 1 Evaluation is to determine those alternative concepts that meet or exceed the criteria of the project, then narrow the initial broad range of alternatives to a reasonable number of feasible options that will be carried forward into the next phase of study.

---

## Process

At this level of screening, the analysis supporting the evaluation of the alternatives was primarily qualitative, answering questions such as how well the proposed alternative meets the objective, and how the proposed alternative compares to other alternatives.

Based on the existing conditions information compiled to date, a broad-brush engineering assessment of each of the alternatives was performed. Each alternative was evaluated against the criteria detailed on the following page. Each proposed alternative was rated on a scale of **+2 (meets objective/has a positive impact), to -2 (fails to meet**

**objective/has a negative impact**) in each category. The ratings in the eight individual categories were summarized to produce a composite rating for each alternative.

For each alternative, a table has been developed showing the criteria; the individual ratings; “explanations” or identifications of key issues used in determining the ratings; and the sum total rating of the alternative. Descriptors such as “minor”, “moderate” and “significant” have been used where appropriate in describing the impacts. Specific numbers or quantities were not applied to items such as air quality impacts. However, based on engineering judgment and a comparison of alternatives to each other and to existing conditions, general magnitudes of impacts such as “major” or “minor” were applied where appropriate. In the next stage, quantifiable elements such as ridership, air quality and costs impacts will be developed and examined in more detail for the selected alternatives.

---

## Criteria

The criteria used in the Tier 1 Screening includes following general areas:

- **Environmental:** Does the proposed alternative improve the quality of the natural environment with a minimum of harmful impacts?
- **Regional Transit System Capacity:** Does the proposed alternative improve the capacity, reliability and quality of the regional transit system?
- **Access to Opportunity:** Does the proposed alternative improve access to opportunities such as employment, education, and health care for area residents?
- **Mobility/Connectivity:** Does the proposed alternative improve mobility and connectivity within the area’s transportation system?
- **Compatibility with Land Use:** Does the proposed alternative fit within the context of the area’s existing land use? Does the proposed alternative comply with economic development and Transit-Oriented Development plans for the area?
- **Environmental Justice:** Does the proposed alternative disproportionately burden or alleviate the burden on environmental justice populations?
- **Cost:** Does the proposed alternative provide transportation system user benefits at a reasonable capital and operating cost?
- **Constructability:** Can the proposed alternative be constructed within a reasonable time frame, with a minimum of impact on the existing transit system and existing land owners, and by utilizing existing infrastructure?

---

## Findings

Based on the methodology for screening, the highest-rated alternatives will proceed to Tier 2, and the lowest-rated alternatives will be eliminated from further study. A summary of the ratings for each of the alternatives is show on the following page. Based on this summary, the following alternatives are indicated to be the top rated alternatives:

- Alternative 1a - Green Line Extension to Medford
- Alternative 1c - Green Line Extension to Medford and to Union Square
- Alternative 2b - BRT to Medford with Green Line to Union Square
- Alternative 3 - Commuter Rail Shuttle Service to West Medford

**Beyond Lechmere Northwest Corridor Project  
Tier 1 Evaluation and Screening of Alternatives**

Summary of Screening		Tier 1 Evaluation Criteria								Totals
Alternative No.	Description	Environmental	Regional Transit System Capacity	Access to Opportunity	Mobility/Connectivity	Comptability with Land Use/Economic Development	Environmental Justice	Cost	Constructability	
<b>Green Line Alternatives</b>										
1A	Green Line Extension to Medford	1	1	2	1	1	2	0	1	9
1B	Green Line Extension to Medford via Union Square	-1	1	2	2	2	1	-2	-2	3
1C	Green Line Extension to Medford and to Union Square	1	0	2	2	2	2	0	1	10
1D	Green Line to Union Square with Commuter Rail Station Stops to Medford	1	0	2	1	2	1	1	-2	6
<b>Bus Rapid Transit Alternatives</b>										
2A	BRT Lechmere to Medford	0	0	2	0	1	1	1	1	6
2B	BRT Lechmere to Medford with Green Line to Union Square	0	1	2	1	2	2	1	1	10
2C	BRT Lechmere to Medford (via Union Square) with Green Line to Yard 8	0	1	2	0	1	0	1	1	6
2D	BRT Lechmere to Union Square with Commuter Rail Station Stops to Medford	0	-1	1	1	1	1	2	-2	3
<b>Commuter Rail Alternatives</b>										
3	Commuter Rail Shuttle Service with Third Track to West Medford	1	1	1	1	1	1	2	2	10

<b>Green Line - Alternative 1A</b>				
<b>Alternative</b>	<b>Description</b>	<b>Criterion</b>	<b>Score</b>	<b>Explanation</b>
<b>1A - Green Line Extension to Medford</b>	This alternative would provide an extension of the Green Line from Lechmere northwards along the MBTA's Lowell Line terminating in the vicinity of the existing West Medford commuter rail station.	Environmental	1	<ul style="list-style-type: none"> <li>▪ Moderate air quality benefits;</li> <li>▪ Moderate impacts on Mystic River;</li> <li>▪ Minor right-of-way (ROW) impacts;</li> <li>▪ Minor storm drainage impacts.</li> </ul>
		Regional Transit System Capacity	1	<ul style="list-style-type: none"> <li>▪ Improved reliability in dedicated corridor;</li> <li>▪ Constraints on Green Line Central Subway capacity.</li> </ul>
		Access to Opportunity	2	<ul style="list-style-type: none"> <li>▪ Access to downtown Boston;</li> <li>▪ Access to jobs, educational, and institutional destinations along the study corridor.</li> </ul>
		Mobility/Connectivity	1	<ul style="list-style-type: none"> <li>▪ Multimodal connections (bus, commuter rail) at intermediate stations;</li> <li>▪ Links neighborhoods within study area;</li> <li>▪ Does not serve major Union Square hub.</li> </ul>
		Compatibility with Land Use	1	<ul style="list-style-type: none"> <li>▪ Compatible with existing land uses;</li> <li>▪ Compatible with local plans, except does not serve Union Square redevelopment area.</li> </ul>
		Environmental Justice	2	<ul style="list-style-type: none"> <li>▪ Transportation benefits to EJ communities include improvements to service quality and reliability;</li> <li>▪ Makes use of existing transportation corridor with minimal adverse impact on neighborhoods;</li> <li>▪ Layover facility to be located in existing industrial area.</li> </ul>
		Cost	0	<ul style="list-style-type: none"> <li>▪ Located within existing corridor and ROW;</li> <li>▪ Moderate capital costs associated with track and systems, a new yard, and bridge improvements;</li> <li>▪ Traffic mitigation (i.e. grade separation) costs in West Medford.</li> </ul>
		Constructability	1	<ul style="list-style-type: none"> <li>▪ Located within existing corridor and ROW;</li> <li>▪ Construction will not impact existing Green Line or commuter rail services;</li> <li>▪ Impacts to local traffic on street and bridge improvements.</li> </ul>
<b>TOTAL SCORE</b>			<b>9</b>	

<b>Green Line - Alternative 1B</b>				
<b>Alternative</b>	<b>Description</b>	<b>Criterion</b>	<b>Score</b>	<b>Explanation</b>
<b>1B - Green Line Extension to Medford via Union Square</b>	This alternative would provide an extension of the Green Line from Lechmere westward to Union Square along the MBTA's Fitchburg Line into Union Square, then northwards via a new deep bore tunnel under Union Square and Prospect Hill, and join the Lowell Line right-of-way near School Street. The route would then continue northwards to West Medford.	Environmental	-1	<ul style="list-style-type: none"> <li>▪ Moderate air quality benefits;</li> <li>▪ Moderate impacts on Mystic River;</li> <li>▪ Minor right-of-way (ROW) impacts;</li> <li>▪ Minor storm drainage impacts;</li> <li>▪ Noise, vibration, and ventilation impacts of tunnel.</li> </ul>
		Regional Transit System Capacity	1	<ul style="list-style-type: none"> <li>▪ Improved reliability in dedicated corridor;</li> <li>▪ Constraints on Green Line Central Subway capacity.</li> </ul>
		Access to Opportunity	2	<ul style="list-style-type: none"> <li>▪ Access to downtown Boston;</li> <li>▪ Access to jobs, educational, and institutional destinations along the study corridor.</li> </ul>
		Mobility/Connectivity	2	<ul style="list-style-type: none"> <li>▪ Multimodal connections at intermediate stations;</li> <li>▪ Links neighborhoods within study area;</li> <li>▪ Serves major Union Square hub.</li> </ul>
		Compatibility with Land Use	2	<ul style="list-style-type: none"> <li>▪ Compatible with existing land uses;</li> <li>▪ Compatible with local plans, including Union Square Master Plan TOD.</li> </ul>
		Environmental Justice	1	<ul style="list-style-type: none"> <li>▪ Transportation benefits to EJ communities include improvements to service quality and reliability;</li> <li>▪ Additional benefit of Union Square service and access to more EJ communities;</li> <li>▪ Makes use of existing transportation corridor along Lowell Line, but with adverse impact on neighborhoods with tunnel to Union Square;</li> <li>▪ Layover facility to be located in existing industrial area.</li> </ul>
		Cost	-2	<ul style="list-style-type: none"> <li>▪ Uses existing corridor and ROW, but some ROW would need to be acquired.</li> <li>▪ Moderate capital costs associated with track and systems, a new yard, and bridge improvements;</li> <li>▪ Significant capital cost for tunnel construction and operating costs for tunnel maintenance;</li> <li>▪ Traffic mitigation costs in West Medford.</li> </ul>
		Constructability	-2	<ul style="list-style-type: none"> <li>▪ Located within existing corridor and ROW, with some ROW acquisition and impact on local area;</li> <li>▪ Construction will not impact existing Green Line or commuter rail services;</li> <li>▪ Impacts to local traffic on street and bridge improvements;</li> <li>▪ Tunnel construction under developed neighborhoods;</li> <li>▪ Relocation of utilities.</li> </ul>
<b>TOTAL SCORE</b>			<b>3</b>	

<b>Green Line - Alternative 1C</b>				
<b>Alternative</b>	<b>Description</b>	<b>Criterion</b>	<b>Score</b>	<b>Explanation</b>
<b>1C - Green Line Extension to Medford and to Union Square</b>	This alternative would provide Green Line service to Union Square and West Medford via a two-branch operation. One branch would operate from Lechmere to West Medford along the Lowell Line as per Alternative 1A. The second branch would operate along the Fitchburg Line from Lechmere into a terminus at Union Square. (A variant to this alternative includes extending the Green Line to Porter Square. This variant can be further explored in Tier 2.)	Environmental	1	<ul style="list-style-type: none"> <li>▪ Moderate air quality benefits;</li> <li>▪ Moderate impacts on Mystic River;</li> <li>▪ Minor right-of-way (ROW) impacts;</li> <li>▪ Minor drainage impacts.</li> </ul>
		Regional Transit System Capacity	0	<ul style="list-style-type: none"> <li>▪ Improved reliability in dedicated corridor;</li> <li>▪ Constraints on Green Line Central Subway capacity;</li> <li>▪ Produces longer headways on each branch due to split service.</li> </ul>
		Access to Opportunity	2	<ul style="list-style-type: none"> <li>▪ Access to downtown Boston;</li> <li>▪ Access to jobs, educational, and institutional destinations along the study corridor.</li> </ul>
		Mobility/Connectivity	2	<ul style="list-style-type: none"> <li>▪ Multimodal connections at intermediate stations;</li> <li>▪ Links neighborhoods within study area;</li> <li>▪ Parallels both commuter rail lines.</li> <li>▪ Serves major Union Square hub.</li> </ul>
		Compatibility with Land Use	2	<ul style="list-style-type: none"> <li>▪ Compatible with existing land uses;</li> <li>▪ Compatible with local plans, including Union Square Master Plan TOD.</li> </ul>
		Environmental Justice	2	<ul style="list-style-type: none"> <li>▪ Transportation benefits to EJ communities include improvements to service quality and reliability;</li> <li>▪ Additional benefit of Union Square service and access to more EJ communities;</li> <li>▪ Makes use of existing transportation corridor along Lowell Line;</li> <li>▪ Layover facility to be located in existing industrial area.</li> </ul>
		Cost	0	<ul style="list-style-type: none"> <li>▪ Uses existing corridor and ROW, but some ROW would need to be acquired.</li> <li>▪ Moderate capital costs associated with track and systems, a new yard, and bridge improvements;</li> <li>▪ Traffic mitigation (i.e. grade separation) costs in West Medford.</li> </ul>
		Constructability	1	<ul style="list-style-type: none"> <li>▪ Located within existing corridor and ROW;</li> <li>▪ Construction will not impact existing Green Line or commuter rail services;</li> <li>▪ Impacts to local traffic on street and bridge improvements.</li> </ul>
<b>TOTAL SCORE</b>			<b>10</b>	

<b>Green Line - Alternative 1D</b>				
<b>Alternative</b>	<b>Description</b>	<b>Criterion</b>	<b>Score</b>	<b>Explanation</b>
<b>1D - Green Line Extension to Union Square with Commuter Rail Station Stops to West Medford</b>	This alternative would provide an extension of the Green Line from Lechmere west to Union Square along the MBTA's Fitchburg Line. This alternative would also construct two new commuter rail stations on the Lowell Line to West Medford. It should be noted that a third commuter rail station is proposed at Gilman Square as part of the Urban Ring Project. Stations will be served by regularly scheduled Lowell Line trains. (A variation of this alternative includes extending the Green Line to Porter Square. This variant can be further explored in Tier 2.)	Environmental	1	<ul style="list-style-type: none"> <li>▪ Moderate air quality benefits;</li> <li>▪ No additional impacts on Mystic River;</li> <li>▪ Minor right-of-way (ROW) impacts;</li> <li>▪ Noise, vibration, and emission impacts from commuter rail diesel locomotives.</li> </ul>
		Regional Transit System Capacity	0	<ul style="list-style-type: none"> <li>▪ Improved reliability in dedicated corridor;</li> <li>▪ Moderate impacts on existing commuter rail service;</li> <li>▪ Impacts on commuter rail capacity (overcrowding, additional run-time);</li> <li>▪ Improved reliability and capacity on Green Line segment to Union Square;</li> <li>▪ Constraints on Green Line Central Subway capacity.</li> </ul>
		Access to Opportunity	2	<ul style="list-style-type: none"> <li>▪ Access to downtown Boston;</li> <li>▪ Access to jobs, educational, and institutional destinations along the study corridor.</li> </ul>
		Mobility/Connectivity	1	<ul style="list-style-type: none"> <li>▪ Requires a transfer at North Station;</li> <li>▪ Serves Union Square and North Station hubs;</li> <li>▪ Several multimodal connections;</li> <li>▪ Links neighborhoods within study area.</li> </ul>
		Compatibility with Land Use	2	<ul style="list-style-type: none"> <li>▪ Compatible with existing land uses;</li> <li>▪ Compatible with local plans, including Union Square Master Plan TOD.</li> </ul>
		Environmental Justice	1	<ul style="list-style-type: none"> <li>▪ Transportation benefits to EJ communities include replacement of bus services, and improvements to service quality and reliability;</li> <li>▪ Additional benefit of Union Square service and access to more EJ communities;</li> <li>▪ Makes use of existing transportation corridors;</li> <li>▪ Layover facility to be located in existing industrial area.</li> </ul>
		Cost	1	<ul style="list-style-type: none"> <li>▪ Uses existing corridor and ROW;</li> <li>▪ Moderate capital costs associated with track and systems, a new yard, and stations;</li> <li>▪ Traffic mitigation costs in West Medford.</li> </ul>
		Constructability	-2	<ul style="list-style-type: none"> <li>▪ Located within existing corridor and ROW;</li> <li>▪ Construction will not impact existing Green Line;</li> <li>▪ Impacts to local traffic on street improvements;</li> <li>▪ Major impacts on existing commuter rail and freight services.</li> </ul>
<b>TOTAL SCORE</b>			<b>6</b>	

<b>Bus Rapid Transit - Alternative 2A</b>				
<b>Alternative</b>	<b>Description</b>	<b>Criterion</b>	<b>Score</b>	<b>Explanation</b>
<b>2A- BRT Lechmere to Medford</b>	This alternative would replicate Alternative 1a, using high capacity buses operating on a two-lane paved roadway within the railroad corridor. The Bus Rapid Transit (BRT) mode could alleviate the Green Line related grade crossing concerns at West Medford by using public streets in this area.	Environmental	0	<ul style="list-style-type: none"> <li>▪ Moderate air quality benefits;</li> <li>▪ Minor right-of-way (ROW) impacts;</li> <li>▪ Substantial storm drainage impacts (closed system, more impervious surface, discharge, salt in winter).</li> </ul>
		Regional Transit System Capacity	0	<ul style="list-style-type: none"> <li>▪ Improved reliability in dedicated corridor;</li> <li>▪ Flexibility in operations;</li> <li>▪ Limited by Green Line Central Subway capacity with transfer at Lechmere.</li> </ul>
		Access to Opportunity	2	<ul style="list-style-type: none"> <li>▪ Access to downtown Boston;</li> <li>▪ Access to jobs, educational, and institutional destinations along the study corridor.</li> </ul>
		Mobility/ Connectivity	0	<ul style="list-style-type: none"> <li>▪ Multimodal connections at intermediate stations;</li> <li>▪ Links neighborhoods within study area;</li> <li>▪ Does not serve major Union Square hub;</li> <li>▪ Transfer to access downtown required.</li> </ul>
		Compatibility with Land Use	1	<ul style="list-style-type: none"> <li>▪ Compatible with existing land uses;</li> <li>▪ Compatible with local plans, but does not serve Union Square redevelopment area.</li> </ul>
		Environmental Justice	1	<ul style="list-style-type: none"> <li>▪ Transportation benefits to EJ communities include improvements to service quality and reliability;</li> <li>▪ Makes use of existing transportation corridor along Lowell Line;</li> <li>▪ No layover facility impact on neighborhoods.</li> </ul>
		Cost	1	<ul style="list-style-type: none"> <li>▪ Primarily uses existing corridor and ROW;</li> <li>▪ Infrastructure costs limited to pavement and bridge improvements;</li> <li>▪ No new yard or traction power costs;</li> <li>▪ Traffic mitigation costs in West Medford.</li> </ul>
		Constructability	1	<ul style="list-style-type: none"> <li>▪ Located within existing corridor and ROW;</li> <li>▪ Construction will not impact existing Green Line or commuter rail services;</li> <li>▪ Impacts to local traffic on street and bridge improvements.</li> </ul>
<b>TOTAL SCORE</b>			<b>6</b>	

<b>Bus Rapid Transit - Alternative 2B</b>				
<b>Alternative</b>	<b>Description</b>	<b>Criterion</b>	<b>Score</b>	<b>Explanation</b>
<b>2B - BRT Lechmere to Medford with Green Line to Union Square</b>	This alternative would combine Alternative 2a and Alternative 1c. High capacity buses would operate on a two-lane paved roadway within the railroad corridor to Medford. A Green Line segment would operate along the Fitchburg Line from Lechmere into a terminus at Union Square. A variant to this alternative is to have both legs BRT. This variant can be further explored in Tier 2.	Environmental	0	<ul style="list-style-type: none"> <li>▪ Moderate air quality benefits;</li> <li>▪ Minor right-of-way (ROW) impacts;</li> <li>▪ Substantial storm drainage impacts (closed system, more impervious surface, discharge, salt in winter).</li> </ul>
		Regional Transit System Capacity	1	<ul style="list-style-type: none"> <li>▪ Improved reliability in dedicated corridor;</li> <li>▪ Some flexibility in operations;</li> <li>▪ Capacity enhanced by Green Line service to Union Square;</li> <li>▪ Limited by Green Line Central Subway capacity with transfer at Lechmere.</li> </ul>
		Access to Opportunity	2	<ul style="list-style-type: none"> <li>▪ Access to downtown Boston;</li> <li>▪ Access to jobs, educational, and institutional destinations along the study corridor.</li> </ul>
		Mobility/Connectivity	1	<ul style="list-style-type: none"> <li>▪ Serves major Union Square hub;</li> <li>▪ Multimodal connections at intermediate stations;</li> <li>▪ Links neighborhoods within study area.</li> </ul>
		Compatibility with Land Use	2	<ul style="list-style-type: none"> <li>▪ Compatible with existing land uses;</li> <li>▪ Compatible with local plans, including Union Square Master Plan TOD.</li> </ul>
		Environmental Justice	2	<ul style="list-style-type: none"> <li>▪ Transportation benefits to EJ communities include improvements to service quality and reliability;</li> <li>▪ Additional benefit of Union Square service;</li> <li>▪ Makes use of existing transportation corridors;</li> <li>▪ No layover facility impact on neighborhoods.</li> </ul>
		Cost	1	<ul style="list-style-type: none"> <li>▪ Primarily uses existing corridor and ROW;</li> <li>▪ Infrastructure costs include track and systems on Green Line segment;</li> <li>▪ Pavement costs on BRT segment;</li> <li>▪ Bridge improvements;</li> <li>▪ No new bus yard;</li> <li>▪ Green Line yard required;</li> <li>▪ Traffic mitigation costs in West Medford.</li> </ul>
		Constructability	1	<ul style="list-style-type: none"> <li>▪ Located within existing corridor and ROW;</li> <li>▪ Construction will not impact existing Green Line or commuter rail services;</li> <li>▪ Impacts to local traffic on street and bridge improvements.</li> </ul>
<b>TOTAL SCORE</b>			<b>10</b>	

<b>Bus Rapid Transit - Alternative 2C</b>				
<b>Alternative</b>	<b>Description</b>	<b>Criterion</b>	<b>Score</b>	<b>Explanation</b>
<b>2C - BRT Lechmere to Medford via Union Square with Green Line to Yard 8</b>	This alternative would provide BRT service from Lechmere into Union Square along the Fitchburg Line and Somerville Avenue, in a loop-type alignment. A new busway would be between Somerville Avenue and the Fitchburg Line. Beyond Union Square, BRT would utilize public streets to reach the Lowell Line at Gilman Square. The route would then utilize the Lowell Line right-of-way north to West Medford. Additionally, Green Line would be extended north from Lechmere to "Yard 8", providing the opportunity for a station near Washington St.	Environmental	0	<ul style="list-style-type: none"> <li>▪ Moderate air quality benefits;</li> <li>▪ Minor right-of-way (ROW) impacts;</li> <li>▪ Substantial storm drainage impacts (closed system, more impervious surface, discharge, salt in winter).</li> </ul>
		Regional Transit System Capacity	1	<ul style="list-style-type: none"> <li>▪ Improved reliability in dedicated corridor;</li> <li>▪ Some flexibility in operations;</li> <li>▪ Capacity enhancements;</li> <li>▪ Limited by Green Line Central Subway capacity.</li> </ul>
		Access to Opportunity	2	<ul style="list-style-type: none"> <li>▪ Access to downtown Boston;</li> <li>▪ Access to jobs, educational, and institutional destinations along the study corridor.</li> </ul>
		Mobility/Connectivity	0	<ul style="list-style-type: none"> <li>▪ Serves major Union Square multi-modal hub, but in mixed traffic operations;</li> <li>▪ Multimodal connections at intermediate stations;</li> <li>▪ Links neighborhoods within study area.</li> </ul>
		Compatibility with Land Use	1	<ul style="list-style-type: none"> <li>▪ Compatible with existing land uses;</li> <li>▪ Somewhat compatible with local plans; provides improved transit but not Green Line service as envisioned in Union Square Master Plan.</li> </ul>
		Environmental Justice	0	<ul style="list-style-type: none"> <li>▪ Transportation benefits to EJ communities including improving service quality and reliability;</li> <li>▪ Additional benefit of Union Square service, but associated local traffic impacts;</li> <li>▪ Makes use of existing transportation corridors;</li> <li>▪ Layover facility impact in industrial area.</li> </ul>
		Cost	1	<ul style="list-style-type: none"> <li>▪ Primarily uses existing corridor and ROW;</li> <li>▪ Infrastructure costs include track and systems on Green Line segment only to Washington St.;</li> <li>▪ Pavement costs on BRT segments;</li> <li>▪ Bridge improvements;</li> <li>▪ No new bus yard, but Green Line yard required;</li> <li>▪ Traffic mitigation costs.</li> </ul>
		Constructability	1	<ul style="list-style-type: none"> <li>▪ Located within existing corridor and ROW;</li> <li>▪ Construction will not impact existing Green Line or commuter rail services;</li> <li>▪ Impacts to local traffic on street and bridge improvements, especially at Union Square.</li> </ul>
<b>TOTAL SCORE</b>			<b>6</b>	

<b>Bus Rapid Transit - Alternative 2D</b>				
<b>Alternative</b>	<b>Description</b>	<b>Criterion</b>	<b>Score</b>	<b>Explanation</b>
<b>2D - BRT Lechmere to Union Square with Commuter Rail Station Stops to North Station</b>	This alternative would provide a Bus Rapid Transit (BRT) service from Lechmere to Union Square along the MBTA's Fitchburg Line. Additionally, this alternative would construct two new commuter rail station stops on the Lowell Line to West Medford. It should be noted that a third commuter rail station is proposed at Gilman Square as part of the Urban Ring Project. Stations will be served by regularly scheduled Lowell Line trains.	Environmental	0	<ul style="list-style-type: none"> <li>▪ Moderate air quality benefits;</li> <li>▪ No additional impact on Mystic River;</li> <li>▪ Substantial drainage impacts (closed system, more impervious surface, discharge, salt in winter);</li> <li>▪ Noise, vibration and emissions impacts from commuter rail diesel locomotives.</li> <li>▪ Minor ROW impacts.</li> </ul>
		Regional Transit System Capacity	-1	<ul style="list-style-type: none"> <li>▪ Improved reliability in dedicated corridor;</li> <li>▪ Some flexibility in operations;</li> <li>▪ Impacts on existing commuter rail service and capacity;</li> <li>▪ Limited by Green Line Central Subway capacity once passengers transfer at Lechmere.</li> </ul>
		Access to Opportunity	1	<ul style="list-style-type: none"> <li>▪ Access to downtown Boston;</li> <li>▪ Access to jobs, educational, institutional destinations in the study area.</li> </ul>
		Mobility/ Connectivity	1	<ul style="list-style-type: none"> <li>▪ Serves major Union Square and North Station multi-modal hubs;</li> <li>▪ Multi-modal connections.</li> </ul>
		Compatibility with Land Use	1	<ul style="list-style-type: none"> <li>▪ Compatible with existing land uses;</li> <li>▪ Supports TOD plans near Union Square, and provides improved transit but not Green Line service as envisioned in Union Square Master Plan.</li> </ul>
		Environmental Justice	1	<ul style="list-style-type: none"> <li>▪ Transportation benefits to EJ communities including improving service quality and reliability;</li> <li>▪ Additional benefit of Union Square service;</li> <li>▪ Makes use of existing transportation corridors;</li> <li>▪ No layover facility impact on neighborhoods.</li> </ul>
		Cost	2	<ul style="list-style-type: none"> <li>▪ Uses existing corridor and ROW;</li> <li>▪ Infrastructure costs include pavement, track systems and station costs;</li> <li>▪ No new bus or layover yard;</li> <li>▪ Minor traffic mitigation costs.</li> </ul>
		Constructability	-2	<ul style="list-style-type: none"> <li>▪ Located primarily within existing ROW;</li> <li>▪ Construction will not impact existing Green Line;</li> <li>▪ Impacts to local traffic on street improvements, especially at Union Square;</li> <li>▪ Major impacts on existing commuter rail and freight services</li> </ul>
<b>TOTAL SCORE</b>			<b>3</b>	

<b>Commuter Rail - Alternative 3</b>				
<b>Alternative</b>	<b>Description</b>	<b>Criterion</b>	<b>Score</b>	<b>Explanation</b>
<b>3 -Commuter Rail Shuttle Service to West Medford</b>	This alternative would provide more frequent commuter rail service and additional stations on the Lowell Line through Somerville to West Medford. Operations would include the use of a shuttle train operating from North Station to West Medford. An additional track or a series of passing sidings may need to be constructed in the right-of-way to accommodate the service.	Environmental	1	<ul style="list-style-type: none"> <li>▪ Some air quality benefits;</li> <li>▪ Noise, vibration, emissions impacts from commuter rail diesel locomotives;</li> <li>▪ Minor ROW impacts;</li> <li>▪ No additional impact on Mystic River crossing.</li> </ul>
		Regional Transit System Capacity	1	<ul style="list-style-type: none"> <li>▪ Improved reliability in dedicated corridor;</li> <li>▪ Improved commuter rail capacity;</li> <li>▪ Impacts on existing commuter rail service;</li> </ul>
		Access to Opportunity	1	<ul style="list-style-type: none"> <li>▪ Access to downtown Boston;</li> <li>▪ Access to jobs, educational, and institutional destinations along the study corridor.</li> </ul>
		Mobility/Connectivity	1	<ul style="list-style-type: none"> <li>▪ Serves multi-modal connections at North Station;</li> <li>▪ Links neighborhoods along Lowell Line within study area.</li> </ul>
		Compatibility with Land Use	1	<ul style="list-style-type: none"> <li>▪ Compatible with existing land uses;</li> <li>▪ Not compatible with local plan to service Union Square.</li> </ul>
		Environmental Justice	1	<ul style="list-style-type: none"> <li>▪ Transportation benefits to EJ communities including removing buses, improving service quality and reliability;</li> <li>▪ Makes use of existing transportation corridor;</li> <li>▪ No impact of layover facility.</li> </ul>
		Cost	2	<ul style="list-style-type: none"> <li>▪ Uses existing corridor;</li> <li>▪ Commuter rail uses existing infrastructure, requires new third track, sidings, systems and high-level platforms;</li> <li>▪ Some bridge improvements required.</li> </ul>
		Constructability	2	<ul style="list-style-type: none"> <li>▪ Located primarily within existing ROW;</li> <li>▪ Construction will have minor impacts on existing commuter rail services;</li> <li>▪ Commuter rail can use existing infrastructure and is consistent with existing system/technology.</li> </ul>
<b>TOTAL SCORE</b>			<b>10</b>	