



Metro Rail Expansion Project Project No. 34LZ1725

Environmental Methodology

December 2018

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1 Introduction

1.1 PROJECT DESCRIPTION

The Niagara Frontier Transportation Authority (NFTA) Amherst – Buffalo Light Rail Extension Project (Project) consists of approximately seven (7) miles of a new double track Light Rail Transit (LRT) line running from University Station at UB South Campus to the area near Audubon Parkway and I-990, through the municipalities of Buffalo, Tonawanda, and Amherst, in Erie County, NY. The Transit Options Amherst-Buffalo Alternatives Analysis (AA) was initiated by NFTA in the fall of 2012 along with study partner, the Greater Buffalo Niagara Regional Transportation Council (GBNRTC) to evaluate a range of high quality transit service alternatives and identify a locally preferred alternative (LPA). In January, 2017 the NFTA Board of Commissioners accepted the Niagara Falls Boulevard Light Rail Transit Alternative alignment as the recommended locally preferred alternative. The following figure depicts the LPA (map will be updated once Refinement of LPA is complete).

The Locally Preferred Alternative (LPA) would begin at the South Campus Station and utilize the existing tunnel to Bailey Avenue. The alignment would continue underground below Bailey Avenue and Eggert Road to a portal near Alberta Drive. Once at the surface, the LPA alignment would utilize a dedicated guideway in the center of Niagara Falls Boulevard ROW to the Boulevard Mall. North of Sheridan Drive, the guideway would be constructed within the existing Niagara Falls Boulevard median (at-grade) and would continue in the center of Maple Road to Sweet Home Road. The concept alignment would utilize dedicated guideway rail lines in the center of Sweet Home Road to a point near the Rensch Road Entrance to the UB North Campus. On the campus, the concept alignment would utilize surface lanes running parallel to and south of Putnam Way. The concept alignment would exit the UB campus utilizing a surface guideway and travel in the median of John James Audubon Parkway to area near the I-990 interchange, where the LRT would terminate within the property just to the north of the interchange. The alignment does not account for any grade separations along the LPA alignment. There are nine proposed at-grade stations and one proposed underground station.

The next step in this process is the evaluation of the LPA through the completion of the environmental review process. NFTA, as the Designated Lead Agency, is preparing an Environmental Impact Statement (EIS) for the Metro Rail Expansion project in accordance with the requirements of the State Environmental Quality Review Act (17 NYCRR [New York Codes, Rules and Regulations] Part 15). Since NFTA may apply for federal funds administered through the Federal Transit Administration (FTA) or other federal sources to cover a portion of the project's capital costs, it is anticipated that that the environmental analyses conducted for the SEQRA EIS will also be compliant with the National Environmental Policy Act of 1969 (NEPA); 42 USC § 4321 et seq. Completion of the NEPA process with a published Record of Decision (ROD) will allow NFTA to enter into Federal Transit Administration's (FTA) Capital Improvement Program's (CIG) Project Development phase.



1.2 REPORT PURPOSE

The purpose of this report is to document the preliminary approach that will be used to evaluate the environmental consequences of the LPA (Project). An existing baseline of the affected environmental will be established including a future No Build condition (the No Action Alternative); to identify the potential impacts of the Project, the LPA will be compared to the future No Action Alternative. An analysis year of 2040 will be used, which includes the anticipated year of completion (2030) and a reasonable planning horizon to evaluate long term environmental consequences. This Environmental Methodology Report is in coordination with the scope of work and will serve as a basis for the scoping document and framework for the content of the Draft Environmental Impact Statement (EIS) and Final EIS / Statement of Findings (SOF). The methodology described in this document may be updated as the project evolves, based on feedback received during scoping and/or with any environmental guidance changes.

The EIS process and the framework of the analytical analyses will be in accordance with the requirements of the NYSDOT Procedures for Implementation of the State Environmental Quality Review Act (SEQRA), as defined in Title 17 of the New York Codes, Rules and Regulations Part 15 (17 NYCRR Part 15). The EIS will also be prepared in accordance with the Council on Environmental Quality (CEQ) regulations for implementing the procedural provisions of the National Environmental Policy Act (NEPA), guidance from the FTA of the U.S. Department of Transportation, and. As per CEQ regulation, the environmental document will be reasonable in length and focused on issues of importance to decision makers, as identified during the scoping process. Clear and concise language will be utilized to communicate the Project's environmental and community impacts to the public and achieve the goal of a streamlined environmental process.

1.3 QUALITY ASSURANCE

Per the Project Management Plan (PMP), the PMP is designed to establish the framework per Title 49 of the Code of Federal Regulations (CFR), Part 633 for managing the project. Appendix A provides the PMP describing the process for completing a quality review for each major deliverable, including the Draft EIS, Final EIS, and any technical reports associated with the development of the EIS.

1.4 PROJECT TEAM

The Project Team is made up of various consultants performing tasks outlined in the environmental methodology. The table below identifies the consultants responsible for completing the required sections of an EIS.

	WSP	AKRF	Mott MacDonald	Watts	Highland Planning	McMahon & Mann	Foit-Albert	Strategic Economics	Sowinski Sullivan
Purpose and Need	X								
Alternatives Considered	X		X			X			X
Transportation	X		X						X
Land Use	X							X	
Socio-Economic Conditions	X				X			X	
Acquisitions and Displacements	X						X		
Neighborhoods and Community Facilities	X	X							
Environmental Justice	X	X							
Visual Resources	X								
Cultural Resources	X	X							
Parklands, Recreation Areas, and Open Spaces	X								
Section 4(f)	X								
Natural Resources	X			X					
Water Resources	X			X					
Soils and Farmlands	X								
Noise and Vibration	X	X							
Air Quality	X								
Energy	X								
Climate Change and Adaptation	X								
Hazardous and Contaminated Materials	X			X					
Safety and Security	X								
Construction Effects	X		X						X
Indirect and Cumulative Impacts	X	X							
Finance	X								
Public Participation and Agency Coordination	X				X				

2 EIS Organization

The EIS document will be organized into five chapters as described below. This report focuses on the methodologies for Chapter 3, Environmental Analysis. A summary of the other EIS chapters is provided below.

2.1 PURPOSE AND NEED

Chapter 1 of EIS will present the reasons for the proposed Project through a clearly articulated statement of its purpose and need. An initial purpose and need statement was identified in the Alternative Analysis document. This chapter will refine the purpose and need and related project goals and objectives. This chapter is currently under development and will be updated as the alternatives and environmental work continues.

2.2 ALTERNATIVES CONSIDERED

Chapter 2 of the EIS summarizes the Alternatives Analysis (or just AA) and provides a description of all alternatives considered, why certain alternatives are no longer considered, and how the LPA was selected. While this chapter is currently under development, it will be updated if any changes occur (such as a new alternative identified in project scoping).

2.3 ENVIRONMENTAL ANALYSIS

Chapter 3 of the EIS will present the evaluation of potential transportation, social, economic, and environmental impacts (beneficial and adverse) of the Project. Subject areas include the following:

- Transportation
- Land Use
- Socio-Economic Conditions
- Acquisitions and Displacements
- Neighborhoods and Community Facilities
- Environmental Justices
- Visual Resources
- Cultural Resources
- Parks, Recreation Areas, and Open Spaces
- Section 4(f)
- Natural Resources
- Water Resources
- Soils and Farmlands
- Noise and Vibration
- Air Quality
- Energy
- Climate Change and Adaptation
- Hazardous and Contaminated Materials
- Safety and Security
- Construction Effects
- Indirect and Cumulative Impacts (including short-term, long-term, and commitment of resources)

2.3.1 Mitigation Strategies

Once the potential environmental impacts for a resource category have been estimated, mitigation will be considered. Mitigation measures are defined in the CEQ Regulations (40 CFR Par 1508.20 – *Regulations for Implementing the Procedural Provisions of the National Environmental Policy Act*) in five ways.

- 1) Avoiding the impact completely by not taking a certain action or parts of an action
- 2) Minimizing impacts by limiting the degree or magnitude of the action and its implementation
- 3) Rectifying the impact by repairing, rehabilitating, or restoring the affected environment
- 4) Reducing or eliminating the impact over time by preservation and maintenance operations during the life of the action
- 5) Compensating for the impact by replacing or providing substitute resources or environments.

As each potential impact is considered, the above strategies will be considered when developing appropriate mitigation based on the unique components of the proposed Project design and needs and culture of the resource being impacted. Where it is determined that mitigation should be provided, alternative approaches will be developed and considered by affected stakeholders to determine the most appropriate mitigation solutions. Factors to be considered when developing mitigation strategies include, but are not limited to:

- Effectiveness of achieving transportation goals of the Project
- Effects on transit operations
- Capital / operation and maintenance costs
- New impacts created
- Compliance with current federal, state, and local environmental protection laws and ordinances
- Acceptability to the community and applicable regulatory agencies

Mitigation measures will be documented in the Draft and Final EIS documents and incorporated into all future project development phases. Mitigation measures will be addressed for each respective subject area.

2.4 FINANCE

Chapter 4 of the EIS will present a financial analysis for the Project, as described in Chapter 2. This chapter will also include a description of the NFTA's capacity to fund the Project. The following sub-sections are anticipated:

- Capital Funding Strategy
- Operating Funding Strategy
- Risk Analysis
- New Starts Rating

2.5 PUBLIC PARTICIPATION AND AGENCY COORDINATION

This chapter of the EIS will summarize the public involvement and agency coordination undertaken during the NEPA and SEQR review, including public meetings and hearings held to solicit comments on the Scoping Document and the Draft EIS. Overall, the public outreach effort is based on a Public Participation and Agency Coordination Plan (Appendix B), which is a separate document that outlines the process that will be used in incorporate public feedback into the Project and to formalize public comment on the Scoping Document and Draft EIS.

3 Environmental Analysis

The environmental analysis will consider potential direct, indirect, and cumulative effects of the Project on the social, economic, and environmental resources within the study areas. FTA and NYSDOT have established specific methodologies and criteria to assess potential environmental effects under NEPA, which will be followed in completion of the technical analyses in the EIS. Where specific criteria are not provided by FTA and NYSDOT, the EIS will rely on methodologies developed or adopted by SEQRA.

The proposed analysis methodologies are outlined for the subject areas to be evaluated in the EIS. The methodologies summarize the study areas, regulatory requirements, analysis tools, and criteria for identifying potential environmental impacts in the EIS. Methodologies will be further detailed in the EIS. If impacts are identified, mitigation measures will be identified using the strategies described in section 2.3.1. Potential mitigation measures that are specific to a subject area are outlined along with the subject area methodology.

Each chapter of the EIS will focus on potential impacts related to operation (i.e., the post-construction condition) of the Project. The construction effects chapter will identify the potential construction-period (i.e., temporary) impacts on relevant environmental resource areas in the construction analysis years.

3.1 TRANSPORTATION

The transportation analysis considers the system of moving people and goods from place to place. It includes various modes of travel (i.e., cars, buses, trucks, trains, bicycles, and walking) that work collectively to get people and goods to their destinations. The transportation analysis in the EIS will assess the individual modes of travel in the study area to determine whether the Project would hinder the safe and/or efficient movement of people and goods. The EIS will consider both the local and regional effects of the Project on transportation.

3.1.1 Affected Environment

A separate Transportation Methodology Report (Appendix C) was prepared in coordination with NFTA, GBNRTC, and NYSDOT. The results of this work will be summarized in a Transportation Technical Report, which will provide a basis for the transportation EIS analysis.

Data collection efforts will focus on current traffic conditions of the Project alignment, including corridor lane configuration, on-street parking, signage, speed limits, non-motorized facilities, signal locations, other traffic control, and transit stops and routing. Signal timing permits will be obtained for all signalized intersections along the corridor. Traffic turning-movement counts will be collected for 18 intersections during the AM and PM peak hours of a typical weekday (Tuesday, Wednesday, or Thursday) on a non-holiday work week while area schools are in session. Counts will also be obtained for the peak hour on a Saturday as well. All counts will include vehicles, pedestrians, and bicycles with heavy vehicle classification.

The chapter will describe the existing and future travel patterns along the corridor utilizing the travel demand model's outputs for daily trip purpose and trips by mode. A summary of the existing public transit service and operations, ridership, and performance, as well as planned improvements will be developed. Similarly, the existing roadway network (including bicycle and pedestrian), planned improvements, traffic volumes and speeds, and parking conditions will be summarized.

3.1.2 Environmental Consequences

Utilizing the Transportation Technical Report results, as well as the data sources noted above, this chapter will summarize the results of the No Build Alternative versus the Project. Transit travel times,

ridership projections, and roadway operation will be summarized, and any impacts to non-motorized transportation modes and intersection operations will be identified.

3.2 LAND USE

This chapter will describe the existing land uses, zoning, and other public policies such as comprehensive plans or economic development plans. Trends and known development projects or other proposed future land uses expected by the 2040 analysis year will also be identified and described. The Project will be assessed for consistency with existing and future and land use, zoning, and public policies.

3.2.1 Affected Environment

The study area for the land use and analyses will be a 1/4 mile on either side of the Project alignment and 1/2-mile radius from proposed stations.

Potential data sources include the following:

- Existing land use data layers in Geographic Information System (GIS) (city, towns, and county to provide)
- Current land use and development plans
- Listing of major projects under construction or proposed (city and towns to provide)
- Vacant and underutilized Land, GIS data layers (city and towns to provide)
- Zoning GIS data layers (city, towns, and county to provide)
- Station area plans (city, towns, county to provide)
- Field reviews

3.2.2 Environmental Consequences

The impact assessment will focus on future conditions for each alternative and their consistency with the city, towns, and county land use plans and zoning ordinance. The following items will be analyzed and discussed:

- General description of land use and activity centers
- Description of local plans and regulatory environment, including zoning regulations
- Description of the station area plans, including yards and maintenance areas
- Assessment of the effects of the proposed Project on development (station areas)
- Joint development potential

3.3 SOCIOECONOMIC CONDITIONS

This section of the EIS will document the socio-economic composition of the corridor and consider the Project's potential effects on socioeconomic conditions, such as population, housing, and primary business sectors.

3.3.1 Affected Environment

The study area for socio-economic conditions includes the area located within 1/4-mile (1320 feet) on either side of the Project alignment and 1/2-mile radius from proposed stations. Census tracts will be identified and the portions of the census block groups within the identified buffer considered in the analysis as described in *Appendix A: Sample Methodology for Estimating Station Area Socio-Economic Statistics* from the *Reporting Instruction for the Section 5309 New Starts Criteria*.

U.S. Bureau of Census data, MPO data, and planning data from Erie County, the City of Buffalo and the towns of Tonawanda and Amherst will be used in this analysis. Much of the existing data will be obtained from the recent TOD study, as well as 2010 U.S. Census and the most recent American Community Survey (ACS). Data at the regional, county and census tract and block group levels, as

well as data from the ridership model. Potential data include the following with the city, towns, county, and MPO to provide where noted:

- 2010 census data for population and race
- ACS data for income, ethnicity, age, poverty levels, employment and housing from most recent 1-year, 3-year or 5-year estimates as appropriate as described in the U.S. Census Bureau General Data Users Handbook, 2008
- Existing employment, labor force and at place employment by selected categories data, including types of employment, and distribution (city, towns, county, and MPO to provide)
- Future population projections for census tracts through 2040 (city, towns, county, and MPO to provide)
- Future employment projections for census tracts through 2040 (city, towns, county, and MPO to provide)
- Existing and projected housing growth (city, towns, county, and MPO to provide)
- Redevelopment opportunities data from New Starts Supplement report, 2018 TOD Station Analysis Economics Benefit Report
- General discussion of economic generators, economic activities and markets

3.3.2 Environmental Consequences

Projected data that builds on growth assumptions contained in the ridership model will be used to predict how changes to transit availability and physical impacts of the Project will affect the corridor and the Greater Buffalo region. Impacts on population and employment will be evaluated from a transit service and accessibility perspective based on the riders anticipated to be served by light rail stations. Population, housing, and employment data will be presented at both the county level and Project corridor level for the base year and forecast year (2040). The primary economic focus areas will be locations identified in the TOD study as redevelopment opportunities.

3.4 ACQUISITIONS AND DISPLACEMENTS

The Project could require the purchase of property, potentially resulting in displacement of residential, commercial, or industrial uses. Permanent or temporary easements could also be required for the Project right of way. Encroachments by businesses or residents (buildings, storage of materials, fences, etc.) and other illegal use of the existing right-of-way may be present along the corridor and would need to be resolved to ensure available right-of-way for the Project. In addition to acquisition or displacement along the Project right-of-way, additional areas that could require acquisition include station areas, park-and-ride lots, maintenance facilities, rail yards, and ancillary facilities such as traction power substation locations and signal structures. Individual acquisition parcels will be identified, mapped, and set in the context of neighborhoods, community services, and environmental justice populations. Potential easements will also be identified.

Procedures and programs related to right-of-way acquisition for the Project will be consistent and in accordance with applicable federal rules (the Uniform Relocation Assistance and Real Property Acquisition Policy Act of 1970), state rules and regulations, and NFTA's updated Real Estate Acquisition Management Plan (RAMP). Local sources of information will include the Erie County Tax and Property Appraiser database.

3.4.1 Affected Environment

The study area for displacements and relocations is site specific and therefore, is defined as the construction limits of the Project and any areas identified for construction staging.

Data for this analysis include:

- Confirmed list of acquisitions and displacements (including impacted on-site parking spaces if available), as identified for the Draft EIS and the Final EIS

- NFTA RAMP
- Erie County Tax and Property Appraiser database

3.4.2 Environmental Consequences

Tasks and activities related to displacements and relocation will be coordinated with the City of Buffalo, towns of Tonawanda and Amherst, and Erie County, as necessary.

1. Identify potential acquisitions and relocations based on engineering drawings overlaid on current aerial photography and GIS mapping, depicting the proposed right-of-way limits for the Project, including full acquisitions and partial acquisitions
2. Conduct field reviews to verify current parcel use of affected properties
3. Calculate residential, business/industrial and institutional displacements of the Project
4. Determine type of business/industry or institution that will be displaced
5. Determine affected tax value and tax revenue loss to the county/city/towns
6. For full acquisitions, estimate the number of relocations of residents and employees
7. Determine the likelihood of displaced businesses relocating within the county based on the availability of appropriate land and buildings that would be comparable in site characteristics, desirability of location and cost
8. Determine the overall impact to the housing supply and employment in the city, towns, and county
9. Assess the access impacts to businesses along the proposed right-of-way that may experience changes to vehicle access, on-site parking and pedestrian access (in such instances where access or parking is affected, appropriate mitigation measures will be identified)
10. Ensure the availability of information to affected property owners, business owners and residents for the following programs: Relocation Assistance, Relocation Moving Payments, Relocation Replacement Housing Payments or Rent Supplement (this effort will be handled entirely by NFTA having jurisdiction over the affected displacement)

3.5 NEIGHBORHOODS AND COMMUNITY FACILITIES

The assessment of neighborhoods and community facilities will include an evaluation of the effects of the Project on the cohesiveness of residential areas (the ability of residents to communicate and interact with each other in ways that lend to a sense of community) and community facilities. Items of importance to people such as mobility, safety, economic effects, relocation, separation, noise and aesthetics will be identified. The process will evaluate the effects of the proposed Project on communities and their quality of life.

3.5.1 Affected Environment

The study area for Neighborhoods and Community Services includes the land area located within 1/4-mile on either side of the Project alignment and 1/2-mile radius from proposed stations. Neighborhoods or facilities where only a portion of the area falls within in the distance-based buffer will be considered in their entirety for analysis purposes.

Data collection efforts will focus on obtaining maps, data and qualitative information on existing conditions, including existing established neighborhoods, proposed neighborhoods, existing community services and public issues and concerns. Potential data for the neighborhoods and community services evaluation will include the following with the city, towns, and county to provide data pertinent to future projections where noted:

- Aerial photography and field verification
- Delineation of Neighborhood Statistical Areas
- Identification of schools, churches and other religious institutions, libraries, post offices, community centers, parks, greenways, hospitals, fire stations and police stations;
- GIS data layers showing community facilities (city, towns, and county to provide);
- Community issues/concerns gathered through public involvement
- Identification of limited English proficiency (LEP) populations
- Identification of special populations, e.g., transit-dependent, disabled, elderly

Work previously completed will be used to the extent practicable.

3.5.2 Environmental Consequences

The evaluation of the impact of the Project on neighborhoods and community cohesion will include consideration of direct and indirect impacts. In addition to initial reviews of aerial photography and necessary site visits, existing neighborhood travel patterns (physical barriers), land use and community services, including an inventory of existing emergency services (police, fire and EMS) and their locations and routes, will be noted. The types of neighborhood and community service impacts that will be evaluated include the following:

- Property acquisitions and/or displacements
- Loss of parking spaces/facilities
- Division of neighborhoods (such as potential physical barriers associated with introducing the Project into neighborhood environments)
- Social isolation (such as potentially isolating a portion of an ethnic group or neighborhood)
- Facilitating new development
- Facilitating rehabilitation or reuse of existing development
- Changes in property values
- Impacts on neighborhood access
- Changes in neighborhood identification;
- Changes in access to community facilities and services
- Traffic and pedestrian safety considerations
- Walkability and bike ability
- Noise impacts
- Visual impacts
- Impacts on special populations, such as those who are transit-dependent, disabled or elderly

3.6 ENVIRONMENTAL JUSTICE

Pursuant to Executive Order 12898, an environmental justice analysis will be prepared to identify any disproportionately high and adverse impacts on minority or low-income populations that could result from the Project.

3.6.1 Affected Environment

Socio-economic data collected for the study area and for the City of Buffalo and Erie County for comparative purposes (including for minority households, transit-dependent populations and low-income households) will be used to identify locations of populations of concern. Erie County will be used as a comparison tool because of the potential regional influence of this Project and because it best represents the regional project area.

3.6.2 Environmental Consequences

The Environmental Justice analysis will follow the guidance found in the U.S. Department of Transportation's (USDOT) *Final Order on Environmental Justice*, April 1997 (as subsequently amended), as well as the U.S. Environmental Protection Agency's (EPA) *Guidance for Incorporating Environmental Justice Concerns in EPA's NEPA Compliance Analyses*, April 1998 and FTA's *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (Circular 4703.1 effective August 15, 2012).

The following tasks will be performed as part of the environmental justice analysis:

1. Establish Environmental Justice Setting - As per the FTA Guidance Document dated August 15, 2012, minority populations include "persons who are American Indian and Alaska Native, Asian, Black or African American, Hispanic or Latino, and Native Hawaiian and other Pacific Islander." Low-income populations are defined as persons "whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines." Following CEQ guidance, minority populations may be identified where either: (1) the minority population of the affected area exceeds 50 percent; or (2) the minority population percentage of the affected area is meaningfully greater than the minority population percentage in the general population or other appropriate unit of geographic analysis. According to CEQ guidance, low-income populations in an affected area should be identified with the annual statistical poverty thresholds from the Bureau of the Census' Current Population Reports, Series P-60 on Income and Poverty (13.5 percent for 2015).¹ According to the USDOT order, low-income population means any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons (such as migrant workers or Native Americans) who will be similarly affected by a proposed DOT program, policy or activity. Per FTA guidance, there is no need to identify a significant threshold; rather, the guidance suggests that effects on any minority or low-income population in the study area be considered. In order to set a conservative boundary for defining minority and low-income populations in this analysis, thresholds that reflect local conditions in the affected area have been established per CEQ guidance. In some cases, additional Environmental Justice communities may be identified even in census areas that do not achieve the threshold percentages, in accordance with USDOT and FTA guidance.

Within the study area, demographic data will be collected at the census block group level and aggregated. Percentages of the demographic data will be calculated to provide a comparative analysis.

2. Areas where the Project would have the potential to cause significant direct, indirect or cumulative adverse impacts (on human health, the natural environment, or the community) from the long-term operation of the Light Rail service and construction activities will be described in relation to the Environmental Justice communities. Factors that will be considered include, but are not limited to, the following:
 - Transportation benefits and impacts, such as changes in transit service, access to transportation services and facilities, mobility, and walkability
 - Changes in the provision of Community Services
 - Whether the Project would result in changes that would affect neighborhood cohesion, such as the placement of physical barriers
 - Alteration of visual/aesthetic characteristics
 - Impacts to Parklands used by EJ communities
 - Changes in Air Quality
 - Noise and Vibration impacts

¹ <http://census.gov/library/publications/2016/demo/p60-256.html>

- Acquisitions, displacements, and relocations, including an assessment of business impacts by type with regard to changes in access to businesses and services that could potentially impact EJ communities
3. The Project will be planned and designed to minimize impacts to Environmental Justice communities to the maximum extent practicable. A comparison of the race/ethnicity characteristics and socioeconomic status of the population in the study area who would benefit from the Project will be compared to those who would be adversely affected. If disproportionately high adverse impacts would result from the Project, mitigation measures will be developed through coordination with the affected community.
 4. The Public Participation and Agency Coordination Plan includes an extensive outreach program of community meetings throughout the Project area, including the ability to provide project information in multiple languages, as necessary. A description of the outreach efforts undertaken to inform and involve minority and low-income populations who may be affected by the Project will be provided.

3.7 VISUAL RESOURCES

NEPA, as well as other regulations concerning federally funded projects, identifies aesthetics as one of the factors in the human environment that must be considered in an EIS in determining the effects of a transportation project. The aesthetic quality of a community is composed of visual resources (e.g., physical features that make up the visible landscape).

Visual impacts affect communities from two perspectives: the view from surrounding streets and buildings of the transportation improvement as it fits into the pre-existing landscape, and the transit user's view of adjacent land uses from inside the transit vehicle. Visual impacts to an area are ascertained by defining the existing visual environment; identifying key views in that environment; analyzing visual resources and community perception of those resources; depicting the project appearance; assessing the visual impacts of the Project; and, developing mitigation measures.

The FTA does not provide specific guidance for assessing visual impacts. Therefore, the following Federal Highway Administration publications will be used for guidance: "Guidance for Preparing and Processing Environmental and Section 4(f) Documents" (Technical Advisory T 6640.8A, 1987), and "Esthetics and Visual Quality Guidance Information" (August 1986). The visual resource section will also be prepared in accordance with the State Environmental Quality Review Act (SEQRA) guidance for assessing potential visual and aesthetic impacts of a project, including NYSDEC guidance policy "Assessing and Mitigating Visual Impacts."

3.7.1 Affected Environment

The study area (or area of visual effect) for visual and aesthetic impacts will be determined through an analysis of existing viewsheds, topography, building heights, and vegetation.

Data for this task will be collected through a combination of field review, photographs and a review of local plans and ordinances relevant to visual and aesthetic considerations.

An initial visual inventory will be established to describe the character of the existing visual environment and identify visually sensitive resources and viewers. Areas of similar visual character will be identified and the corridor will be segmented into visual analysis units based on visual character.

The following steps will be taken to define and analyze aesthetic issues:

- Review local plans and ordinances pertinent to visual and aesthetic considerations as they relate to planning for, and constructing, transportation projects;
- Identify the Project's viewshed and inventory the visual features in the study area. These features will include landforms, manmade development, water features and vegetation;
- Describe the existing visual character of the study area, using photographs to illustrate existing conditions;
- Describe the viewer groups in the study area; include people who will view the Project and people who will have a view from the Project. Groups potentially having a view of the Project can include residents, travelers, workers and shoppers. Groups with a view from the Project would include the transit riders (some of whom would also be among the groups having a view of the Project);
- Review public input gained from the Station Area planning process; and,
- Identify visually sensitive locations along the Project alignment and categorize the level of sensitivity for identified locations or vistas.

3.7.2 Environmental Consequences

The visual impact discussion will explain potential visual impacts within each visual analysis unit with regards to the various project elements constructed within that unit: the proposed rail line, grade separations, stations, miscellaneous rail equipment such as power substations or maintenance facilities. The impact analysis will describe how the proposed Project will change views from these locations, particularly at station sites and bridge structures. Consider the scale and features of the proposed Project. Where determined necessary, 3-D visualizations developed for other project purposes may be used to assist in the analysis of the visual impacts.

If adverse impacts are identified, techniques will be outlined that can minimize these impacts, including the location of alignment and use of color, unique or significant construction materials, full cut-off or directed site lighting, artwork opportunities, landscaping, screening, incorporation of architectural features, earthwork and litter control. Visual mitigation measures can also include design components such as landscaping and architectural standards for the station platforms; park-and-ride facilities; transit way; substation locations; bridge structures and retaining walls; and, new roadways and/or access drives to transit facilities.

3.8 CULTURAL RESOURCES

Section 106 of the National Historic Preservation Act of 1966 (NHPA) requires federal agencies to take into account the effects of their undertakings on historic properties. For this Project, the term "cultural resources" will be used to collectively refer to historic properties, including archaeological sites. As defined in the Section 106 regulations, historic properties include "any prehistoric or historic district, site, building, structure, or object included in, or eligible for inclusion in, the National Register of Historic Places" (36 CFR §800.16(l)(1)).

3.8.1 Affected Environment

The study area for cultural resources is called the "Area of Potential Effects" (APE). The APE will differ between the historic resources (also known as architectural resources) and archaeological resources.

The APE for historic resources is the geographic area(s) that includes the proposed right-of-way limits for the Project and areas extending outward from the proposed right-of-way limits in which the proposed Project may cause direct or indirect changes in the character or use of properties or sites listed or eligible for listing in the NRHP. For the purposes of this Project, it is anticipated that the APE for historic resources will generally be defined as 150 feet from the centerline of the proposed Project, except in station areas or grade separation areas where the APE will be extended to a larger area where the potential for impact exists and where structures that may be eligible for the NRHP are

located. For stations where there is a potential for the station locations to shift slightly, a larger APE will be identified. As none of the station locations have been finalized, this expanded APE will apply to all 17 stations (pending concurrence from NYS Historic Preservation Office).

The APE for archaeological resources will be defined as the construction-limits of the Project and will be subject to site specific investigations for archaeological resources.

Data needed for the historic and archaeological resources assessment will be collected through a combination of field work and documentary research, including a review of online databases, such as that of the State Historic Preservation Office.

3.8.2 Environmental Consequences

3.8.2.1 Historic Resources

The following activities will be completed to identify historic resources within the APE:

- Invite interested parties and Indian tribes to serve as consulting parties in the identification of historic resources and conduct consultation activities
- Conduct an architectural resources survey within the revised APE to update earlier findings and to identify any new historic resources that are now 50 years or older or that were outside of the APE of the prior undertaking
- Prepare a Preliminary Summary of Findings with the results from the architectural resources survey and make a presentation of these findings to SHPO for review and comment
- Prepare an architectural resources survey report to include a historic/architectural context and evaluations of eligibility for each property which appears to warrant such level of investigation
- Submit architectural resources survey report to SHPO for review and concurrence on determinations of eligibility.

Once the architectural resources survey report is submitted to SHPO for review/concurrence, efforts will commence to prepare the Evaluations of Effects Report and determine the potential effects of the Project by applying the criteria for adverse effect. As defined by the Advisory Council on Historic Preservation, the Criteria include the:

- Physical destruction, damage or alteration of all or part of the property;
- Isolation of the property from or alteration of the character of the property's setting when that character contributes to the property's qualification for the National Register;
- Introduction of visual, audible, or atmospheric elements that are out of character with the property or alter its setting;
- Neglect of a property resulting in its deterioration or destruction; and,
- Transfer, lease or sale of the property.

The effects identified in the Evaluation of Effects Report will be presented in the Draft EIS. It is expected that a SHPO review and concurrence on effects evaluations will occur prior to the publication of the Draft EIS. If SHPO response is not provided within 30 days, the consultant-recommended effects determinations may be used in the circulated Draft EIS and then updated for the Final EIS with SHPO's final concurrence. The following activities will be completed in order to identify the impacts of the Project on historic resources:

- Apply criteria for adverse effect and prepare Evaluations of Effects Report
- Submit Evaluations of Effects Report to NFTA for transmittal to SHPO

3.8.2.2 Archaeological Resources

The following activities will occur to identify archaeological resources within the APE and evaluate the potential effects of the Project:

- Review the records on file with SHPO and New York State Museum to update any previous research and historic context;
- Conduct a Phase 1 archaeological survey of the LRT alignment and additional areas of potential ground disturbance. The survey will locate, identify and assess the potential of any recorded sites for eligibility for the National Register of Historic Places (NRHP)
- Submit the report to NFTA for transmittal to the State Historic Preservation Office (SHPO) for review and concurrence of recommendations
- Conduct Phase 2 testing, if warranted, on any sites within the APE that appear potentially eligible for the NRHP; the testing should result in a recommendation regarding eligibility.

If adverse effects are identified for a site that is recommended eligible for, or is listed in, the NRHP, options to resolve those adverse effects will be identified in consultation with SHPO and consulting parties.

3.9 PARKS, RECREATION AREAS, AND OPEN SPACES

This section will analyze the Project's potential environmental impacts and benefits to existing and planned public parklands, including public parks, greenways, recreation areas, and wildlife and waterfowl refuges.

3.9.1 Affected Environment

The study area for parks and recreation will include the land area located within 1/4 mile (1320 feet) on either side of the Project alignment and 1/2-mile radius from proposed stations. Facilities where only a portion of the area falls within in the distance-based buffer will be considered in their entirety for analysis purposes.

Potential data sources include the following:

- State, County, and local parks and recreation data and maps (city, towns, and county to provide)
- City, towns, and county greenway plans (city, towns, and county to provide)

The evaluation methods used to describe impacts to parkland will first involve a review and inventory of available State and County parks and recreation database information/maps to identify any existing or potential lands utilized or to be utilized for park or open space activities located in the study area. Specific information to be collected includes park name, boundaries (from tax mapping or other source as required), distance to proposed rail right-of-way, park use (public/private), designated recreational uses/functions, land area, ownership, physical appurtenances, access and relationship to similarly used lands in the vicinity and Section 4(f)/Section 6(f) applicability. This information will be obtained through a combination of literature search and field visits.

A field visit will be conducted to confirm the presence/location and determine characteristics of identified parklands. Other environmental features contained within these park areas (i.e. wetlands, streams, floodplain areas, wildlife habitat and unique vegetation) will be noted.

3.9.2 Environmental Consequences

The boundaries of identified public parklands located within proximity to the proposed Project corridor will be compared to the city, towns, and county GIS layer for parks. The Project GIS layer will be overlaid to determine impacts. Direct impacts, including permanent uses, temporary uses, and constructive uses, will be calculated in acreages and/or linear feet, as applicable. Indirect impacts will be quantified by identifying the distance of the proposed infrastructure from each parkland within the

analysis area. The type of activities occurring within each park where proximity impacts are likely to occur will be noted and any interference with activities designated to occur within each park will be identified as an indirect effect.

3.10 SECTION 4(F) EVALUATION

A Section 4(f) evaluation will be included in the Draft EIS if a use of Section 4(f) resources is determined. Section 4(f) of the U.S. Department of Transportation Act of 1966, as amended, protects historic and cultural resources, public parks and wildlife refuges from conversion to transportation uses unless: (1) it can be demonstrated that there is no feasible or prudent alternative to the use of such land, and (2) such program includes all possible planning to minimize harm to such park, recreation area, wildlife and waterfowl refuge, or historic sites resulting from such use. Section 4(f) applies to historic sites regardless of ownership, but only to publicly-owned parks, recreation areas and refuges.

3.10.1 Affected Environment

Resources to be evaluated in the Section 4(f) evaluation document would include publicly-owned parks, recreation areas and refuges, historic, archaeological or cultural resources that would be used by the Project that would constitute a permanent, temporary or constructive use under the regulations will be evaluated.

Data from the Section 4(f) evaluation will rely upon data contained in the assessments for historic, archaeological and cultural resources; parklands; and, natural resources investigations.

3.10.2 Impact Assessment Methods

Assessments methods will include the identification of a “use” that would be permanent, temporary or constructive. For properties that have an identified “use”, the Section 4(f) evaluation will document and assess the extent of the impact to the 4(f) resource in terms of linear feet or acres and whether feasible and prudent alternatives exist to avoid the 4(f) resource.

Key activities for assessing feasible and prudent alternatives will include:

- Documentation of avoidance alternatives developed during station site location and planning analysis
- An evaluation of whether or not the avoidance alternatives are feasible, meaning if it cannot be built as a matter of sound engineering judgment, or prudent, which is defined as whether or not it:
 - 1) compromises the project that it is unreasonable to proceed with the Project
 - 2) results in an unacceptable safety or operational problems
 - 3) after mitigation, it would still cause severe impacts to other resources
 - 4) it results in additional construction, maintenance or operations costs of an extraordinary magnitude
 - 5) causes unique or unusual problems
 - 6) it involves multiple factors listed above that cumulatively cause unique problems or impacts of an extraordinary magnitude

3.10.3 Avoidance, Minimization and Mitigation Plans

In accordance with Section 4(f) of the U.S. Department of Transportation the use of historic and cultural resources, public parks and wildlife refuges parklands, will be avoided if at all possible. If avoidance is not feasible, efforts to minimize the use of Section 4(f) properties will be made and a least harm alternative will be developed. If a 4(f) avoidance alternative cannot be developed, the Section 4(f) Evaluation will identify why avoidance alternatives are not feasible and prudent in accordance with Section 4(f) guidance.

3.10.4 Section 4(f) Statement

The Final EIS will contain a Section 4(f) Statement that will document all possible planning to reduce harm to Section 4(f) resources and will include coordination documentation from Section 4(f) resource officials, including but not limited to SHPO and State and County parks providers. The 4(f) Statement will address comments from the U.S. Department of Interior, FTA, and any other public and agency official that may have provided comments during the Draft EIS public comment period.

3.11 NATURAL RESOURCES

This section of the EIS will evaluate the impacts of the alternatives on ecosystems including: existing threatened and endangered species (fish, plants and wildlife), habitats and flora. The impact evaluation process will be focused on identifying both beneficial and adverse impacts. Where potential adverse impacts are identified, design modifications and mitigation measures will be identified to reduce or eliminate the impact.

3.11.1 Affected Environment

Data collection for natural areas will be made for a corridor-wide area; however, the impact assessment will be limited to a study area to be defined as the construction limits of the Project alignment and stations.

Input regarding the relevant resource areas will be collected from a review of US Fish and Wildlife Service (USFWS) Threatened and Endangered Species databases, New York State Heritage's databases, Erie County Soil Survey, aerial photography, topographic maps and a technical staff field investigations. The most current data from local sources and recent aerial photography, supplemented by limited field work, will be used in the analysis.

3.11.2 Environmental Consequences

The environmental evaluation for this study will begin with a broad review of environmental factors to identify notable issues and constraints. Some of these factors and considerations were documented during project scoping. Where relevant, this information will provide the starting point for the environmental analysis. The environmental analysis will require that the alternatives be evaluated at a level of detail that may impact design. The focus will be on site-specific impacts, the significance of these impacts and what mitigation measures may be required. Consultation with resource agencies will determine further consultation/coordination required with respect to project impacts, mitigation and permitting.

3.11.2.1 Plant Communities

The assessment of plant or floral communities will be conducted with a review of the natural communities. Natural communities in the study area will be categorized using the New York State Heritage's Classification of the Natural Communities of New York State document and determined from aerial photography and select ground truthing. Since the Project corridor is largely urbanized, it is anticipated that only elements of the original natural community may remain in the study area. These plant communities within the study area will be categorized and depicted on aerial photography.

3.11.2.2 Wildlife

Erie County's Demographic, Employment and Land Development database will be utilized for water resources, parklands, open space areas and natural areas. USGS maps, National Wetland Inventory (NWI) maps, Erie County Soil Survey and other published sources will be reviewed as needed. Aerial photography will be reviewed and a field visit will be conducted to identify quality wildlife habitat along the corridor that might contain threatened and endangered species.

3.11.2.3 Forests

Impacts to forest resources will be determined using the site productivity index in the soil survey. No analysis will occur in those portions of the alignment where the land has been developed.

3.11.2.4 Protected Species

Threatened and endangered species will be analyzed for this section of the document. Collected resource studies will be presented and include tables of county-listed federally protected species and their current status; locations of nearest populations; habitat requirements; physical descriptions and blooming periods; and, biological conclusions. The presence of suitable habitat for protected species, if present, will be identified and mapped. Field visits conducted during data collection efforts will verify presence of suitable habitat. This section will summarize the quality of that habitat and document sightings of protected species, if applicable.

3.11.2.5 Significant Natural Heritage Areas

Potential impacts to Significant Natural Heritage Areas will be reviewed using the Natural Heritage Program database.

3.12 WATER RESOURCES

Water resources (groundwater, surface waters, floodplains/floodways and wetlands) will be analyzed to determine potential impacts of the Project alternatives, as per the Wild and Scenic Rivers Act, Section 7 (b), (c) Air Quality, Clean Air Act, Sections 176 (c) and (d), and 40 CFR 6,51,93. The impact evaluation process will be focused on identifying both beneficial and adverse impacts. Where potential adverse impacts are identified, design modifications and mitigation measures will be identified to reduce or eliminate potential impacts.

3.12.1 Affected Environment

The study area for water resources will vary according to the technical resource area. The study area for groundwater resources will extend 500 feet from the alignment. The study area for surface area water resources and floodplains will include the streams and rivers within the larger watershed and the Project corridor. The study area for wetland assessment will be limited to the construction limits of the Project where site specific impacts would result; however, wetlands within the larger Project corridor will be noted through a review of regulatory maps and resources.

Input regarding the relevant resource areas will be collected from a review of topographic mapping, County soil surveys, National Wetlands Inventory (NWI) maps, New York State Department of Environmental Conservation aquifer mapping and data, United States Environmental Protection Agency watershed data, FIRM maps and technical staff field assessments. The most current data from local sources and recent aerial photography, will be used in the analysis.

3.12.2 Environmental Consequences

The environmental evaluation for this study will begin with a broad review of environmental factors to identify notable issues and constraints. Some of these factors and considerations were documented during project scoping. Where relevant, this information will provide the starting point for the environmental analysis. The environmental analysis will require that the alternatives be evaluated at a level of detail that may impact design. The focus will be on site-specific impacts, the significance of these impacts and what mitigation measures may be required. Consultation with resource agencies will determine jurisdictional status and further consultation/coordination required with respect to Project impacts, mitigation, and permitting.

3.12.2.1 Groundwater

The New York State Department of Environmental Conservation water well database will be checked for any located wells along the Project alignment.

3.12.2.2 Surface Waters and Wetlands

Surface waters and other potential waters of the U.S. within the Project corridor will be identified using published resources, mapping, and aerial photography. Surface waters and potential waters of the U.S. within the study area will be demarcated on base maps to allow an assessment of potential development conflicts with these areas.

Review of available environmental assessments, along with a field screening for potential wetlands will be performed through field visits along the Project corridor. A comparison of the field screening to the NWI and previous environmental assessments will be conducted. Any potential wetland areas will be demarcated on base maps to allow for an assessment of potential development conflicts with these areas.

3.12.2.3 Floodplains and Regulatory Floodways

A review of map products of Flood Insurance Studies completed by the Federal Emergency Management Agency (FEMA) will be conducted to assess potential development restrictions in the Project corridor. Flood Insurance Rate Maps (FIRM) and local Floodplain Land Use Maps (FLUM) will be reviewed to identify the extent of the potential flood hazard along the Project corridor. Special flood hazard areas within the study area will be demarcated on base maps to allow an assessment of potential development conflicts with these areas.

3.12.2.4 Water Quality

Water quality in the Project corridor will be qualitatively assessed through a combination of field observations and literature review. Surface waters will be discussed in the context of the river basin, sub-basin, hydrologic unit, as well as stream classifications as established by NYSDEC. Additional literature to be reviewed will include the 303(d) list of impaired waters and the basin wide assessment reports and water quality plans promulgated by NYSDEC, including listings of National Pollution Discharge Elimination System (NPDES) permitted dischargers. Local water quality requirements will be addressed. The role that storm water and drainage issues in the Project corridor potentially have on water quality in the study area will be assessed, incorporating the findings of the preliminary drainage assessment. A brief overview of key storm water infrastructure will be provided, including notable outfall locations.

3.13 SOILS AND FARMLANDS

Soils in the Project study area will be evaluated as part of the Farmland Protection Policy Act (FPPA) regulation (7 CFR 658). This requires federal agencies to evaluate the impacts of federally funded projects that may involve converting farmlands to nonagricultural uses and to consider alternative actions that would lessen the adverse effects of the land's conversion. The evaluation process will focus on identifying any Prime, Unique, or of Statewide Important Farmlands.

3.13.1 Affected Environment

National Resource Conservation Service (NRCS) form CPA-106 will be submitted to the State Conservationist to obtain information on the farmland resources as this is a corridor-style project. This will cover the immediate construction area, the full parcels that are impacted by construction and any areas impacted by the construction of park and ride lots, stations or maintenance facilities.

3.13.2 Environmental Consequences

The farmland impact discussion will explain potential impacts to farmlands of importance along each proposed corridor with regards to the various constructed project elements: the proposed rail line, stations, and maintenance facilities. The impact analysis will describe how the proposed Project will convert farmlands to suburban or urban use, particularly at station sites and park and ride lots.

3.14 NOISE AND VIBRATION

Analysis of noise and vibration associated with the Project will use procedures described in the Federal Transit Administration (FTA) guidance manual, *Transit Noise and Vibration Impact Assessment* FTA-VA-90-1003-06, May 2006. Following the methodologies set forth in this document, airborne noise and vibration impacts are analyzed using three-step processes that consists of screening procedures, general noise and vibration assessment, and detailed analyses. The screening procedure is performed first to determine whether any noise- or vibration-sensitive receptors are within distances where impacts are likely to occur. If the screening reveals that there are noise- or vibration-sensitive receptors in locations where impacts are likely to occur, then a general noise or vibration assessment is performed to determine locations where impacts could occur. If this general assessment indicates that a potential noise or vibration impact does exist, then a detailed noise or vibration analysis may be necessary. The FTA's detailed analysis methodologies are used to predict impacts and evaluate the effectiveness of mitigation with greater precision than can be achieved with the general assessment methodologies.

3.14.1 Affected Environment

Existing land uses will be reviewed with FTA's screening distances for each Project component (see Section 4.11.1.1 below) and noise-sensitive receptor locations will be identified and categorized according to the Land Use Categories from the FTA guidance manual, which includes:

- Category 1: Tracts of land where quiet is an essential element in the intended purpose. This category includes lands set aside for serenity and quiet, and such land uses as outdoor amphitheaters and concert pavilions, as well as National Historic Landmarks with significant outdoor use. Also included are recording studios and concert halls. (Outdoor $L_{eq(h)}$ is the noise metric used at these types of land use for the noisiest hour of transit-related activity during hours of noise sensitivity).
- Category 2: Residences and buildings where people normally sleep. This category includes homes, hospitals, and hotels, where a nighttime sensitivity to noise is assumed to be of utmost importance. (Outdoor L_{dn} is the noise metric used at these types of land use).
- Category 3: Institutional land uses with primarily daytime and evening use. This category includes schools, libraries, and churches, where it is important to avoid interference with such activities as speech, meditation, and concentration on reading material. Places for study or meditation associated with cemeteries, monuments, museums, campgrounds and recreational facilities can also be considered to be in this category. Certain historical sites and parks are also included. (Outdoor $L_{eq(h)}$ is the noise metric used at these types of land use for the noisiest hour of transit-related activity during hours of noise sensitivity)

Based on the types of receptors identified, noise monitoring locations will be selected, and a noise monitoring program will be developed to measure existing noise levels in the study area. The noise monitoring locations will be selected to provide geographic coverage of the study area, account for the various noise sources throughout the area (including rail activity, vehicular traffic, aircraft activity, industrial sources, etc.), determine the range of existing conditions throughout the study area, and represent those locations with the greatest potential to experience a significant increase in noise levels associated with the Project. The noise survey will include a combination of 24-hour continuous noise level measurements and 1-hour spot noise measurements. During each noise level

measurement, weather conditions, physical geometry of the surrounding area, and contributing noise sources will be noted.

Similarly, vibration-sensitive receptor locations will be identified and categorized according to the Land Use Categories from the FTA guidance manual, which includes:

- Category 1: Buildings where vibration would interfere with interior operations;
- Category 2: Residences and buildings where people normally sleep
- Category 3: Institutional land uses with primarily daytime use.

The FTA manual notes that there are some buildings, such as concert halls, TV and recording studios, and theaters, that can be very sensitive to vibration and noise but do not fit into any of the three categories. Because of the sensitivity of these buildings, they usually warrant special attention during the environmental assessment of a transit project. Table 8-2 in the FTA manual gives criteria for acceptable levels of ground-borne vibration and noise for various types of special buildings.

The study area for noise and vibration will be defined by FTA's screening distances for noise and vibration. Screening distances for airborne noise vary depending on the Project component as follows:

- Fixed guideway (light rail transit) – 350 feet unobstructed; 175 feet with intervening buildings;
- Shops and yards – 1,000 feet unobstructed; 650 feet with intervening buildings;
- Parking facilities – 125 feet unobstructed; 75 feet with intervening buildings;
- Ancillary facilities – 250 feet unobstructed; 125 feet with intervening buildings.

The screening distances for vibration and ground-borne noise for the Project vary based on the category of land use:

- 450 feet for Category 1 Land Use
- 150 feet for Category 2 land use
- 100 feet for Category 3 land use

Data Needs

- Scaled maps and aerial photographs (cut sheets) showing the alignment and parking
- Scaled maps of all realigned or newly created roadway segments
- Land use map and information along corridor to identify locations of highly sensitive land use such as theaters/auditoriums, recording studios, vibration-sensitive research institutions, etc.
- Letter of introduction for consultant staff
- Information on existing and future rail and bus activity (schedules, average speeds, number of cars, etc.)
- The type and model of locomotive and cars for future trains
- Peak hour existing and future traffic data (includes vehicle volume, speed and vehicle mix)
- Policy on use of horns, bells, etc
- Location of crossover tracks and/or switches
- Details of curved tracks

3.14.2 Environmental Consequences

3.14.2.1 Noise

Figure 3-1 in the FTA guidance manual shows FTA's noise impact criteria for transit projects. The FTA impact criteria are keyed to the noise level generated by the Project (called "Project noise exposure") in locations of varying existing noise levels. Two types of impacts—moderate and severe—are defined for each land use category, depending on existing noise levels. Thus, where existing noise levels are 40 dBA, for land use categories 1 and 2, the respective Leq and Ldn noise exposure from the Project would create moderate impacts if they were above approximately 50 dBA, and would create

severe impacts if they were above approximately 55 dBA. For category 3, a project noise exposure level above approximately 55 dBA would be considered a moderate impact, and above approximately 60 dBA would be considered a severe impact. The difference between “severe impact” and “moderate impact” is that a severe impact occurs when a change in noise level occurs that a significant percentage of people would find annoying, while a moderate impact occurs when a change in noise level occurs that is noticeable to most people but not necessarily sufficient to result in strong adverse reactions from the community.

3.14.2.2 Vibration

The FTA criteria for environmental impact from vibration and ground-borne noise are based on the maximum levels for a single event. The criteria for acceptable ground-borne vibration are expressed in terms of RMS velocity levels in decibels and the criteria for acceptable ground-borne noise are expressed in terms of A-weighted sound level. The FTA methodology provides three different impact criteria—one for “infrequent” events, when there are fewer than 30 vibration events per day, one for “occasional” events, when there are between 30 and 70 vibration events per day, and one for “frequent” events, when there are more than 70 vibration events per day. These impacts occur only if a project causes ground-borne noise or vibration levels that are higher than existing vibration levels.

3.15 AIR QUALITY

Air quality analysis will include evaluations of macro-scale air quality, micro-scale air quality for the entire region. Erie County is in attainment for PM₁₀ and PM_{2.5}; therefore, an assessment of the impacts of particulate matter will not be included in the Draft or Final EIS. As the Project is proposed to be partially funded with USDOT 5309 funding, Transportation Conformity is assumed.

3.15.1 Affected Environment

3.15.1.1 Transportation Conformity and Macro-Scale Air Quality

The discussion of air quality considerations will be focused on the applicability of project level transportation conformity, which is determined based on whether the proposed Project is located in an area that is either in non-attainment or maintenance status based on National Ambient Air Quality Standards (NAAQS). Project level conformity requires the existence of a currently conforming plan and program at the time of NEPA approval for the environmental documentation. The environmental documentation must contain verification that the design concept and scope of the Project is the same at the NEPA approval stage as the design concept and scope in the currently conforming plan and program. Erie County is currently in attainment for all NAAQS standards.

It is expected that implementation of the Project could change travel patterns and alter traffic conditions in the region and thus affect regional (macro-scale) air quality. The change in macro-scale air quality due to mobile source pollutant emissions is related to the total number of vehicle trips, vehicle miles of travel (VMT) and vehicle hours of travel (VHT) throughout the urban area. Since the purpose of the Project is to provide and promote the use of transit, the Project is expected to shift some highway trips to transit, which would in turn help to reduce vehicle trips and VMT. Therefore, it is expected that regional emissions would be reduced, resulting in a net air quality benefit. This will be quantified by conducting a macro-scale air quality emission burden analysis using link by link traffic information for the build and no build conditions and emission factors developed using EPA’s MOVES2014 model with State and local input parameters.

3.15.1.2 Micro-scale Air Quality

The micro-scale analysis is focused on the Project’s impact on local air quality levels. The pollutants of concern on a localized level include particulate matter (PM₁₀ and PM_{2.5}) and carbon monoxide (CO). As the Project is expected to be electrically powered and would not result in an increase in diesel powered vehicles, the Project is not expected to impact particulate matter levels. This will be verified

by the Project sponsor. As the Project is expected to impact local traffic, a CO hot spot analysis will be conducted, regardless of the attainment status of the air quality region.

The micro-scale air quality analysis for the Project will use the EPA MOVES model to predict carbon monoxide concentrations at selected roadway intersections and in project-related parking facilities in accordance with FTA guidelines. The results of the analyses will be compared to the NAAQS to determine impacts.

The study area for air quality assessment is the entire region. Project-specific details to evaluate project level impacts will come from the transportation data and specific intersection performance levels and vehicle delay information.

Data for the air quality analysis include the following:

- Regional daily traffic including volumes, vehicle mix, vehicle miles traveled and speed information on a link by link basis
- Vehicular traffic data and projections for roadway intersections affected by the Project and for proposed park-and-ride lots.
- Data on existing air quality in the project study area from the GBNRTC
- MOVES2014a input files including registration information, age distribution information, temperature information and other available input values.

3.15.2 Environmental Consequences

3.15.2.1 Transportation Conformity and Macro-Scale Air Quality

Pursuant to the 1990 Clean Air Act Amendments (CAAA) and New York State Department of Environmental Conservation guidelines, transportation conformity will be performed locally at the systems planning level by the GBNRTC, utilizing accepted regional emissions analysis methodologies and tools. The project area is classified as in attainment for all criteria pollutants, and therefore, a transportation conformity determination is not required.

For NEPA purposes, however, macro-scale air quality impacts of the Project will be evaluated. The No Build and Project will be analyzed to demonstrate the Project's impact on a macro level.

For the purposes of completing the macro-level evaluation for air quality, the following tasks and activities will be conducted:

- Description of air quality setting
- General description of the sensitive receptors in the study area
- Description of status of attainment for each of the NAAQS pollutant standards
- Summary and comparison of the Project and No Build Alternative annual VKT/VMT/VHT, yearly or daily emissions for CO, HC, PM₁₀, PM_{2.5}, NO_x, and mobile source air toxics (MSAT), with indication of the percentage change from No Build Alternative;
- Summary of all coordination with other agencies and their comments

3.15.2.2 Micro-scale Air Quality

The following key activities will take place in order to assess air quality impacts on a micro-scale level:

- Obtain and review vehicular traffic data and projections for roadway intersections affected by the Project and for proposed park-and-ride lots;
- Obtain and review data on existing air quality in the project study area from the GBNRTC, the Erie County Engineering and Environmental Services, and the Erie County Department of Environment, Agriculture, Parks and Recreation

- Based on the traffic data provided, select modeling locations for the micro-scale CO analysis. These locations will include up to three worst roadway intersections impacted by project-generated automobile traffic and Project parking lots
- Obtain the MOVES model input parameters appropriate for Erie County. Use MOVES to estimate vehicular emissions factors
- Identify receivers to be input for each modeled location. The receivers will include residences, schools, parks, sidewalk areas and other areas where people may stay for an extended period of time (over one hour)
- Run MOVES for vehicular traffic to estimate one-hour and 8-hour carbon monoxide concentrations at roadway intersections.
- Compare the results from the models with the National Ambient Air Quality Standards (NAAQS) for carbon monoxide
- Prepare a report summarizing the results of the micro and macro study

3.16 ENERGY

Energy is consumed in the construction, maintenance and operation of transportation systems. Transportation energy is generally discussed in terms of direct and indirect energy consumption. Direct energy involves all energy consumed by vehicle propulsion together with that energy consumed to support vehicle operation, such as guideway and station lighting. Indirect energy consumption involves the one-time, non-recoverable energy expenditure involved in constructing the physical infrastructure associated with a project. For consistency with the Project's New Starts application, the energy analysis methods and calculations laid out in the FTA guidance document, *Proposed New Starts and Small Start Policy Guidance*, January 9, 2013, will be used in this analysis, or subsequent updates to this guidance released by the FTA.

Energy is commonly measured in terms of British thermal units (BTU), or the amount of heat required to raise the temperature of one pound of water by one degree Fahrenheit. This provides a comparison of energy consumption for energy produced from different sources, such as petroleum, coal, nuclear, wind power.

3.16.1 Affected Environment

The study area for energy use is the Project corridor.

Energy use for transit and automobile modes is based on the change in vehicle miles traveled (VMT). Estimates of VMT and vehicle hours of travel will be provided by the ridership model.

3.16.2 Environmental Consequences

3.16.2.1 Direct Energy Use

Transportation system operation energy analysis calculates vehicle propulsion consumed under the No Build and Project using estimates of annual Vehicle Miles Travel (VMT). It will be consistent with and based on the ridership modeling consultant's estimates of VMT as developed using the regional travel model. The energy analysis methods and calculations laid out in the FTA guidance document, *Proposed New Starts and Small Start Policy Guidance*, January 9, 2013, will be used in this analysis, or subsequent updates to this guidance released by the FTA.

3.16.2.2 Indirect or Construction Energy Use

Construction energy factors estimate the amount of energy necessary to extract raw materials, manufacture and fabricate construction materials, transport materials to the worksite and complete the construction activities. Construction energy use will be quantified based on miles of track constructed at grade, fill and elevated structures. Typically, construction energy expended is offset relatively soon by the savings in operating energy consumption by the Project.

Given the uncertainty of field variables at this point in the analysis, accurate, detailed indirect energy costs will be extremely difficult to estimate with point-level accuracy. The indirect energy values that will be calculated should be considered as indicators between alternatives, rather than as absolute values. The indirect energy consumption will be based on factors found in Draft Energy Analysis Guidelines for Project Level Analysis (New York State Department of Transportation 2003).

3.17 CLIMATE CHANGE AND ADAPTATION

In accordance with Executive Order 13514, Federal Leadership in Environmental, Energy, and Economic Performance, and the Council on Environmental Quality, the DOT shall integrate consideration of climate impacts and adaptation into the planning, operations, policies and programs and to remain effective in current and future climate conditions. To the extent practical, potential changes in regulations will be considered. This section summarizes the preventative measures to slow the progression of climate change and identify the mitigation measures to help reduce the effects.

3.17.1 Affected Environment

The study area for climate change adaptation planning is Erie County. Project-specific details to evaluate project level impacts will come from coordination with the FTA and review of relevant documentation. For example, GHG emissions could serve as a measure of the Project's potential impact on climate change. Currently, neither the EPA nor FTA has adopted quantitative GHG emission thresholds applicable to the Project. GHG emissions could be calculated by multiplying the VMT of each type of vehicle by the CO₂ emission factors taken from the New and Small Starts Evaluation and Rating Process Final Policy Guidance (FTA, 2013b). NFTA will work with FTA to determine and clearly identify appropriate data needs.

3.17.2 Environmental Consequences

At present, draft "Guidelines for Consideration of GCC Impacts and Adaptation in Project Development and Environmental Review" are under review. These guidelines will include discussions of how to consider climate change impacts as part of Project Development and NEPA analysis.

3.18 HAZARDOUS AND CONTAMINATED MATERIALS

The term "hazardous materials" is an all-inclusive term for materials that are regulated as a solid waste, hazardous waste, and other wastes contaminated with hazardous materials, radioactive materials, petroleum fuels, toxic substances, and pollutants. The discovery of hazardous materials within a proposed project area may have an adverse impact on timely completion of the Project. Therefore, Watts will assess potential areas of contamination should be conducted as early in the Project Development process as possible, and the initial findings presented in the draft EIS.

Standards for identifying potential hazardous and contaminated materials concerns have been established in the American Society for Testing and Materials (ASTM) Standard E1527-05, entitled Standard Practice for Environmental Site Assessments: Phase I Environmental Site Assessment Process (ASTM E1527). The hazardous and contaminated materials analysis will summarize results of a database review and any previous studies or investigations in the area to document any hazardous or contaminated soils or substances within the proposed area of construction. The EIS will identify protocols and measures to be undertaken during construction to avoid adverse effects on human health from project-related exposure to hazardous materials. Handling requirements for potentially hazardous or contaminated materials will be identified, which will outline the procedure for removal of these substances during construction. The analysis will be outlined in a Hazardous Waste/Contaminated Materials Screening Report.

3.18.1 Affected Environment

The study area for hazardous and contaminated materials varies depending on the level of information being collected. The study area will extend outward from the construction limits, per ASTM standards, from the Project alignment.

As part of this project, a review of previous and publicly available documents (i.e. EDR reports) will be conducted to determine the nature and extent of potential contaminants in the area of proposed construction activities. A Preliminary Assessment Report (PAR) for the study area will be prepared, as necessary. Based on the results of the EDR report, a Phase I Environmental Site Assessment may be conducted if potentially hazardous materials are identified.

3.18.2 Environmental Consequences

A contamination screening evaluation will be conducted for each property within the proposed alignment. The initial assessment will identify contamination potential within the proposed right-of-way limits, and/or from adjacent properties that could affect the proposed right-of-way through migration of the adjacent contamination. A second factor will evaluate the potential impacts from construction. Screening will also recommend potential contamination sites requiring further investigation in future phases of the Project Development process. This evaluation system will allow for a determination of sites with both a high potential to discover contamination as well as high impact sites. Data to be collected for each property will be based on the likelihood of the potential for involvement with contamination. The process is described below.

3.18.2.1 Ownership and Land Use

The screening will identify the current legal owner and previous owners of each property impacted by the proposed alignment, including the property's use (current and previous) and type of business.

3.18.2.2 Contaminants

The screening will identify potential contaminants based on type of business (existing or previous).

3.18.2.3 Regulatory Agencies

The screening will consider information obtained from regulatory agencies concerning past, present and future enforcement actions that could impact property located along the proposed alignment. Example records include compliance inspection reports, enforcement notices, contamination assessment reports, remedial action plans, etc. This information is available from the US EPA, NYSDEC, and Erie County, among other sources.

3.18.2.4 Aerial Photography

A review of current aerial photography will be completed. Potential sources of contamination such as landfills, storage areas, drums, tanks, landscaping and ground staining from spills that may be difficult to see from site visits alone can sometimes be identified by means of aerial photography.

3.18.2.5 Interviews

Interviews with local public officials and agencies can help to identify potential contamination problems along the proposed right-of-way. Residents and property owners along the corridor often have valuable information concerning historical uses of property. Such contacts will be made in those areas where contamination is suspected to exist.

3.18.2.6 Site Visits

Site visits are required to verify listed hazardous materials and petroleum contamination sites and to identify and investigate any previously unrecorded sites.

3.18.2.7 Property Ratings

Properties within or adjacent to the proposed right-of-way limits for the proposed Project will be assigned a rating from 1 (no contamination anticipated) to 4 (high contamination potential). A second factor will evaluate the potential impacts from construction. This information will be documented in the Contamination Screening Evaluation that will include impacted properties (based on the above rating), regulatory status of sites, nature of potential contamination and potential mitigation techniques associated with the contaminated sites. This evaluation will also identify those sites that merit further evaluation to determine the existence of site contamination prior to purchase of right-of-way.

3.19 SAFETY AND SECURITY

The Safety and Security Chapter of the EIS will examine the safety and security measures that will be employed by NFTA to provide for the safe and secure operation of Project. The FTA publication Hazard Analysis Guidelines, 2000, will be consulted related to identification and avoidance of potential hazards to the public.

3.19.1 Affected Environment

The study area for the safety and security assessment is limited to the Project alignment and stations.

Data needs will include the identification of general safety and security measures that NFTA will employ to provide for safe and secure operations of the proposed Light Rail. NFTA, the City of Buffalo, towns of Tonawanda and Amherst, and Erie County will provide data for this chapter.

3.19.2 Environmental Consequences

Assessment methods to determine the significance of impacts on safety and security will include:

- Review of the Safety & Security Management Plan
- Evaluation of the Safety & Security Management Plan (SSMP) based on FTA guidance for preparing the SSMP

3.20 CONSTRUCTION EFFECTS

Implementation of the Project will involve physical improvements within the corridor that will result in construction-related impacts. This section in the EIS will address the construction impacts and related mitigation and preventative measures that can be implemented to minimize the negative impacts of construction activities. Descriptions of the impacts associated with the construction phase of the Project may include disruptive effects on the community. This section of the EIS will identify corrective measures where feasible to reduce potential community disruption.

Transportation and circulation impacts during construction are perhaps the most commonly experienced impact by the public and will vary based on construction activities related to aerial structures or activities located at at-grade railroad crossings. These impacts occur to traffic, transit, pedestrian, and bicycle movements, on-street parking and access to adjacent properties. Disruptions to traffic flows may also occur as a result of at-grade crossing construction; light rail station construction; bridge construction; utility relocations; and, increases in truck and construction equipment near the work sites. The extent of disruptions to existing traffic will vary significantly by location and specific construction activity. Both partial and full closures of impacted roadways/intersections may occur, with varying durations.

Typical construction-related impacts associated with the Project that will be addressed in the EIS will include:

- Traffic, including maintenance of traffic and detour routing
- Pedestrian, including detours
- Transit, including service outages and impacts to bus routes/stops
- Property access, including maintenance of access to businesses and residences
- Visual effects of construction
- Nature resources effects, including tree removal and pest control
- Water resources effects, including erosion control, sedimentation and turbidity reduction
- Noise and Vibration related to construction activities
- Air Quality (localized), including dust from movement of dirt and diesel emissions from various construction equipment
- Safety, including job site safety considerations
- Disposal of construction material
- Utility impacts
- Stock piling of construction material
- Use of Borrow Areas (and mitigation measures proposed to reduce dredge and fill-related impacts)

3.20.1 Affected Environment

The study area for construction impacts will be the areas within the limits of construction. Those limits of construction will be determined through the conceptual engineering analysis identifying the area needed to construct the LRT facility (tracks, ballast curb, signals, substations, etc.), stations, tunnels, and maintenance facilities. The limits will also identify temporary construction impacts due to roadway detours and closures, staging areas, and any other needs during construction.

Data for this chapter will come from each of the technical assessment areas within the Draft EIS and general information from the engineering team including: construction phasing by duration and location within the corridor, equipment utilized by phase (including data on noise and emissions standards), staging areas and anticipated deliveries with an estimate of truck arrivals and departures, employment by phase and work schedule to estimate vehicular traffic generated during construction, anticipated programs to minimize dust during construction.

The EIS will include a discussion of Construction Impacts on a category-by-category basis (e.g., land use, historic resources, water quality, social, economics, wetlands, and other topics for which this discussion will be appropriate) for those areas where impacts of national, regional, or local significance are anticipated. Impact categories with emphasis during the construction process are detailed below.

3.20.2 Environmental Consequences

The procedure to identify and document construction impacts will be as follows:

- Document all agency standards and policies now in effect related to construction activity and community disruption
- Identify potential impacts from construction activities and estimated timeline of probable impact based on construction schedule
- Evaluate the feasibility of implementing a community relations program in order to provide general construction scheduling information, coordination of construction work with adjacent business activities and assistance with the resolution of issues that may develop between local residents, motorists, the contractor and sponsoring agency

Mitigation measures that may be identified could potentially range from simple techniques of short duration (e.g., watering to reduce dust) to longer term and more complex measures (e.g., detours or temporary highway lane construction).

3.20.2.1 Utilities

The Project has the potential to impact existing electrical power, water and sewer facilities, storm drainage systems, natural gas lines and telecommunications transmission lines. As such, the impact to these systems will be assessed during preliminary engineering and described in the Draft and Final EISs. Data for this chapter of the EIS will be obtained from the utility surveys being conducted by the engineering team.

Impact assessment to utilities will be limited to the results of the utility surveys being performed by the engineering team and the capital costs associated with the relocation of the utilities identified to be relocated as a direct result of the Project. Utility owners will be identified and individual meetings will be held with each individual utility to gather information on existing facilities and any planned improvements. A utility corridor will be identified to evaluate the potential utility relocation scenarios and to identify a “utility corridor” for the Project. This will include the adjustments to the proposed alignment to minimize utility conflicts, consolidating utilities into designated corridors, and a preliminary determination of easements required for potential utility relocations. Any waterline and sanitary sewer lines that will be relocated will be identified in a “red-line” set of drawings.

Impacts to existing storm drainage systems will be assessed during design by reviewing previous work performed as part of conceptual engineering; obtaining data from the City of Buffalo, towns of Tonawanda and Amherst, and Erie County Stormwater Services; delineating existing drainage outfalls drainage areas and determining the impacted stream lengths. A letter report of stormwater findings and a map delineating drainage outfalls will be prepared for submittal to the city, towns, and county and for coordination with the appropriate Storm Water Services provider with jurisdiction over the area potentially impacted. The results of this interagency coordination will be documented in the Draft EIS.

Storm Water impacts will be updated if necessary for the Final EIS based significant design changes, if any which occur during the DEIS process. This will include a field review of the Project; a layout of the proposed drainage system on civil and roadways plans; the delineation of drainage areas and the preparation of drainage area maps; performance of initial drainage calculations; the refinement of the drainage system layout; and, the initial Drainage Report. These efforts will be coordinated with the Storm Water Services provider with jurisdiction over the area potentially impacted.

Avoidance and minimization measures will be employed to reduce the impacts and costs associated with relocation utilities both above and below ground. Where feasible the design team will minimize possible utility conflicts.

3.21 INDIRECT AND CUMULATIVE IMPACTS

This section will identify and summarize key indirect (or secondary) and cumulative impacts of the Project. Indirect or secondary impacts are defined as “effects which are caused by the action and are later in time or further removed in distance, but are still reasonably foreseeable. Indirect or secondary effects could include growth-inducing effects and other effects related to changes in the pattern of land use, population density or growth rate and related effects on air and water or other natural systems, including ecosystems” (40 CFR 1508.8). Cumulative impacts result from the incremental consequences of an action when added to other past and reasonably foreseeable future actions (40 CFR § 1508.7). The direct effects of an individual action may be negligible, but may contribute to a measurable environmental impact when considered cumulatively with other past and/or future projects. Indirect and cumulative effects can include the full range of impact types, such as changes in land use, economic vitality, neighborhood character, traffic congestion, air quality, noise, vibration, and water and natural

resources. The indirect and cumulative effects analysis will assess the potential for such effects to all relevant resource areas.

In 1997, CEQ published a handbook entitled “*Considering Cumulative Effects Under the National Environmental Policy Act*,” which addresses indirect impacts in addition to cumulative impacts. The handbook offers strategies and suggestions for structuring and undertaking analysis of indirect and cumulative effects, but does not constitute formal CEQ guidance, procedures, or new regulations on the analysis of such impacts. FHWA issued a position paper on indirect and cumulative effects in 1992 entitled “*Secondary and Cumulative Impact Assessment in the Highway Project Development Process*,” that lists project considerations regarding indirect and cumulative impacts that remain applicable to transit projects as well. Two National Cooperative Highway Research Program (NCHRP) guidebooks regarding indirect and cumulative impact assessment are particularly relevant. These documents are: “*NCHRP Report 403: Guidance for Estimating the Secondary Effects of Proposed Transportation Projects*,” 1998, and “*NCHRP Report 423A: Land Use Impacts of Transportation: A Guidebook*,” 1999.

3.21.1 Affected Environment

The study area for indirect and cumulative effects includes the area that will capture the indirect or secondary impacts, which may occur further removed in distance than the direct effects study area.

The analysis will focus on both the construction and operational effects of the Project. The analysis of indirect effects will build on the direct effects assessments for the other resource areas analyzed in the EIS, and will determine which, if any, of the project’s direct effects have the potential to lead to further, secondary effects. The cumulative effects analysis will require an understanding of past and reasonably foreseeable future projects in the geographic and temporal study areas that could, in combination with the Project, lead to significant cumulative effects. The Project Team will compile an inventory of reasonably foreseeable projects not already included in the No Build Alternative. This review will include consideration of land use plans and major infrastructure projects including long-range transportation plans, county and municipal capital improvement plans, and private development projects to identify all related reasonably foreseeable future projects. Where available, environmental documentation from other projects will be reviewed and any relevant information on direct and indirect effects of these projects will be considered.

3.21.2 Environmental Consequences

The indirect effects analysis will follow the same methodologies used to analyze direct effects for the resource area in question; however, the study areas and timeframes may be correspondingly larger or longer, respectively. The cumulative impact assessment will summarize and refer to information on impacts developed in other chapters of the DEIS. Analysis of the combined effects of direct and indirect impacts in the context of past, present, and reasonably foreseeable future conditions in each resource area will be described.

3.21.3 Commitment of Resources

Commitment of Resources will focus on two concepts: the permanent commitment of resources as compared to the benefits of the Project, and the relation between expending environmental resources in the short-term and gaining productivity in the long-term. Both concepts will be qualitatively addressed and documented to identify issues such as improved mobility, reduced travel time, reduced congestion on the regional highway network, support for the region’s economic development and reduction in mobile source air pollutants. This section will rely on results obtained in other technical areas.