14. Evaluation of Short-List Alternatives

Based on the alternatives development and screening evaluation results summarized in Sections 6 through 12 and reflecting stakeholder and public input summarized in Section 13, the Short-List Alternatives were evaluated in the final phase of the alternatives screening process. In this screening, the four remaining alternatives were comparatively evaluated against a set of criteria and evaluation measures directly related to the Study's goals and objectives, which, in turn, relate to the purpose and need for transit improvement in the Study Area and the underlying transportation- and economic development-related problems identified in the Study Area. This section summarizes the Short-List Alternatives screening and rating process; identifies the criteria and evaluation measures used; and reports the alternatives' comparative performance against the evaluation measures and, on that basis, their relative summary ratings.

14.1 Short-List Alternatives Screening Process

The Short-List Alternatives screening criteria and evaluation measures are presented in Table 14-1 organized by the specific Study goal and associated objective to which the criteria and measures relate. Criteria in the FTA's New Starts evaluation process (highlighted in brown type in Table 14-1) were aligned with specific Study goals. Additional criteria not in the New Starts evaluation process but relevant to address certain of the Study's goals and objectives were defined.

Following the screening evaluation against these criteria and measures, the Short-List Alternatives were ranked (as described below) based on a summary rating for the evaluations associated with each of the four project goals. That is, for each goal, the individual ratings specific to each evaluation measure were averaged to determine the alternative's summary rating for the given goal.

In keeping with the Federal Transit Administration's (FTA) project rating process, a rating system of high, medium-high, medium, medium-low, and low was used. In FTA's Policy Guidance,[1] its rating process recognizes that small amounts of benefits are simply small, but not bad, as an indicator of a proposed project's performance. Therefore, FTA rates a small amount of positive benefits on a particular measure as "medium" rather than "low" or "medium-low." FTA rates projects with greater than small benefits on a particular measure as "high" or "medium-high." Only projects with adverse impacts or disbenefits on a particular measure receive a "medium-low" or "low" rating. The same series of ratings and a similar approach to assignment of ratings were used in the Short-List Alternatives screening evaluation.

Ranking breakpoints (i.e., thresholds) defined by the FTA in its Policy Guidance were used in this screening's rating system, where applicable to the criteria; the applicable FTA breakpoints are identified in Table 14-1.

A point system was assigned to the ratings: High=4; Medium-High=3; Medium=2; Medium-Low=1; Low=0. Points were then summed for each alternative. The alternative with the highest points for the Short-List Alternatives screening is being recommended as the Locally Preferred Alternative (LPA).

[1] Federal Transit Administration, Major Capital Investment Projects New and Small Starts: Final Rule (PDF) (49 CFR Part 611; effective April 9, 2013)

Table 14-1: Short-List Alternatives Screening Criteria

Objective	Screening Criterion	Evaluation Measure
GOAL: Develop transit improvements that will provide additional realistic and practical travel options to, from and within the Study Area and help to mitigate congestion on roadways.		
Increase public transportation options and use as a means of access to, from and within the Study Area.	Total transit trips to, from and within the Study Area should be maximized.	Number of Transit Trips using the Project: Non-transit-dependent Trips + (Transit-dependent trips * 2) (*new FTA mobility measure*) Ranked using FTA breakpoints: High: >25.0 million; Medium-High: 15-24.9 million; Medium: 9-14.9 million; Medium-Low: 4.5-8.9 million; Low: < 4.49 million
Develop a transit alternative that encourages use of alternate transportation modes (walking, bicycling, carpooling and other travel demand management methods) to travel by auto.	The number of trips that access transit by walking, bicycling, carpooling and other travel demand management methods should be maximized.	Number of trips accessing transit alternative by walking, bicycling, carpooling and other travel demand management methods. Ranked as High: > 2.0 million; Medium-High: 1.5-2.0 million; Medium: 1-1.5 million; Medium-Low: 0.5-1.0 million; Low: <0.5 million
Identify a transit alternative that is capable of growing and adapting to changes in the demand for service.	Flexibility to respond to future changes in demand should be maximized.	Qualitative evaluation of the degree of system flexibility. Ranked as High, Medium, Low, relative to other alternatives under evaluation.
GOAL: Develop transit improvements that will enhance mobility to, from and within the Study Area in a cost-effective manner.		
Develop an alternative that will have a capital cost that is consistent with anticipated financial resources and operating and maintenance (O&M) costs that can feasibly be funded with state and local resources.	Annualized capital and O&M costs per trip should be minimized.	Annualized capital and O&M cost per trip (*new FTA Cost-effectiveness measure*). Ranked using FTA breakpoints: High: <$4.00; Medium-High: $4.00 - $5.99; Medium: $6.00 - $9.99; Medium-Low: $10.00 - $14.99; Low: >$15.00
Develop a transit alternative that provides travel time savings compared to existing options.	The alternative should shorten travel time between a standard set of activity centers.	Travel time from Village of Hempstead to Roosevelt Field Ranked as High: <20 minutes; Medium-High: 20-21.9 minutes; Medium 22-23.9 minutes; Medium-Low: 24-25.9 minutes Low: > 26 minutes
		Travel time from Village of Mineola to Nassau Veterans Memorial Coliseum Ranked as High: <15 minutes; Medium-High: 15-16.9 minutes; Medium: 17-18.9 minutes; Medium-Low: 19-20.9 minutes Low: > 21 minutes

Table 14-1: Short-List Alternatives Screening Criteria (continued)

Reduce travel time and costs associated with congestion.	Capital cost per passenger mile should be minimized.	Annualized capital cost per passenger mile Ranked as High: <$4; Medium-High: $4-$5.9; Medium: $6-$7.9; Medium-Low: $8-$9.9; Low: >$10
Develop an alternative that is capable of being funded for construction through traditional or alternative/innovative funding mechanisms.	The federal funding component of total funding should be maximized.	Local capital funding required of total capital cost: (Non-Section 5309 Federal Funds) Ranked as High: <$50 million; Medium-High: $50-$100 million; Medium: $100-$150 million; Medium-Low: $150-$200 million; Low: >$200 million
Develop an alternative that is capable of being funded for operation through traditional or alternative/innovative funding mechanisms.	Projected ratio of farebox recovery & operating subsidy should be maximized relative to projected operating costs.	Farebox recovery ratio. High: > 60%; Medium-High: 50-60%; Medium: 40-50%; Medium-Low: 30-40%; Low: <30%
Explore alternatives that can be phased incrementally, consistent with available funding.	Ability to phase the project based on viability to implement initial or minimum operating segments should be maximized.	Qualitative evaluation of ability to phase project. Ranked as High, Medium-High, Medium, Medium-Low, Low, relative to other alternatives under evaluation.
GOAL: Develop transit improvements that encourage the development of sustainable, transit-friendly land use patterns and support economic development activities.		
Use transit to enable more compact land uses that could better support a transit-oriented development scenario.	Density of development within ¼-mile radius of transit stations or stops should be maximized.	Average population density (persons/square mile) within ¼-mile radius of transit stations/stops (*FTA land use measure*). Ranked using FTA breakpoints: High (> 15,000); Medium-High (10,000-15,000); Medium (6,667-10,000); Medium-Low (3,333-6,667); Low (< 3,333)
Locate transit to enhance the economic competitiveness of the Study Area, creating new job opportunities, and support existing businesses.	The number of jobs within ¼ mile of proposed alignment should be maximized.	Employment/jobs served by system (*FTA land use measure*) Ranked using FTA breakpoints: High (> 250,000); Medium-High (175,000-250,000); Medium (125,000-175,000); Medium-Low (75,000-125,000); Low (< 75,000)
Develop transportation alternatives that attract transit-dependent and non-transit-dependent riders.	The number of transit-dependent users (elderly, youths, and/or below median income levels) should be maximized.	Number of units of publicly supported housing in the corridor (*FTA land use measure*). Breakpoints not yet established by the FTA; medium rating to be applied to all alternatives.

Table 14-1: Short-List Alternatives Screening Criteria (continued)

Develop a transit alternative that can be supported by local land use plans and development policies.	Extent to which an alternative is supportive of existing and planned local land use policies should be maximized.	Qualitative evaluation of transit-supportive plans and policies in place, including plans to support or increase affordable housing (*FTA economic development measure*). Ranked as High, Medium-High, Medium, Medium-Low, or Low, relative to other alternatives under evaluation.
GOAL: Develop transit improvements that enhance quality of life and minimize adverse environmental impact.		
Use transit as part of a regional approach to address congestion-related air quality concerns and regional air quality conformity; mitigate greenhouse gas (GHG) emissions; and mitigate overall energy consumption for trip making.	Reduction in air pollutants, GHG emissions and annual energy consumption based on reduction in vehicle miles traveled (VMT) should be maximized.	Reduction in VMT (*new FTA environmental benefits measures are a function of reduced VMT*). Ranked using FTA breakpoints: High: >10 million; Medium-High: 8-10 million; Medium: 6-8 million; Medium-Low: 4-6 million; Low: < 4 million
Encourage uses at street level that will support a lively streetscape on a pedestrian scale with diverse activity in the vicinity of station areas.	Ability to integrate into a streetscape with a pedestrian-scale environment should be maximized.	Qualitative evaluation of ability to integrate into pedestrian-scale streetscape. Ranked as High, Medium-High, Medium, Medium-Low or Low, relative to other alternatives under evaluation.
Incorporate alternative fuels and energy sources into the transit alternative, as appropriate.	Incorporation of alternative fuels and energy sources should be maximized.	Fuel or energy source incorporated: High: electric; Medium: hybrid; Low: diesel

Note: Evaluation criteria used by the FTA in the New Starts rating process are indicated in brown.

Source: Jacobs, 2013.

14.2 Evaluation Results

The comparative performance of the four Short-List Alternatives against each of the evaluation measures is presented in Table 14-2 and discussed in the following section, organized by Study goals and associated evaluation measures.

Table 14-2: Short-List Alternatives Screening Results

Evaluation Measures	Thresholds/Breakpoints	Alternative 2 Modern Streetcar Mineola to Hempstead via Source Mall			Alternative 2A BRT/Premium Bus Mineola to Hempstead via Source Mall			Alternative 3 Modern Streetcar Mineola to Hempstead via South Street			Alternative 3A BRT/Premium Bus Mineola to Hempstead via South Street		
		Measure	Rating	Points	Measure	Rating	Points	Measure	Rating	Points	Measure	Rating	Points
Trips on the Project: Non-transit dependent Trips + (Transit dependent trips * 2) (new FTA mobility measure)	High: >25.0 million; Medium-High: 15-24.9 million; Medium: 9-14.9 million; Medium-Low: 4.5-8.9 million; Low: < 4.49 million	2,799,857	Low	0	1,838,712	Low	0	2,925,224	Low	0	2,005,868	Low	0
Number of trips accessing transit by walking, bicycling, carpool and other travel demand management methods	High: > 2.0 million; Medium-High: 1.5-2.0 million; Medium: 1-1.5 million; Medium-Low: 0.5-1.0 million; Low: <0.5 million	2,014,286	High	4	1,310,188	Medium	2	2,104,478	High	4	1,443,070	Medium	2
Degree of system flexibility to grow and change	Qualitative evaluation of degree of system flexibility to grow and change & ranking of as High, Medium-High, Medium, Medium-Low, Low, relative to other alternatives under evaluation	Qualitative	Medium	2	Qualitative	Medium	2	Qualitative	Medium	2	Qualitative	Medium	2
Annualized capital and O&M cost per trip (new FTA Cost-effectiveness measure)	High: <$4.00; Medium-High: $4.00 - $5.99; Medium: $6.00 - $9.99; Medium-Low: $10.00 - $14.99; Low: >$15.00	$21.41	Low	0	$12.27	Medium-Low	1	$17.79	Low	0	$10.11	Medium-Low	1
Travel time from Hempstead to Roosevelt Field	High: <20 minutes; Medium-High: 20-21.9 minutes; Medium 22-23.9 minutes; Medium-Low: 24-25.9 minutes Low: > 26 minutes	24.8	Medium-Low	1	30.9	Low	0	19.1	High	4	23.5	Medium	2
Travel time from Mineola to Coliseum	High: <15 minutes; Medium-High: 15-16.9 minutes; Medium 17-18.9 minutes; Medium-Low: 19-20.9 minutes Low: > 21 minutes	20.3	Medium-Low	1	28.6	Low	0	14.5	High	4	20.0	Medium-Low	1
Annualized capital cost per passenger mile	High: <$4; Medium-High: $4-$5.9; Medium: $6-$7.9; Medium-Low: $8-$9.9; Low: >$10	$6.7	Medium	2	$2.9	High	4	$5.7	Medium-High	3	$2.7	High	4
Local capital funding required (Non-Section 5309 Federal Funds)	High: <$50 million; Medium-High: $50-$100 million; Medium: $100-$150 million; Medium-Low: $150-$200 million; Low: >$200 million	$203,778,000	Low	0	$66,733,500	Medium-High	3	$180,054,000	Medium-Low	1	$57,614,000	Medium-High	3
Farebox recovery ratio	High: > 60%; Medium-High: 50-60%; Medium: 40-50%; Medium-Low: 30-40%; Low: <30%	29%	Low	0	38%	Medium-Low	1	36%	Medium-Low	1	44%	Medium	2
Ability to phase project	Qualitative evaluation of ability to phase project & ranking of as High, Medium-High, Medium, Medium-Low, Low, relative to other alternatives under evaluation	Qualitative	Medium	2	Qualitative	Medium	2	Qualitative	Medium	2	Qualitative	Medium	2
Average population density (persons/square mile) within ¼-mile radius of transit stations/stops (FTA land use measure)	High (> 15,000); Medium-High (10,000-15,000); Medium (6,667-10,000); Medium-Low (3,333-6,667); Low (< 3,333)	8,350	Medium	2	7,820	Medium	2	9,070	Medium	2	8,470	Medium	2
Employment/jobs served by system (FTA land use measure)	High (> 250,000); Medium-High (175,000-250,000); Medium (125,000-175,000); Medium-Low (75,000-125,000); Low (< 75,000)	34,975	Low	0	36,710	Low	0	32,030	Low	0	32,730	Low	0
Units of publically supported housing in the corridor (FTA land use measure)	Ranges not yet established; medium rating applied to all alternatives.	1,330	Medium	2	1,330	Medium	2	1,330	Medium	2	1,330	Medium	2
Transit-Supportive Plans and Policies in place, including plans to support or increase affordable housing (FTA economic development measure)	Qualitative evaluation of transit-supportive plans and policies & ranking of as High, Medium-High, Medium, Medium-Low, Low, relative to other alternatives under evaluation	Qualitative	Medium	2	Qualitative	Medium	2	Qualitative	High	4	Qualitative	Medium	2
Reduction in vehicle miles traveled (VMT) (new FTA environmental benefits measures are a function of reduced VMT)	High: >10 million; Medium-High: 8-10 million; Medium: 6-8 million; Medium-Low: 4-6 million; Low < 4 million	436,852	Low	0	340,759	Low	0	431,298	Low	0	288,639	Low	0
Ability to integrate into a streetscape with a pedestrian-scale environment	Qualitative evaluation and of ability to integrate into pedestrian-scale streetscape & ranking of as High, Medium-High, Medium, Medium-Low or Low, as relative to other alternatives under evaluation.	Qualitative	High	4	Qualitative	Medium	2	Qualitative	High	4	Qualitative	Medium	2
Incorporation of alternative fuels and energy sources	High: electric; Medium: hybrid; Low: Diesel	Electric	High	4	Diesel	Low	0	Electric	High	4	Diesel	Low	0
SUMMARY RATING FOR ALTERNATIVE				**26**			**23**			**37**			**27**

Methodology for Evaluation Rating Points: High = 4; Medium-High = 3; Medium = 2; Medium-Low = 1; Low = 0;

Source: Jacobs, 2013.

GOAL: Develop transit improvements that will provide additional realistic and practical travel options to, from and within the Study Area and help to mitigate congestion on roadways.

For the three evaluation measures used to evaluate the alternatives' relative ability to satisfy this Study goal, the alternatives' performance was as follows:

- Alternative 3 would have the highest number of trips using the proposed transit improvement, which is the new FTA measure for mobility, although all four alternatives rated low against the current[2] FTA breakpoints for this evaluation measure.
- Alternative 3 would have the highest number of trips accessing the proposed transit improvement by walking, bicycling, carpool and other travel demand methods and was given a high rating, as was Alternative 2, while Alternatives 2A and 3A received medium ratings.
- All of the alternatives were evaluated as having a medium degree of system flexibility to grow and change, based on the nature of the modern streetcar and BRT/premium bus modes.

GOAL: Develop transit improvements that will enhance mobility to, from and within the Study Area in a cost-effective manner.

For the seven measures used to evaluate the alternatives' relative ability to satisfy this Study goal, the alternatives' performance was as follows:

- Alternatives 2A and 3A were rated medium-low for annualized capital and O&M cost per trip, while Alternatives 2 and 3 were rated low.
- For travel time from the Village of Hempstead to Roosevelt Field, Alternative 3 had the best time at 19.1 minutes and was rated high, while Alternative 3A was rated medium, Alternative 2 was rated medium-low and Alternative 2A was rated low.
- For travel time from the Village of Mineola to the Nassau Veterans Memorial Coliseum, Alternative 3 had the best time at 14.5 minutes and was rated high, while Alternative 3A was rated medium, Alternative 2 was rated medium-low and Alternative 2A was rated low.
- For annualized capital cost per passenger mile, Alternatives 2A and 3A were rated high, Alternative 3 was rated medium-high, and Alternative 2 was rated medium.
- Alternatives 2A and 3A were rated medium-high for the local capital funding required while Alternative 3 was rated medium-low and Alternative 2 was rated low.
- For farebox recovery ratio, Alternative 3A was rated medium, Alternatives 2A and 3 were rated medium-low and Alternative 2 was rated low.
- All of the alternatives were evaluated to have a medium ability to be implemented in phases.

GOAL: Develop transit improvements that encourage the development of sustainable, transit-friendly land use patterns and support economic development activities.

For the four measures used to evaluate the alternatives' relative ability to satisfy this Study goal, the alternatives' performance was as follows:

- All of the alternatives received a medium rating for population density.

[2] FTA Breakpoint used as of June 2013 on http://www.fta.dot.gov/.

- All of the alternatives received a low rating for employment/jobs served by the proposed system, based on the FTA employment thresholds.
- Because the exact details of the FTA methodology to evaluate the units of publicly supported housing in the corridor had not been determined at the time of the Short-List Alternatives evaluation, and since all of the alternatives were found to have the same amount of publicly supported housing in the corridor, all of the alternatives were given a medium rating for this measure.
- Alternative 3 was rated high for transit-supportive plans and policies being in place. Alternatives 2, 2A and 3A were rated medium, based on qualitative review of the plans and policies in place.

GOAL: Develop transit improvements that enhance quality of life and minimize adverse environmental impact.

For the three evaluation measures used to evaluate the alternatives' relative ability to satisfy this Study goal, the alternatives' performance was as follows:

- All of the alternatives received a low rating for reduction in VMT.
- Alternatives 2 and 3 were rated high for their ability to be integrated into a streetscape with a pedestrian-scale environment because they would use modern streetcar technology which, because it is a fixed guideway, directly supports creation and enhancement of pedestrian environments. Alternatives 2A and 3A, which would use BRT/premium buses, were rated medium because they would also contribute to enhancing the pedestrian environment but on a lesser scale.
- For incorporation of alternative fuels and energy sources, Alternatives 2 and 3 were rated high because they use electric propulsion, while Alternatives 2A and 3A were rated low because they use some form of fuel propulsion.

14.3 Evaluation Recommendation

Based on the results of the Short-List Alternatives screening and the summary ratings of each alternative's performance against the full set of evaluation measures, Alternative 3 Modern Streetcar is recommended for advancement for further, more detailed study. Alternative 3's summary rating (37 points) was 10 points higher than the next best-performing alternative, Alternative 3A BRT/Premium Bus (27 points). Key differentiators of Alternative 3, compared to the other three alternatives, are its relatively better travel-time performance, a critical consideration for any transit-improvement project, and, to a lesser extent, the degree to which local transit-supportive plans and policies are in place and would help advance its implementation.