



Metro Amherst-Buffalo Corridor Alternatives Analysis

TASK 4 SCREENING METHODOLOGY & PRELIMINARY EVALUATION CRITERIA TECHNICAL MEMORANDUM

**Prepared for:
Niagara Frontier Transportation Authority (NFTA)**



**Prepared by:
AECOM USA, Inc.
October 2013**

Table of Contents

Contents

1.0 INTRODUCTION..... 1

2.0 GUIDELINES AND REQUIREMENTS.....2
 2.1 Federal Transit Administration Requirements 2

3.0 STUDY AREA DESCRIPTION AND BACKGROUND..... 4
 3.1 Study Area Boundaries..... 4
 3.2 Purpose and Need 5

4.0 GOALS AND OBJECTIVES..... 6
 4.1 Goals, Objectives, and Screening Criteria..... 6
 4.2 Appraisal Methods 14

5.0 ALTERNATIVES IDENTIFICATION PROCESS.....14
 5.1 Alternatives Previously Identified 14
 5.2 Stakeholder Outreach and Public Meetings.....16
 5.3 Field Reviews and Reconnaissance..... 16

6.0 EVALUATION AND SCREENING PROCESS.....17
 6.1 Evaluation Framework 17
 6.2 Screening Process 17
 6.2.1 Preliminary Screening (Tier 1 Screen)..... 18
 6.2.2 Initial Screening (Tier 2 Screen).....19
 6.2.3 Final Screening (Tier 3 Screen)..... 19

Figures and Tables

Figure 1 Study Area Map..... 4

Figure 2 Screening and Evaluation of Alternatives..... 7

Figure 3 Tiered Screening Process..... 8

Table 1 Evaluation Criteria for Tier 1 Screening..... 10

Table 2 Evaluation Criteria for Tier 2 and Tier 3 Screening..... 11

1.0 INTRODUCTION

The Federal Transit Administration (FTA) and the Niagara Frontier Transportation Authority (NFTA) have initiated the preparation of an alternatives analysis (AA) study to evaluate transit service alternatives for the Amherst-Buffalo corridor.

This *Screening Methodology & Preliminary Evaluation Criteria Technical Memorandum* describes the evaluation framework and process for screening alternatives for new transit service in the corridor. This draft technical memorandum describes a proposed three-tier process for screening the long list of alternatives, evaluating conceptual alternatives, and subsequently evaluating the detailed final “build” alternatives. These methods will be used to screen and evaluate any alternatives that may be identified during the study.

The approach in this technical memorandum is based on the current understanding of the needs within the study area and throughout the region, as well as the transportation needs expressed by local decision makers, including the project Steering Committee and Stakeholder Advisory Committee, NFTA, and the Greater Niagara Buffalo Regional Transportation Council (GNBRTC). The approach also relies on guidelines of the FTA regarding the alternatives analysis process: “Guiding Principles of Alternatives Analysis”, their guidelines and requirements relating to “Linking the Transportation Planning and National Environmental Policy Act (NEPA) Process”, and the Section 5309 New Starts evaluation and rating process.

The contents of this document include a description of the FTA guidelines for alternatives analysis studies; a description and background of the current project; the goals, objectives and evaluation criteria to be used as part of the screening process; a description of the alternatives identification process; and a description of the evaluation and screening process that will be used to evaluate alternatives.

The over-arching objectives of this process are (1) to develop a set of alternatives that respond to the transportation problems of the corridor; (2) to screen alternatives to identify those most responsive, (3) to optimize the performance of the most responsive alternatives within the limits of their technology and operating characteristics; (4) to analyze, evaluate and refine the detail in these alternatives; and thereby (5) to support the identification of an alternative as the Locally Preferred Alternative (LPA).

The methodology included herein will undergo review and approvals from NFTA and GNBRTC as sponsors of the Metro Amherst-Buffalo Corridor Alternatives Analysis. As part of their roles and responsibilities under SAFETEA-LU, as amended by Section 1305 of MAP-21, public agencies and the public and other stakeholders will also be afforded opportunities to provide comment and refinement on these methodologies during:

- Ongoing agency collaboration, public involvement opportunities, and public meetings;
- Meetings of the Project Steering Committee, Project Advisory Committee and Agency Coordinating Committee; and,
- The coordination efforts being conducted for the study documentation.

Because this project is in an early phase of project development, collaboration between the project team and lead, cooperating, and participating agencies will be ongoing during project development. As such, the screening methodologies will be revisited and may be refined as appropriate.

2.0 GUIDELINES AND REQUIREMENTS

The technical analysis will be consistent with local, state, and federal guidelines and requirements. The Alternatives Analysis will comply specifically with FTA guidelines related to the analysis required for AA studies and for early efforts under project development and New Starts funding in particular FTA guidelines relating to “Linking the Transportation Planning and NEPA Process”. In addition, transportation infrastructure projects that use federal funding, such as the one contemplated in this alternatives analysis, will eventually become subject to federal environmental review regulations under NEPA as well as other federal environmental review regulations as defined by Section 4(f) and 6(f) of the Department of Transportation Act of 1966, Section 106 of the National Historic Preservation Act of 1966, the Clean Water Act and the Clean Air Act of 1970, along with other applicable federal, state and local environmental regulations including New York State Environmental Quality Review (SEQR). As such, this AA study will follow FTA guidelines for linking the planning process with NEPA.

The Metro Amherst-Buffalo Corridor Study will utilize an objective evaluation process coupled with logic and reason by experienced transportation engineers and planners to systematically reduce the universe of alternatives (or long list of alternatives) to a select few that provide the range of reasonable alternatives that are the most feasible and prudent to be examined in detail in the AA. The range of feasible alternatives will undergo more detailed analysis resulting in the identification of a recommended LPA. The recommended LPA will then be subject to a subsequent environmental review study under NEPA.

2.1 Federal Transit Administration Requirements

Under the new federal surface transportation program, “Moving Ahead for Progress In The 21st Century” (MAP-21), the analysis of alternatives occurs now as part of the NEPA environmental review of a project—it is no longer a required stand-alone phase of study. However, FTA guidance states that AA studies remain useful precursors to NEPA environmental review studies, particularly when mode and alignment questions remain broad in a study area and are useful to narrow the range of alternatives to be studied during NEPA. Alternatives analysis has been a key part of FTA’s process for advancing local public transit projects for over 25 years. The study process builds on the information on regional travel patterns, problems, and needs generated as part of the metropolitan transportation planning process, as specified by 23 CFR Part 450 FTA/Federal Highway Administration (FHWA) Joint Final Rule on Metropolitan and Statewide Planning.

Guidance from FTA on linking the planning and NEPA process states that work from the transportation planning process must be documented in a form that can be appended to the NEPA document or incorporated by reference. To the extent possible, the documentation should be in a form such as official actions by the public transportation operator and/or include correspondence within and among the organizations involved in the transportation planning process. Further the guidance states that a planning-level analysis does not need to rise to the level of detail required in the NEPA process. Rather, it needs to be accurate and up-to-date, and should adequately support recommended improvements. The FTA states that past successful examples of using transportation planning products in a subsequent NEPA analysis are based on early and continuous involvement of environmental, regulatory, and resource agencies. NFTA intends to comply with this guidance in the conduct of the Metro Amherst Buffalo Corridor AA.

Thus, an AA study should employ a comprehensive, cooperative, and continuous public involvement and interagency consultation process and incorporate the intent of NEPA through the consideration of natural, physical, and social effects in the AA. It is important to involve environmental, regulatory, and resource agencies; and thoroughly document the transportation planning process information, analyses, and decisions; and vet the planning results through the applicable public involvement processes. Again, NFTA intends to comply with this guidance in the conduct of the Metro Amherst Buffalo Corridor AA.

NFTA elected to conduct an AA to narrow the choices of mode and alternative alignments and aid in decision making on the course of action to take under a separate and subsequent NEPA study. This may ultimately streamline the environmental review process because the results of prior planning work evaluating alternatives may be incorporated into the NEPA review. AA studies are useful where a large number of transit mode and alignment alternatives in a broad study area are under consideration as in this effort. As general good planning practice, FTA suggests sponsors look at a range of alternatives and consider carefully the evaluation criteria that will be used to choose among alternatives. However, in order to qualify for funding under the FTA New Starts program, 49 USC5309 requires that projects be based upon the results of an NEPA level environmental review.

Recent FTA guidance (*New and Small Starts Evaluation and Rating Process Final Policy Guidance*, dated August 2013) indicates that all project sponsors will need to calculate the measures for the evaluation criteria based on current year inputs. If future horizon estimates are desired by the sponsor, the FTA allows 10-year and 20-year estimates to be prepared. Sponsors, such as NFTA, may also submit a future horizon year analysis. For a 20-year horizon, the existing transportation network plus all projects identified in the GBNRTC's fiscally constrained long-range transportation plan (excluding the proposed action) would serve as the point of comparison. NFTA will prepare measures for a 2035 horizon, in addition to current year estimates.

At the conclusion of the AA study process, the NFTA Board of Commissioners will confirm the selection of the LPA, and the GBNRTC Policy Committee will adopt the LPA into the region's long-range transportation plan. NFTA will prepare a NEPA level study after FTA determines the NEPA class of action (either a Categorical Exclusion, or an Environmental Assessment or an Environmental Impact Statement), on which the FTA will issue an environmental determination confirming the LPA. NFTA will submit the required New Starts project justification and rating information to FTA and make a request to FTA to initiate engineering on the LPA. If approved, NFTA will initiate engineering on the LPA.

3.0 STUDY AREA DESCRIPTION AND BACKGROUND

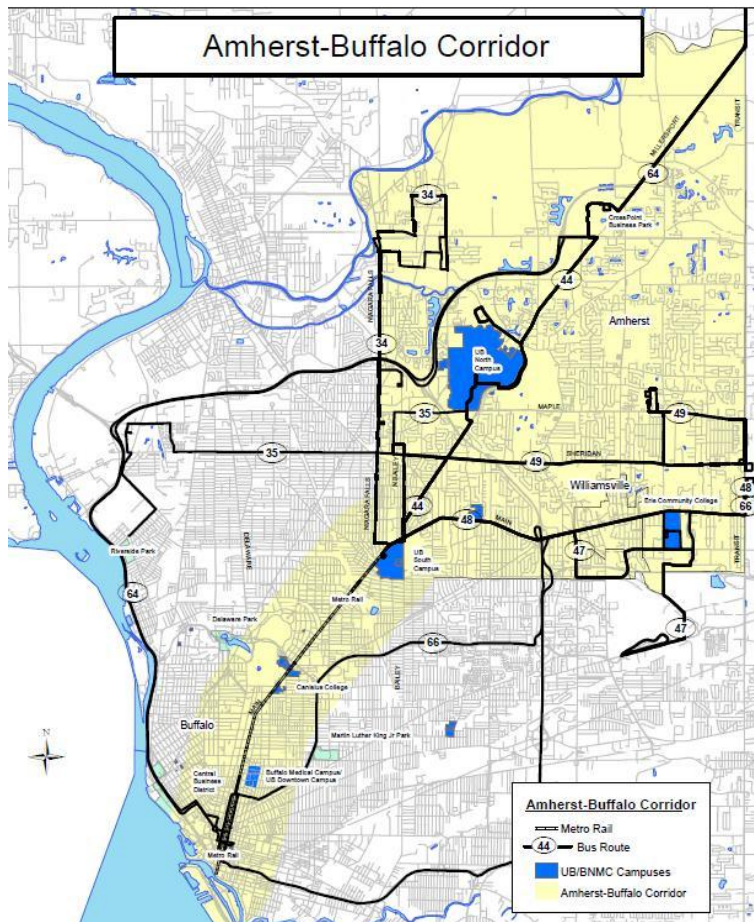
The Amherst-Buffalo project proposes expanding public transit service in the study corridor. Within the study area light rail service is provided by NFTA’s Metro Rail, a light rail line that runs for 6.2 miles between downtown Buffalo and the University at Buffalo (UB) South Campus. Several NFTA bus routes also serve the study area, and four routes connect Metro Rail’s University Station with destinations in Amherst. In addition, UB operates bus and shuttle service, including the Stampede bus routes, which connect the UB North Campus with the UB South Campus, and a number of private operators provide shuttle bus service from apartment buildings and other residential complexes to commercial areas and UB campuses and other colleges and universities.

The concept of providing enhanced transit service in the Amherst-Buffalo corridor dates back to the 1960s. At that time, plans considered the concept of a high-quality rapid transit line along the Main Street corridor between downtown Buffalo and the then-proposed UB North Campus. At one point, the preferred alternative was for an 11-mile line. Due to various considerations, the proposed project was scaled back to a six-mile rail line terminating at UB’s South Campus. This line opened in 1985 and continues to operate as Metro Rail.

3.1 Study Area Boundaries

The study area extends from downtown Buffalo along the Main Street corridor (see Figure 1). For the purposes of the AA, the study area will be the area that includes the paths of alternative alignments (including ancillary facilities and station areas), along with the geographic scope of the impacts of these alternatives.

Figure 1 Study Area Map



3.2 Purpose and Need

The purpose of the proposed project is to provide a fast, reliable, safe, and convenient transit ride in the Amherst-Buffalo Corridor linking established and emerging activity centers along the existing Metro Rail Line in the City of Buffalo with existing and emerging activity centers in the Town of Amherst. The project will better serve existing rail and bus riders, attract new transit patrons, provide employment opportunities, improve connections to/from Buffalo and Amherst, and support redevelopment and other economic development opportunities. Importantly, it will serve to improve livability by increasing mobility and accessibility in communities throughout the project corridor. The project will:

- Serve increased travel demand generated by new development in downtown Buffalo and in Amherst.
- Provide high-quality transit service to and from key activity centers in the Amherst-Buffalo Corridor by providing a time-efficient transit option connecting and serving key destinations in the corridor (University at Buffalo (UB) campuses, Buffalo Niagara Medical Campus (BNMC), the Buffalo central business district (CBD), business parks, the Buffalo waterfront, among others).
- Reduce carbon footprint.
- Increase employment opportunities in the corridor.
- Expand available workforce for businesses in the corridor.
- Better serve transit-dependent population segments and improve opportunities for participation of the workforce in the overall regional economy.
- Provide a reliable service that minimizes delays and optimizes on-time performance and thus provides an attractive travel option.
- Improve the system operating efficiency of the transit network.
- Support local and regional land use planning and transit-oriented design.
- Provide social benefits from transit investment that supports an array of economic and affordable housing development.
- Help meet the sustainability goals and measures as contained in state, regional, and local plans (One Region Forward-The Regional Plan for Sustainable Development, Buffalo Niagara 2050 - the Metropolitan Transportation Plan of the Greater Buffalo-Niagara Regional Transportation Council, Erie and Niagara Counties Framework for Regional Growth, the University at Buffalo 2020 Plan, the Western New York Regional Economic Development Council's (WNYREDC) Economic Development Strategic Plan, the City of Buffalo Comprehensive Plan, and the Town of Amherst Comprehensive Plan, among others).
- Help relieve parking constraints and capacity issues on the Buffalo Niagara Medical Campus and surrounding downtown area to minimize traffic and parking-related impacts on neighborhoods.

Expanded transit service in the study corridor represents a way to serve a growing transit market, provide direct transit service to this area, attract additional transit riders, help to reduce the rate of growth in traffic congestion, and link major activity centers.

The AA will examine alternative alignments and modes, engineering feasibility, ridership potential, station locations, project costs, possible funding, and screen for economic development, land use, , and environmental factors within the study area.

Evaluating the mobility problems and travel conditions within the project study area, several themes emerge that reinforce the need for transit improvements. The following themes represent the basis of the need for the project. Each of these themes is elaborated on in greater detail in the Purpose and Need Statement prepared for this project, which will be included in the AA report:

- The need to serve increased travel demand generated by recent, pending, and future development
- The need for high-quality service to key activity centers in the study area that provides reliable, on-time service,
- The need to serve better transit-dependent population segments

4.0 GOALS AND OBJECTIVES

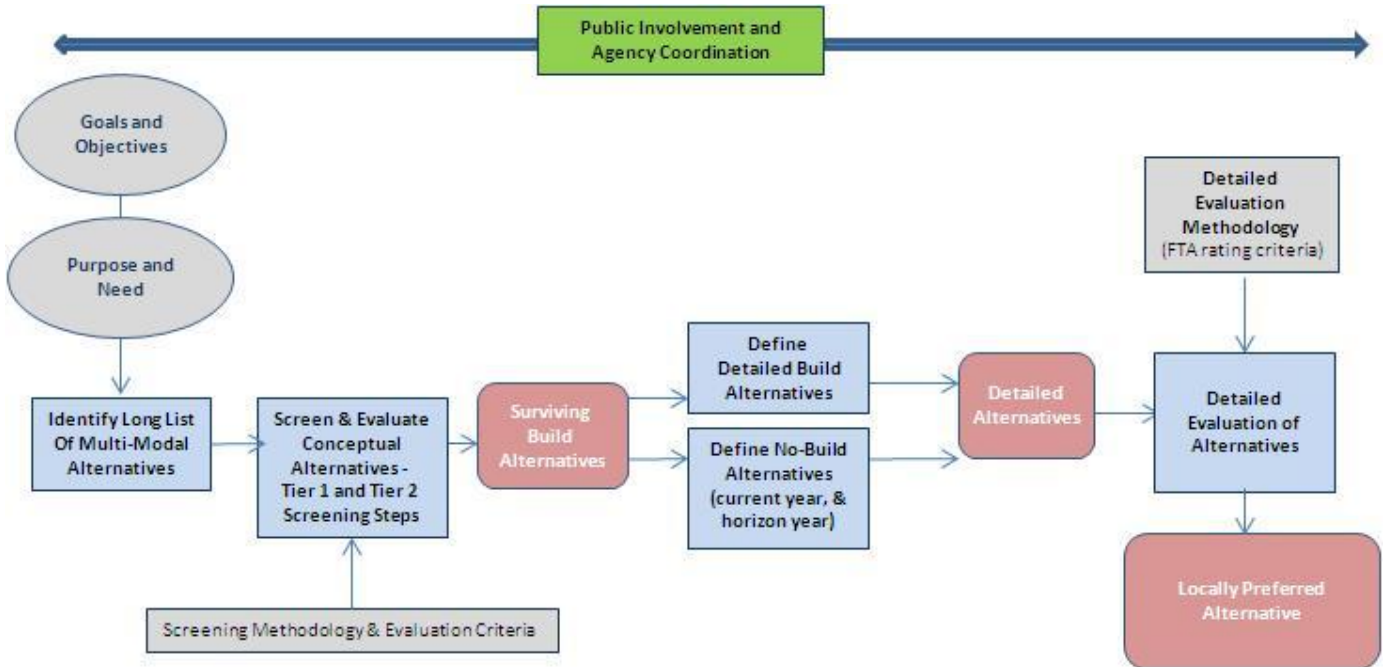
The following goals and objectives of the proposed project complement the purpose and need.

4.1 Goals, Objectives, and Screening Criteria

- Develop a cost-effective, attractive, and high-quality transit service to serve the Amherst-Buffalo Corridor that provides reliability and convenience to riders in order to improve mobility
 - Provide travel times competitive with automobile
 - Optimize on-time performance with a schedule unaffected by weather
 - Provide convenient and comfortable service
 - Maximize safety and security for riders, employees, and others
 - Increase access to employment opportunities
- Mitigate the growth of traffic congestion on study area roadways
 - Increase the share of trips using transit (both bus and rail) in study area
- Improve the accessibility of transit in the study area
 - Increase the number of transit options for work trips and non-work trips
 - Provide more convenient transit services for riders transferring to or from Metro Rail at University Station
 - Improve the connectivity of transit services
 - Improve livability by providing increased access to facilities such as, medical services, food shopping, retail shopping, entertainment, etc.
- Increase the effectiveness of the regional transit system
 - Increase system ridership
 - Increase system revenue
- Support sustainable future economic growth in the study area
 - Serve new markets with high quality transit services to support economic development
 - Provide the basis for transit-oriented development and design to enable the development/redevelopment of quality neighborhoods
 - Strengthen the regional economy and increase employment opportunities
- Avoid or minimize adverse community and environmental effects
 - Avoid or minimize impacts to sensitive environmental resources, e.g., minimize carbon footprint
 - Avoid or minimize negative impacts to neighborhoods
 - Avoid or minimize negative impacts to businesses

The proposed goals and objectives will be included as part of the public and agency involvement process for the project and are based on the planning and community involvement activities undertaken to date. As noted earlier in this document, the over-arching objectives of the AA study are (1) to develop a set of alternatives that respond to the transportation problems of the corridor; (2) to screen alternatives to identify those most responsive, (3) to optimize the performance of the most responsive alternatives within the limits of their technology and operating characteristics; (4) to analyze, evaluate, and refine in detail these alternatives; and thereby (5) to support the identification of an alternative as the LPA. Figure 2 below graphically depicts the study process as it relates to the screening and evaluation of alternatives.

Figure 2 Screening and Evaluation of Alternatives



The evaluation criteria for the project are provided in Table 1. These specific criteria will be used in the initial (Tier 1) screening process, secondary (Tier 2) screening process, and final (Tier 3) evaluation step. These criteria serve as measures of effectiveness that were developed collaboratively with NFTA and other stakeholders. The screening criteria measure the effectiveness of the alternatives. They will be applied in a way that permits an increasing level of analysis with each successive screening of alternatives.

Tier 1

The initial or Tier I screening entails a “fatal flaw” assessment of the long list of alternatives to identify alternatives that are (not) worthy of further consideration. For this initial screening, a set of criteria will be established that represents known market and engineering factors based upon the project’s purpose and need. If an alternative fails any of these criteria, it would be dismissed from further evaluation. In this earliest stage, a wide range of alternatives (or what is known as the “long list of alternatives”) will be screened against a few select measures that have the greatest potential to differentiate among these elements. The aim is to screen out alternative modes that are not applicable to serve the Amherst-Buffalo corridor’s transit market and alternatives that are not feasible (reasonable and prudent) engineering-wise. Tier I screening is aimed toward a fatal flaw determination and ensuring the reasonableness of an alternative to undergo further analysis.

Tier 1 entails first determining if the alternative would 1) address purpose and need and 2) is a suitable mode to address the transit market present in the study area. If it does not, the alternative is not screened further and is eliminated from further consideration. If the alternative is deemed to meet purpose and need and addresses the transit market, it undergoes the following two reasonableness tests.

Reasonableness Test 1:

- Is there sufficient land / right-of-way to accommodate the proposed cross-section?

Reasonableness Test 2:

- Is the alternative feasible from an engineering perspective: is it reasonable to build, operate, and maintain?

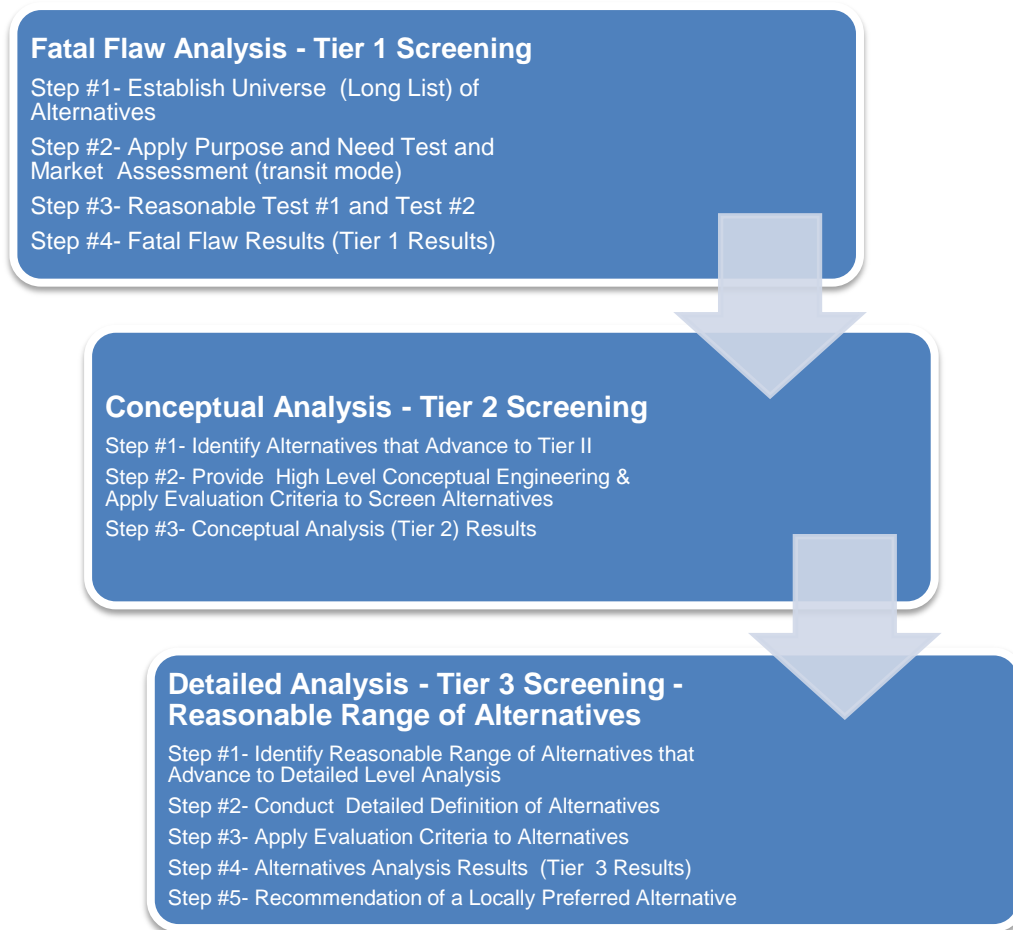
Tier 2

Alternatives surviving the Tier 1 screen are then developed into Conceptual Alternatives – meaning that a more detailed definition of each alternative is developed, including an initial service strategy. As a result of the greater detail developed for each alternative, a slightly more rigorous and more quantitative analysis can be performed to evaluate the alternatives in the Tier 2 screen. High-level conceptual level engineering is completed with order of magnitude estimated capital costs developed. Additionally, the application of a validated travel demand model for ridership estimates is undertaken. These calculations relate to the FTA project justification criteria of cost-effectiveness and mobility improvements.

Tier 3

Alternatives surviving the Tier 2 screen are then developed into Build Alternatives and are studied in detail within the AA report, which is the Tier 3 screen. More refined capital and operating costs are developed, and cost per rider estimation is performed as well as economic and land use impact assessment, funding feasibility assessments, and evaluation of community and environmental impacts. These calculations relate to the FTA project justification criteria of cost effectiveness, mobility improvements, environmental benefits, and economic development. Figure 3 below provides a graphic depiction of the tiered screening process, and Section 6 of this memorandum provides a more detailed discussion of the screening process.

Figure 3 Tiered Screening Process



As each step in the screening process is taken, the alternatives themselves also become increasingly more detailed in their definition. For example, possible station locations are developed for Conceptual Alternatives, but the possible impact of these stations on adjacent roadways is not determined until the detailed study of the Build Alternatives in Tier 3. Each step results in progressively fewer alternatives with higher levels of scrutiny. The screening process aims at reducing the range of alternatives to only those that are most reasonable and practical, ensuring that only the most reasonable and practical alternatives undergo detailed study. In summary, the three tiers of the screening process and the alternatives derived in terms of the outcome from each tier of screening consist of:

- **Tier 1:** Preliminary Screening of the Long List of Alternatives → Conceptual Alternatives
- **Tier 2:** Initial Screening of the Conceptual Alternatives → Build Alternatives
- **Tier 3:** Final Screening/Detailed Analysis of the Build Alternatives → Locally Preferred Alternative

Evaluation Criteria

Tables 1 and 2 present the preliminary evaluation criteria for this project. These criteria incorporate FTA's framework for evaluating and rating major transit capital investments (FTA's New Starts program). FTA released new Final Rules regarding the evaluation and rating of major transit capital investments in January 2013, and it released *New and Small Starts Evaluation and Rating Process Final Policy Guidance* in August 2013. New Starts projects are evaluated and rated according to criteria set forth in law.

The statutory FTA project justification criteria and their associated measures include:

- **Mobility Improvements** – total number of linked trips using the project, with extra weight given to trips made by transit dependent persons (estimated annual trips)
- **Environmental Benefits** – dollar value of anticipated direct and indirect benefits to human health, safety, energy, and the air quality environment, scaled by the cost of the project and computed based on the change in vehicle miles traveled (VMT) resulting from the implementation of the proposed project (as calculated from estimates of change in automobile and transit vehicle miles traveled)
- **Congestion Relief** – no measure has been defined yet by FTA; all projects will receive a medium rating
- **Economic Development** – the extent to which a proposed project is likely to enhance additional, transit supportive development in the future, based on a qualitative examination of local plans and policies to support economic development proximate to the project
- **Land Use** – an examination of existing corridor and station area development; development character; existing station area pedestrian facilities; existing corridor and station area parking supply; and affordable housing in the corridor and station areas
- **Cost-effectiveness** – annual capital and operating cost per trip on the project

The statute also requires FTA to examine the following when evaluating and rating local financial commitment:

- Availability of reasonable contingency amounts
- Availability of stable and dependable capital and operating funding sources
- Availability of local resources to recapitalize, maintain, and operate the overall existing and proposed public transportation system without requiring a reduction in existing services

The statute requires FTA to give “comparable, but not necessarily equal” weight to their evaluation criteria. In the Proposed Guidance issued, FTA is proposing to give each of the project justification criteria equal weight. Because of changes made by MAP-21, the final FTA rule does not address how FTA will develop overall New Starts project ratings. Instead, FTA has indicated that this will be the subject of future subsequent rulemaking. As an interim approach until that rulemaking process is complete, FTA has proposed to give 50 percent weight to the summary project justification rating and 50 percent to the summary local financial commitment rating to arrive at an overall rating. FTA also has proposed to continue requiring at least a medium rating on both project justification and local financial commitment to obtain a medium or better rating overall.

Table 1 Evaluation Criteria for Tier 1 Screening

- Does the alternative meet Purpose and Need? (if no, alternative fails)
- Is the alternative of a suitable mode to address the transit market present in the corridor? (if no, the modal alternative fails)
- Reasonableness Test #1: Can existing right-of-way/corridor land area accommodate cross-section needed? (if no, alternative fails)
- Reasonableness Test #2: Engineering feasibility: Is the alternative reasonable to build, operate, and maintain?
 - Does it have extraordinarily long or extraordinarily high and complex engineered structures relative to other alternatives? (if yes, alternative fails)
 - Does it exceed maximum grades that the transit vehicle type can negotiate? (if yes, alternative fails)
 - Does it exceed maximum curve radii for the transit vehicle type? (if yes, alternative fails)

Table 2 Evaluation Criteria for Tier 2 and Tier 3 Screening

(shaded text relates to FTA News Starts justification criteria and measures)

Topic	Tier 2 Screening Process Evaluation Criteria	Tier 3 Screening Process Evaluation Criteria
Right-of-Way Needs	Order of magnitude estimated right-of-way needs in terms of feet Percentage of ROW need of alignment length	Updated information on ROW impacts: residential, commercial, industrial, open space, agricultural, other
Engineering Feasibility	Number of structures At-grade percent and length, cut section percent and length, fill section percent and length, aerial section percent and length	Updated data on structures, at-grade, cut section, fill section, aerial section
Cost-Effectiveness	Order of magnitude capital cost	Capital cost estimate Operating cost estimate Cost per rider
Access to Activity Centers	Number of activity centers provided direct access	Updated information on activity center access
Number of Transfers	Number of transfers required to travel from downtown Buffalo and from University Station to Amherst’s key activity centers: UB North, CrossPoint Business Park, Amherst Commerce Park Interface with existing transit (# of stations that connect with existing bus routes, ranked High, Medium, Low)	Change in the number of transfers occurring in the study area Opportunity to reconfigure existing system and subsequent increase in system usage
Land Use	Population, households and employment in TAZ’s along alignment	Total and density of population, households, and employment within ½ mile of stations Affordable housing in station areas
Economic Development	Consistency with local and regional plans and strategies Existence of transit supportive land use adjacencies Potential for multimodal transit center (based on existing and/or potential transit supportive land use)	Ability to enable Transit Oriented Development

Topic	Tier 2 Screening Process Evaluation Criteria	Tier 3 Screening Process Evaluation Criteria
Mobility Improvements	Ridership estimate	Transit ridership: <ul style="list-style-type: none"> • Total number of linked trips • Total number of linked trips by transit dependent persons Change in transit ridership in study area Forecasted change in transit mode share Change in transit ridership in the region Estimated change in NFTA revenue
Congestion Relief		Congestion reduction Highway VMT Transit VMT
Travel Time		Average operating speed of service Travel time savings vs. No Build alternative Comparison of highway and transit peak period travel times between major travel pairs
Environmental Benefits	“Order of magnitude” for natural environmental impacts such as an alignment traversing a floodplain or wetland area (ranked High, Medium, Low)	Dollar value of anticipated direct and indirect benefits to human health, safety, energy, and air quality Quantified impacts to natural resources and other regulated resources
Neighborhood Impacts	“Order of magnitude” for neighborhood impacts such as an alignment going through neighborhood with a possible need to acquire residences (ranked High, Medium, Low)	Updated information on impacts to neighborhoods and community resources Benefits to low-income families
Commercial Impacts	“Order of magnitude” for commercial impacts with a possible need to acquire businesses (ranked High, Medium, Low)	Updated information on impacts to businesses and commercial areas

4.2 Appraisal Methods

Different methods of appraising the relative merits of alternatives will be employed. These are:

Logic (Tier 1 Screening) - This method of analysis is based on a description of the preliminary alternatives resulting from the identified need to provide a high-quality service that serves the transit market in the Amherst Buffalo corridor. Logic is used as the appraisal method for Tier 1 screening. Tier 1 screening is used to eliminate alternatives that are not feasible and reasonable, do not meet purpose and need, and are not appropriate modes to address the transit market in the corridor.

Scoring and Qualitative Assessment (Tier 2 Screening) - Alternatives that survive the Tier 1 screening are then refined into Conceptual Alternatives and assessed using a scoring and qualitative assessment method to reduce the set of alternatives to those most reasonable and feasible for possible implementation and for detailed study. This process involves completing a matrix that has a listing of evaluation criteria and a listing of each conceptual alternative. Some of these criteria relate to the FTA justification criteria, including land use, economic development, and mobility. Based on a technical evaluation, a "score" is given to each alternative for each criterion. Because this process tends to be subjective, caution will be exercised when employing this technique. This technique should be used as a helpful guide, not an absolute formula. Weighted scoring is a similar technique that weights individual criterion differently based on local values of goals and objectives.

Quantitative Analysis (Tier 3 Screening) - The resulting surviving conceptual alternatives from the Tier 2 screen are then taken into detailed study in Tier 3. Each alternative is defined in even greater detail. This method of evaluating alternatives relies largely on quantitative measurements to identify major advantages and disadvantages of each alternative and to identify a locally preferred alternative, and it brings into the evaluation process the measures that FTA will use to evaluate the proposed project for possible federal capital investment under their New Starts program (see prior discussion for a list of the justification criteria and related measures). The evaluation process uses a combination of appraisal methods to ascertain the impacts, benefits, and effects of the alternatives under detailed consideration. For this project, quantitative analysis will be utilized when the subset of retained alternatives undergoes detailed study in the AA. It is the detailed study that generates the quantification that is needed. This step is Tier 3 screening.

5.0 Alternatives Identification Process

There is no hard-and-fast rule regarding what constitutes a reasonable range of alternatives. What constitutes a reasonable range of alternatives depends on the nature of the proposed project and the facts of each case. At the same time, the concept of alternatives must be bounded by the notion of engineering feasibility, as NFTA desires the outcome of this effort to be the identification and adoption of a locally preferred alternative, which would then enter the NEPA phase of project development. An AA level study does not require a detailed discussion of the environmental effects of every possible alternative, especially when a particular alternative is only remotely feasible and speculative and thereby not reasonable. The range of alternatives to be considered in detailed study need not extend beyond those reasonably related to the purposes of the project bounded by feasibility.

Reasonable alternatives include those that are practical and feasible from the engineering, technical, and economic standpoint and make common sense, rather than simply being desirable from one viewpoint. Each alternative should be defined in a way that makes it competitive within the overall set of alternatives under consideration (i.e., it would be reasonable to pursue further engineering development of it). The alternatives must, within the limits of their definition, respond to the purpose and transportation needs in the corridor. Each alternative must also be refined to optimize its performance. Each alternative will have different strengths and limitations. Consequently, it is important that each alternative be refined to ensure that its specifications and operating policies make maximum use of the physical facilities that it would provide.

The project's long list of alternatives includes alternative alignments that were identified by previous studies and new alignments identified by NFTA and the consulting team in concert with the Steering and Project Advisory Committees and consultation with the Agency Coordination Committee, interviews with local stakeholders, and as a result of public meetings.

5.1 Alternatives Previously Identified

Planning documents were reviewed from the various agencies within the study area. These documents identified expanded service in the Amherst-Buffalo corridor as a desired transportation investment and reinforced the need for transit supportive land use. The following summarizes some of the findings and policies anticipated to impact changes in land use and transit-oriented development within the study area that would support new service.

Amherst

The town of Amherst adopted its current comprehensive plan in 2007 and amended it in 2011. The plan contains extensive provisions in support of center-based, transit-oriented development. It establishes land use objectives relating to concentrated development, mixed-use development, revitalized neighborhoods and commercial centers, and improved development standards. Its conceptual future land use plan identifies 17 mixed-use activity centers, including a University-Related Center, Special Use Centers, Highway/Intersection Centers, and Urban/Village Centers. The plan also provides detailed concept plans for "focal areas" including the UB North Campus. The plan states that mixed-use centers will provide an increased market for public transit. The plan refers to the previous proposals for extending light rail service to Amherst, and it states support for mixed-uses, alternative travel modes, and better integrating the community and the University. The plan notes an increasing number of town residents using NFTA bus service to access local industrial parks, as well as an increasing number of Buffalo residents traveling to employment and retail centers in Amherst.

Buffalo

The City of Buffalo adopted its current comprehensive plan in 2006. The planning process included evaluating future development scenarios. An urban revitalization scenario focused on physical rehabilitation of neighborhoods and housing, while a corridor/activity center scenario focused on attracting large-scale employment growth. An integrated regional center scenario is a balance of the other two scenarios, and it became the preferred scenario and basis for the plan. The plan includes many "Development Priorities and Planning Policies."

These policies included “Public Transit,” which included a map of proposed transit expansions. This map showed a conceptual extension of service from the UB South Campus to North Campus, running north along Niagara Falls Boulevard and then east to UB-North. Another policy, “Key Transportation Projects,” notes the recent trend of reinvestment along the Main Street corridor, and it referred to the corridor as tying together the city. Also, the plan’s Land Use Concept for 2030 highlighted key proposed land use changes, which included redevelopment along three Strategic Investment Corridors, one of which was the Main Street / Downtown corridor.

The City of Buffalo also is undertaking a historic revision of Buffalo’s land use and zoning policies that will promote investment, facilitate job creation, and improve the environment. Called “Buffalo’s Green Code,” the process includes a new land use plan that will guide the city’s development over the next 20 years. In addition, a new zoning ordinance – a form-based, unified development ordinance –will promote investment by making the development process simple, transparent, and in line with the vision for the city. The code will reinforce mixed-use, walkable places anchored by smart growth and sustainability principles.

University at Buffalo

The University at Buffalo (UB) has prepared *UB 2020*, a strategic plan for developing its three campuses and their environs. The plan proposes 7 million square feet of new building space, which would generate an estimated 10,000 new students and 6,700 faculty and staff. The plan calls for substantial growth of the Downtown Campus, which would generate new travel demand between the three campuses. A cornerstone of the plan is for each campus (downtown, South, and North) to have its own distinct identity while becoming better connected with each other and the community that surrounds them. *UB 2020* targets areas well-served by public transit for future development. It identifies the Main Street/Millersport Highway corridor – with the North Campus on one end, Downtown Campus on the other, and South Campus in the middle – as a primary target for investment and development. The plan encourages future growth within this corridor, building on existing infrastructure and centers of economic activity and relieving development pressure on the region’s remaining open space and natural resources.

Also, the UB Downtown Campus is integrated within the Buffalo Niagara Medical Campus (BNMC). The new master plan for BNMC estimates that at build-out the campus will have 17,500 employees. Major projects currently under construction at BNMC are the Women and Children’s Hospital, new facilities for the Roswell Park Cancer Institute, and the Conventus medical office building. Also under construction nearby is a new UB Educational Opportunity Center. Also at BNMC, UB recently unveiled design for its new School of Medicine and Biomedical Sciences, which will be built surrounding and encompassing NFTA Metro’s Allen Medical Station. Construction is underway and is expected to be completed in 2016. Several new residential projects are also occurring near BNMC and along Main Street.

Greater Buffalo Niagara Regional Transportation Council (GBNRTC)

The GBNRTC is the metropolitan planning organization (MPO) for the region. One of the duties of an MPO is to prepare a long-range regional or metropolitan transportation plan (MTP). The plan assesses current and future transportation needs and recommends transportation improvements to meet these needs. One of the criteria for projects to be identified in the GBNRTC MTP is consistency with the *Erie-Niagara Framework for Regional Growth*, which establishes a future center-based “smart growth” vision of development in the region. This vision identifies several growth and development principles, including maps of planning policy areas (developed, developing, and rural) and centers and corridors. It supports transportation infrastructure investment in developed areas, alternative modes of transportation, and enhancement of the livability of neighborhoods. The vision encourages the location of new public facilities and services close to existing and planned bus and light rail transit corridors, along with expanded efforts to encourage ridesharing and transit use. GBNRTC adopted its most recent MTP, the *2035 Long-Range Transportation Plan Update*, in May 2010. The plan’s recommended projects include one for “Amherst Corridor High Quality/High Capacity Transit Service” between University Station and CrossPoint Business Park. The estimated cost of this project is over \$450 million.

NFTA

As described in Section 3, many years of previous planning for transit to serve the Amherst – Buffalo corridor led to the current Metro Rail system. Since then, a few additional studies have occurred. In 2009, NFTA began an update to its Strategic Assessment in order to provide guidance on potential future major capital and operating investment alternatives. The work included assessing six high profile urban core arterial bus routes, along with four potential light rail expansion corridors, as candidates for possible future major investment. This corridor evaluation considered the following: service effectiveness (productivity), market intensity (forecast corridor population and employment), development opportunities, travel patterns, and existing ridership. For the Amherst-Buffalo corridor, the analysis considered two alternative alignments, both beginning at University Station and running north to the UB North Campus, terminating at a major future development at Audubon Parkway and Dodge Road. The “Boulevard” alignment runs north along Bailey Road and then northeast toward UB North. Major trip generators and destinations include Northtown Plaza, Boulevard Mall, and UB North. The “Millersport” alignment runs north along Millersport Highway, following the current route of the UB Stampede bus and providing a more direct connection between the two campuses. The analysis concluded that at least five corridors, including both Amherst-Buffalo alignments, are good candidates for further study for major transit investment. The study recommended conducting additional analysis, including travel demand modeling and basic feasibility analysis, to assess further the possibility of the corridors meeting the criteria for obtaining federal funding for service enhancements.

5.2 Stakeholder Outreach, and Public Meetings

At present, the first set of public meetings is anticipated for late fall of 2013. Detailed information on specific comments received will be provided in the Public Meeting Report, to be prepared after all comments are received.

Stakeholder outreach will be conducted throughout the AA. Stakeholder outreach was initiated at project inception in the spring of 2013 with meetings held by NFTA with key stakeholders and the formation of a Steering Committee and Project Advisory Committee to meet at key points throughout the duration of the AA. The Project Advisory Committee includes various community leaders, business owners, and other entities, and it will provide NFTA comments and input on key project steps. Another series of Public Meetings are anticipated to be held in 2014 to introduce the general public to the screening results the alternatives that would undergo detailed study.

5.3 Field Reviews and Reconnaissance

Extensive field reviews and detailed parcel mapping have been and will be conducted during the alternatives evaluation process to clearly identify existing rights-of-way, building setbacks, landscape and topographic features, existing transportation facilities, land uses, destinations that could be served by transit, and potential locations for transit stations. This information will be combined with general design standards to identify opportunities and constraints along an alternative’s alignment within the project area.

6.0 Evaluation and Screening Process

This section describes the evaluation and screening process used to assess the reasonableness of alternatives being considered in the AA. A comparative evaluation of advantages, disadvantages, and cost differences of the alternatives will be conducted, along with environmental screening of the most promising alternatives (retained alternatives that will undergo detailed study in Tier 3). Each of the alternatives will be analyzed for their effect on the transportation system, community, environment, costs, and financial feasibility.

This basis for evaluation allows the benefits and impacts of each alternative to be measured with an objective set of criteria that relate to the specific needs for this project. As the evaluation progresses with respect to these criteria, the most suitable alternatives will emerge for more detailed analysis, eventually leading to the identification and adoption of the locally preferred alternative by local decision-makers. While the methodology offers an objective procedure for comparing potential transit options in this specific corridor, it also takes into consideration FTA's criteria for evaluating transit projects competing for New Starts funding to facilitate fully informed decision making.

Using a three-tier screening methodology, alternatives that either have fatal flaws or little opportunity to enhance transportation in the study area will be eliminated. In the first screen of the process, a wide range of alternatives will be evaluated at a broad level against a select few measures that have the greatest potential to ascertain the feasibility of each alternative. The second screen is to help discriminate among the remaining alternatives to identify those most reasonable to take into detailed study. Detailed study is the third screen of the process where a detailed evaluation is done on all alternatives and will be documented in detail within the AA report. In order to allow a comparison to a do-nothing situation, a "No Action" alternative (No Build Alternative) will be considered as the performance baseline. The alternatives that undergo detailed study for Tier 3 will be subjected to a greater number of more detailed analytical measures, and the total transit system performance will be evaluated.

6.1 Evaluation Framework

The evaluation framework is based on the successive, iterative screening of alternatives. The performance of alternatives will be assessed based upon measures of effectiveness and appraisal techniques that achieve local goals and objectives, as data is developed. The evaluation may include weighting and scoring of alternative attributes to calculation of numeric rankings based on comprehensive benefit /cost analysis.

6.2 Screening Process

The screening process provides a rational framework to screen preliminary alternatives and eliminate alignments with obvious fatal flaws or major deficiencies. These deficiencies will be documented in a systematic way with sufficient justification to convince federal agencies, the public, and other stakeholders that these alternatives should not be pursued further. This screening will be structured to permit as many early decisions as possible to simplify large, complex sets of alternatives so that both the technical work undertaken in detailed study and the volume of information provided to decision makers can be kept to manageable levels.

The process includes three screening steps. These screening steps will bring alternatives from the long list of Preliminary Alternatives to a smaller number of Conceptual Alternatives to ultimately a subset of Build Alternatives to that will undergo a more detailed technical and environmental analyses as part of the evaluation process in order to identify a locally preferred alternative that will be advanced into subsequent NEPA phase and eventually engineering.

The primary purpose of each step in the screening process is to identify those alternatives that best meet study area needs and are the most likely to be a candidate for the locally preferred alternative. Additionally, the screening process will provide insight into how the alternatives can be refined or modified to improve their

effectiveness in satisfying local goals and objectives. And finally, the screening process will identify logical sub-areas for analysis and to prioritize and concentrate study resources in those sub-areas that make the most sense.

The evaluation methodology is a multi-step process, whereby increasingly detailed and comprehensive measures of effectiveness are applied to a decreasing number of alternatives. **Each step in the evaluation process is thus designed to focus the analysis on progressively fewer alternatives with higher levels of scrutiny.** As the process progresses, more quantitative and fewer qualitative measures are used.

Preliminary Screening- Long List of Alternatives (Tier 1 Screen)

- Assessment on project purpose and need and transit market to be served (modal)
- Assessment of the sufficiency of land / right-of-way to accommodate the proposed cross-section (near fatal flaw analysis)
- Assessment of engineering feasibility and reasonableness to build, operate, and maintain the alternative(near fatal flaw analysis)

Initial Screening – Conceptual Alternatives (Tier 2 Screen)

- A slightly more rigorous and more quantitative analysis in comparison to Tier 1
- Relies on a more detailed definition of each alternative, including an initial service strategy and possible stations
- Requires a high level of conceptual level engineering with order of magnitude estimated capital costs
- Application of a validated travel demand model for ridership estimates

Final Screening – Build Alternatives (Tier 3 Screen)

- Much more detailed definition of each alternative including additional engineering
- Service plan for each Build Alternative and revised service plan for previously existing transit services
- More refined capital and development of operating and maintenance costs
- Refined ridership forecasting
- Cost per rider estimation
- land use analysis
- Financial feasibility
- Evaluation of community and environmental effects

6.2.1 Preliminary Screening (Tier 1 Screen)

The preliminary screening process will include an evaluation of a long list of alternatives, also referred to as the universe of alternatives, developed from previous studies, committee and stakeholder interactions, and public meetings.

Using existing information, field reconnaissance, aerial photography, and NFTA standards, a number of alternatives will be screened out. The goal is to determine whether the alternative is reasonable, in terms of it being practical and feasible. The analysis will focus on eliminating alternatives that are not viable for the transit market to be served and do not meet purpose and need. The Draft Purpose and Need Statement and evaluation criteria will play a role as a guideline in this preliminary step, since the alternatives will not be technically evaluated in detail.

This universe of alternatives will be screened to eliminate any alternatives that are flawed or if a closely similar alternative exists that clearly eliminates or reduces concerns, or clearly provides an advantage on alignment, profile, or constructability.

The preliminary screening process (Tier 1) will result in the conceptual alternatives for Tier 2 screening.

6.2.2 Initial Screening (Tier 2 Screen)

For the second level of screening, both quantitative and qualitative values for the evaluation criteria in Table 1 will be used. Additional information will be developed, as compared to Tier 1, to provide the basis for analyzing alternatives and eliminating some from further consideration. The evaluation criteria used in the screening are linked to a specific objective and goal. This Tier 2 Screen will identify order-of-magnitude costs and the likely possible benefits of each conceptual alternative being analyzed. The primary criteria will center on cost and anticipated ridership potential.

Conceptual alternatives will be ranked according to each one of the criteria. It is typical in planning projects to find alternatives that perform well in terms of some criteria but are less satisfactory in terms of others. This will be taken into consideration and used in the screening by evaluating tradeoffs between the criteria. A typical tradeoff analysis involves the analysis of the performance of the conceptual alternatives according to some benefit criterion in relation to their costs.

The short list of Build Alternatives resulting from this initial screening step (Tier 2 Screening results in Build Alternatives which proceed into detailed study in the AA) will be analyzed by NFTA, its project committees, and the consultant team in the context of the stakeholder environment and with public input.

Following the Tier 1 and Tier 2 Screen, a Screening Report will be prepared for comment. The report will document how the alternatives were evaluated and the results of the findings of technical analysis. This document will form the Alternatives Considered chapter of the AA. The alternatives that pass Tier 2 screening will be advanced to Final Tier 3 Screening to be compared and contrasted to the No Build Alternative.

6.2.3 Final Screening (Tier 3 Screen)

The final screening will be on the short list of Build Alternatives to be evaluated in detail in the AA and will allow the team to do a more in-depth analysis (more detailed study) of alternatives with the criteria defined for the Tier 3 screen. The team also will introduce new criteria that require more specific and comprehensive environmental screening analysis that would be too time consuming and costly as well as unproductive to do for a longer list of alternatives. Many of the criteria to be utilized in the final screening will include technical data that are required in FTA's New Starts project rating process.

The results of the final screening (Tier 3) will be contained within the AA document, which compares and contrasts the No Build and Build Alternatives and identifies the recommended locally preferred alternative. At the end of the preparation of the AA report and after public comment, NFTA staff will present recommendations to the NFTA Board for possible adoption of the LPA. NFTA staff will present recommendations to the GBNRTC Policy Committee for possible adoption of the LPA into the region's long-range transportation plan. If these two adoptions occur, the NEPA phase of study can commence and a NEPA level environmental review document will be developed and will identify the LPA, its likely impacts, and its mitigation commitments. Upon completion of the NEPA phase, FTA will issue an environmental determination on the NEPA document.