NEC FUTURE

7.11 Environmental Justice

7.11 ENVIRONMENTAL JUSTICE

7.11.1 Introduction

This chapter provides an overview of the demographic characteristics of the Study Area and identifies potential effects to Environmental Justice (EJ) populations. The demographic characteristics establish a baseline for the Federal Railroad Administration (FRA) to identify minority and low-income populations to support its EJ analysis. The FRA has presented some specific demographic characteristics for context, but this chapter focuses primarily on the identification of and potential effects to EJ populations.

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority and Low-Income Populations*, requires all federal agencies to "develop an agency-wide environmental justice strategy that identifies and addresses disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations."

> **Environmental Justice**
>
> - Executive Order 12898 requires federal agencies to assess the effects of their actions on EJ populations and determine if disproportionately high and adverse effects occur.
> - Identifies concentrations of minority populations and low-income populations that could benefit or be affected by environmental impacts occurring in their communities.
> - Identifies effects on resources located within concentrations of EJ populations.

Following the direction of EO 12898, federal agencies developed their own strategies to implement EJ. The guidance applicable to NEC FUTURE was formed under guidance from the U.S. Department of Transportation's (U.S. DOT) *Order to Address Environmental Justice in Minority Populations and Low-Income Populations* 5610.2(a) (May 2012).

U.S. DOT Order 5610.2(a) (USDOT 2012) provides the following definitions, which guided this EJ analysis:

- ▶ *Minority Individual*: The U.S. Census Bureau classifies a minority individual as belonging to one of the following groups: American Indian or Alaskan Native, Asian American, Native Hawaiian or Other Pacific Islander, Black (not of Hispanic Origin) and Hispanic or Latino.

- ▶ *Minority Populations:* Any readily identifiable groups of minority persons who live in geographic proximity, and if circumstances warrant, geographically dispersed/transient persons (e.g., migrant workers or Native Americans) who would be similarly affected by a proposed US. Department of Transportation (U.S. DOT) program, policy, or activity.

- ▶ *Low-income:* A person whose household income is at or below the U.S. Department of Health and Human Services poverty guidelines.[1]

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[1] Since the NEC FUTURE Study Area includes multiple states, the FRA used the Health and Human Services poverty guidelines to ensure consistency across state boundaries. However, as part of Tier 2 project studies, the Federal Transit Administration approach could be considered for more-focused study areas.

▶ *Low-income Population:* Any readily identifiable group of low-income persons who live in geographic proximity, and, if circumstances warrant, geographically dispersed/transient persons(e.g., migrant workers or Native Americans) who would be similarly affected by a proposed U.S. DOT program, policy, or activity.

Project proponents evaluate potential effects to EJ populations in terms of whether the effects have disproportionately high and adverse effects on EJ populations.

An adverse effect is a significant individual or cumulative human health or environmental effects (e.g. the displacement of a household structure or business as a requirement to build a project). A Disproportionately High and Adverse Effect on Minority and Low-income Populations is an adverse effect that:

▶ Is predominately born by a minority population and/or a low-income population, or

▶ Will be suffered by the minority populations and/or low-income population and is appreciably more severe or greater in magnitude than the adverse effect that will be suffered by the non-minority population and/or non-low-income population.

This analysis identifies concentrations of EJ populations within the Study Area that coincide with effects identified on resources evaluated in this Tier 1 Final Environmental Impact Statement (Tier 1 Final EIS). Because this Tier 1 Final EIS represents a high-level of analysis for all resources, identifying potential disproportionate effects on EJ populations was not possible. However, this analysis presents identified benefits to EJ populations and those EJ areas that are most susceptible to having multiple resource areas affected because of implementation of the Preferred Alternative. Table 7.11 1 summarizes key factors associated with the methodology for this EJ analysis.

Table 7.11-1: Effects-Assessment Methodology Summary: Environmental Justice Populations

Resource	Affected Environment	Type of Assessment	Outcome
EJ populations	1-mile-wide swath centered along Representative Route for the Existing NEC + Hartford/Springfield Line and Preferred Alternative	Qualitative: Census tract that meets or exceeds 10 percentage points higher than the total minority or low-income percentage in the corresponding county	Evaluate the potential for the Preferred Alternative to either benefit or adversely affect EJ populations.

Source: NEC FUTURE Environmental Justice Effects-Assessment Methodology, Volume 2, Appendix E.11, 2014

Volume 2, Appendix E.11 provides the detailed methodology for EJ that includes the methodology for developing demographic profiles and the identification of EJ populations.

7.11.2 Resource Overview

Implementation of the Preferred Alternative would substantially improve Intercity and Regional rail options for travelers, including travelers from EJ communities, by increasing the frequency of service, reducing travel time, and improving reliability. The improvements provide travel choices, accessibility to jobs, and a range of pricing options for travelers. The incorporation of service to Springfield, MA, would expand access to job markets in 17 additional locations via a direct rail

connection. The air quality benefits from the Preferred Alternatives would benefit the EJ communities living near major roadways and airports.

The FRA reviewed the effects-assessment of seven environmental resource areas in relation to EJ populations: potential acquisitions and displacements related to land conversions, parklands, hazardous waste and contaminated materials, cultural resources and historic properties, visual and aesthetic resources, noise, and vibration. In counties where EJ populations were identified, the greatest potential impacts on those environmental resource areas occur in Harford County, MD; Philadelphia County, PA; Middlesex County, NJ; Queens, NY; and Fairfield County, CT.

7.11.3 Affected Environment

The Preferred Alternative covers 38 counties within eight states and Washington, D.C. According to the 2010 census there are almost 5 million people living in the Affected Environment of the Preferred Alternative. The central region, consisting of New Jersey and New York City, contains almost 34 percent of the total population in the Affected Environment, with approximately 1.7 million people. Table 7.11-2 lists additional population and demographic characteristics by state for the existing Northeast Corridor (NEC) and Table 7.11-3 lists the information for the Preferred Alternative Affected Environment.

The minority and low-income population totals within the Affected Environment summarized at the state level provide a framework for this Tier 1 Final EIS EJ analysis. The FRA used these totals within the Affected Environment as a benchmark for an overall comparison to the more-detailed county-level analysis conducted for the Preferred Alternative. Approximately 2.7 million persons (53 percent) living in the Preferred Alternative Affected Environment are minorities and approximately 802,000 person (17 percent) are low-income.

The FRA analyzed all census tracts in the Affected Environment to determine the presence of minority and low-income populations. The FRA also screened the census tracts against GIS data collected for the resources evaluated to understand the potential for impacts on these resources to affect EJ populations within the Affected Environment. The FRA further analyzed the demographic data to determine the concentrations of EJ populations at the census tract level for counties located within the Affected Environment in accordance with the EJ methodology (see Volume 2, Appendix E.11). Table 7.11-4 presents the total number of EJ census tracts for each state in the Affected Environment.

The states with the highest number of EJ census tracts for both the Existing NEC + Hartford/Springfield Line and Preferred Alternative Affected Environments are Maryland, New Jersey, New York, and Connecticut. Within those states, the following counties contain the highest number of EJ census tracts:

- Baltimore City, MD
- Philadelphia County, PA
- Somerset County, NJ
- Essex County, NJ
- Bronx County, NY
- Fairfield County, CT

Table 7.11-2: Affected Environment (Existing NEC + Hartford/Springfield Line): Total Population and Total Minority/Low-Income Populations by Geography

Geography	Total Population	Total Minority Population	% Minority Population	Total Low-Income Population	% Low-Income Population
D.C.	57,799	42,353	73%	13,762	25%
MD	547,655	316,220	58%	80,409	16%
DE	161,701	75,629	47%	26,043	17%
PA	673,782	396,229	59%	177,091	27%
NJ	722,404	471,360	65%	91,701	13%
NY	937,790	607,066	65%	170,944	19%
CT	995,391	398,838	40%	119,226	13%
RI	352,309	140,473	40%	54,046	16%
MA	421,149	162,187	39%	71,646	18%
TOTAL	**4,869,980**	**2,610,355**	**54%**	**804,868**	**17%**

Source: U.S. Census Bureau 2010 census, U.S. Census Bureau American Community Survey; 2010 5-Year Estimates

Table 7.11-3: Affected Environment (Preferred Alternative): Total Population and Total Minority/Low-Income Populations by Geography

Geography	Total Population	Total Minority Population	% Minority Population	Total Low-Income Population	% Low-Income Population
D.C.	57,799	42,353	73%	13,762	25%
MD	627,497	350,613	56%	86,149	14%
DE	167,739	80,768	48%	26,890	17%
PA	580,653	341,947	59%	155,874	28%
NJ	743,185	486,163	65%	94,318	13%
NY	997,687	643,772	65%	177,446	18%
CT	1,047,959	410,487	39%	121,590	12%
RI	352,309	140,473	40%	54,046	16%
MA	421,149	162,187	39%	71,646	18%
Total	**4,995,997**	**2,658,763**	**53%**	**801,721**	**17%**

Source: U.S. Census Bureau 2010 census, U.S. Census Bureau American Community Survey; 2010 5-Year Estimates

Table 7.11-4: Affected Environments: Environmental Justice Census Tracts by Geography

Geography	Existing NEC + Hartford/Springfield Line	Preferred Alternative
D.C.	18	18
MD	103	112
DE	20	22
PA	108	95
NJ	129	132
NY	151	161
CT	114	116
RI	36	36
MA	52	52
TOTAL	**731**	**744**

Source: NEC FUTURE team, 2016

7.11.4 Environmental Consequences

The following analysis identifies, on a county level, the occurrence of EJ populations in relation to areas where effects to resources have also been identified. Table 7.11-5 describes the resource areas that the FRA used to determine potential effects to EJ populations. This analysis also includes information to better understand how the concentration of EJ populations differs between the Affected Environment of the Existing NEC + Hartford/Springfield Line and that of the Preferred Alternative. As the entirety of the Existing NEC + Hartford/Springfield Line is included in the Preferred Alternative, the analysis focuses on new segments included under the Preferred Alternative that diverge from the Existing NEC + Hartford/Springfield Line.

To understand where EJ populations have the greatest potential to be affected, the FRA reviewed the counties where EJ populations were identified against counties where resources are affected. Table 7.11-6 summarizes this analysis.

In the programmatic NEC FUTURE analysis, the more resource effects identified for a county where EJ populations occur indicates a greater potential for that EJ population to be adversely affected. While a determination of disproportionate effects has not been included in this Tier 1 Final EIS, the combined effects to multiple resources within EJ populations could result in a disproportionate effect. Tier 2 project studies will determine if disproportionate effects on EJ populations will occur.

As shown in Table 7.11-6, Harford County, MD; Philadelphia County, PA; Middlesex County, NJ; Queens County, NY; and Fairfield County, CT, have the greatest number of potential environmental resource effects identified within counties where the FRA identified EJ populations. These counties would have environmental impacts in all of the seven resource categories the FRA assessed. Nine counties would have potential land cover changes, resulting in acquisitions with the potential for displacements in developed areas. Most of the potential acquisitions would occur in Harford, MD, and Fairfield, CT (see Chapter 7.2, Land Cover). The FRA identified effects to parklands, visual and aesthetic resources, noise impacts, and historic properties as Environmental Consequences of the Preferred Alternative that traverse these counties. Eleven counties contain hazardous materials and contaminated waste (HWCM) sites, with Essex and Union County, NJ, and Philadelphia County, PA, identifying the highest number of sites (see Chapter 7.8, Hazardous Waste and Contaminated Material). Providence, RI (up to 50 acres) and Bronx County, NY (35 acres), had the highest number of acres of affected parkland.

All the counties within the Preferred Alternative that have identified EJ populations would experience impacts to historic properties, visual and aesthetic resources, and effects from noise. Several counties show a greater degree of change in noise exposure (from existing conditions to those anticipated under the Preferred Alternative): Harford County, MD; Cecil County, MD; New London County, CT; and Washington County, RI (see Chapter 7.12, Noise and Vibration).

Table 7.11-5: Resources Considered for Environmental Justice Assessment

Resource	Description of Resource	Input to EJ Assessment
Transportation	Transportation network and services	Present a qualitative discussion on changes in the network and potential benefits and impacts to EJ populations caused by changes in mobility, access, and other service changes.
Economic Effects	Identification of foundations of the local economy in the Study Area	Present a qualitative discussion on overall economic changes in the region and potential effects to EJ populations caused by changes in access to institutional facilities (e.g., hospitals, schools and social service agencies), increase or decrease in jobs, and available training.
Land Cover	Land cover within the Affected Environment	Determine where potential acquisitions could result in displacements in developed areas located in EJ census tracts. Specific details on the number of properties and/or structures required are not available for this Tier 1 assessment.
Parklands	Publicly owned parklands and parklands receiving funding from the Land and Water Conservation Fund Act within the Affected Environment	Determine where parklands located in EJ census tracts are affected. Specific details on the location of parks and gathering locations in communities in EJ areas are not available for this Tier 1 assessment.
Hazardous Wastes and Contaminated Material Sites (HWCM)	Known sources and potential suspected sources of contaminated and hazardous materials sites within the Affected Environment	Determine if HWCM sites are located along the Action Alternatives in EJ census tracts. State level environmental site investigations were not under the Tier 1 assessment.
Historic Properties	Resources listed in or eligible for listing in the National Register of Historic Places within the Affected Environment	Determine location of historic properties in EJ census tracts. Specific details on impacts to resources of cultural significance to EJ populations, such as Native American burial grounds, historic churches, and meeting facilities, are not available for this Tier 1 assessment.
Visual and Aesthetic Resources	Prominent visual resources and aesthetic qualities within the Affected Environment	Determine location of visual and aesthetic impacts in EJ census tracts. Impacts for this Tier 1 assessment were determined only in parklands and open space areas and included specific changes in the visual landscape because of stations, station modifications, and structural elements (i.e., embankments, bridges, parking lots etc.). Specific visual and aesthetic impacts to residents and system users are not available for this Tier 1 assessment.
Noise and Vibration	Ambient noise and vibration conditions, and noise-sensitive land cover categories locations within the Affected Environment	Determine locations where the Federal Railroad Administration/Federal Transit Administration noise and vibration exceeds thresholds along the Action Alternatives in EJ census tracts. Specific impact ratings for each sensitive receptor are not available for this Tier 1 assessment.
Air Quality (including greenhouse gas emissions)	Current attainment status for criteria pollutants established by the U.S. Environmental Protection Agency for air-sheds within the Study Area	Determine the locations where air quality impacts or improvements would occur throughout the Study Area.
Safety and Public Health	Operational, infrastructure and overall modal safety	Present a qualitative discussion on overall safety and public health concerns and mitigation measures for the project.

Source: NEC FUTURE team, 2016

Table 7.11-6: Preferred Alternative – Summary of Potential Effects by County

Geography	Counties (with EJ Census Tracts)	Land Cover (Acquisitions and Displacements)	Parkland	Hazardous Waste and Contaminated Materials	Culture Resources/ Historic Properties	Visual and Aesthetic Resources	Noise	Vibration
D.C.			X		X	X	X	
MD	Prince George's				X	X	X	
	Baltimore City	X	X		X	X	X	X
	Harford	X	X	X	X	X	X	X
PA	Philadelphia	X	X	X	X	X	X	X
NJ	Mercer			X	X	X	X	
	Middlesex	X	X	X	X	X	X	X
	Union	X		X	X	X	X	
	Essex	X		X	X	X	X	
	Hudson	X		X	X	X	X	
NY	Queens	X	X	X	X	X	X	X
	Bronx		X	X	X	X	X	
CT	Fairfield	X	X	X	X	X	X	X
	Hartford		X	X	X	X	X	
RI	Providence		X		X	X	X	
MA	Hampden				X	X	X	
	Suffolk		X		X	X	X	

Source: NEC FUTURE team, 2016

X = Presence of potential resource effects; effects will be subject to Tier 2 project studies.

Blank Cell = No effects identified for subject resource at Tier 1 level review. Potential effects should be confirmed during Tier 2.

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Elements South of New York City

Approximately 1.7 million people live within the Affected Environment associated with the five new segments south of New York City included in the Preferred Alternative. Approximately 960,000 persons (56 percent) are minorities and 200,000 persons (12 percent) are low-income populations. A total of 251 EJ census tracts are located within the Affected Environment along the new segments of the Preferred Alternative. These additional EJ census tracts are located along the Bayview to Newport segment and the Wilmington segment; the New Brunswick to Secaucus and Secaucus/Bergen Loop mirror the identified Existing NEC census tract in terms of what EJ census tracts are located there. Finally, no additional EJ populations are introduced within the Preferred Alternative along the Philadelphia Segments.

▶ **Maryland/Delaware – Bayview to Newport (new segment) –** The new segment begins in the Bayview section of Baltimore City, MD, which comprises a minority population. In Harford County, MD, the new segment enters another cluster of EJ tracts comprising minority and low-income populations. After entering Delaware, the new segment continues through a cluster of low-income populations around University of Delaware.

▶ **Delaware – Wilmington Segment (bypasses Wilmington Station) –** The new two-track segment shifts south of the Existing NEC and east of I-95, continuing at-grade through a minority and low-income area.

▶ **Pennsylvania – Philadelphia Segments (new segments) –**New infrastructure begins east of I-95, continuing in tunnel under Philadelphia International Airport, reconnecting to near Island Avenue in Southwest Philadelphia. The segments do not affect any additional EJ communities compared to the Existing NEC.

▶ **New Jersey – New Brunswick to Secaucus (new segment) –** The new segment is adjacent to Existing NEC, running generally at-grade through the same EJ communities in Middlesex, Union, and Essex Counties as the Existing NEC.

▶ **New Jersey – Secaucus/Bergen loop (new segment) –** The Secaucus/Bergen Loop begins at the Existing NEC at the Secaucus rail station, parallel to NJ TRANSIT's main line. The segment follows the NJ TRANSIT's main line extending further in tracts identified as minority in Hudson County before turning north, eventually becoming parallel to the Existing NEC.

Elements North of New York City

Approximately 1.4 million people live within the Affected Environment associated with the three new segments north of New York City included in the Preferred Alternative. Approximately 540,000 persons (38 percent) are minorities and 160,000 persons (11 percent) are low-income populations. The new segments of the Preferred Alternative contain 143 EJ census tracts within the Affected Environment. Along the New Rochelle to Greens Farms, Old Saybrook-Kenyon, and New Haven-Hartford-Springfield segments, additional EJ populations are within the Preferred Alternative Affected Environment.

▶ **New York/Connecticut – New Rochelle to Greens Farms (new segment) –** The new segment beginning west of the New Rochelle Rail Station continues at-grade or on embankment through

minority and low-income communities in New Rochelle and Port Chester in Westchester County.

▸ **Connecticut/Rhode Island – Old Saybrook-Kenyon (new segment) –** The new segment runs through minority and low-income populations in New London and a minority community east of New London in New London County.

▸ **Connecticut/Massachusetts – Hartford/Springfield Line (upgraded track/electrification) –** The Hartford/Springfield Line, runs north through New Haven County through low-income and minority areas, a low-income neighborhood in Wallingford, and a minority and low-income cluster in Meriden. In Hartford County, there is a minority and low-income cluster around New Britain and Hartford and a low-income cluster near Enfield. The Hartford/Springfield Line continues into Hampden County, MA, entering minority and low-income neighborhoods of Springfield.

7.11.4.1   Transportation Effects/Benefits

Implementation of the Preferred Alternative would result in substantially improved Intercity and Regional rail options for travelers compared to the No Action Alternative, increasing frequency and service, reducing travel time and increasing reliability. These improvements benefit EJ populations, and additional benefits to EJ populations could include the following:

▸ An expanded transportation network that provides mobility choice

▸ An upgraded passenger and commuter rail network for daily or occasional travel

▸ Improvements in connectivity, frequency, and accessibility, which would result in reliable service

The Intercity ridership estimate would increase more than 200 percent for select metropolitan-area pairs as described in Chapter 5, Transportation. The metropolitan-area pairs highlight the improved market connections that would result from the Preferred Alternative. In addition, the Preferred Alternative introduces Metropolitan service—a new service concept that offers improved service to new and intermediate markets and key transfer locations, and stops at more stations and lower cost than the current Amtrak Northeast Regional service (including some stations that are served today by only Regional trains). These improvements are a potential benefit to EJ populations since they would provide access and fare flexibility to an extended network for job, educational, medical, and housing choices.

7.11.4.2   Economic Effects/Benefits

Economic analyses presented in this Tier 1 Final EIS includes the quantification and evaluation of operational costs, employment impacts, travel time savings, travel cost, and safety. Capital investments in transportation improvements often lead to jobs and job-training programs for skilled and unskilled workers. As discussed in Chapter 6, Economic Effects and Growth, and Indirect Effects, the FRA estimates that construction of the Preferred Alternative would result in an average of nearly 57,600 total jobs per year.

Improved rail service also creates the potential for labor markets to become more interlinked as additional places fall within a 45-minute travel shed. The greatest gains in accessibility would be located in Penn Station New York, Newark and Trenton, NJ, and Philadelphia, PA. Those markets would gain access to over 1 million jobs under the Preferred Alternative. Among smaller markets, Wilmington, DE, Baltimore, MD, and New Haven, CT, would see the largest gains in accessibility. In addition, the extension to Springfield, MA, would allow travelers access to new markets.

Travel costs may be a concern for EJ populations. The additional capacity provided in the Preferred Alternative would provide more lower-fare options for train travel across various types of Intercity services. Capacity constraints in the No Action Alternative are estimated to result in higher fares.

For low-income and minority populations, the potential increase in employment opportunities via expanded travel options, new job markets, reduction in overall trip travel time and a decrease in travel cost could be considered as positive effects.

7.11.4.3   Air Quality

The FRA determined air quality effects for this Tier 1 study at the regional level and not specific to a particular EJ census tract. However, air quality effects at this larger level did provide insight into the potential exposure and related health effects to all populations including EJ populations.

Analysis indicates that implementation of the Preferred Alternative would result in net benefits to air quality within the Study Area (see Chapter 7.13, Air Quality). The net effect of the Preferred Alternative would be a predicted decrease in greenhouse gases (GHG) and all criteria pollutant burdens, with the exception of SO_2. The predicted reduction in roadway vehicle-miles traveled associated with the Preferred Alternative would also result in an overall beneficial effect on mobile-source air toxics. EJ populations living near major roadways and airports would benefit from a decrease in air pollutants and toxins.

Construction of the project would result in temporary emissions of criteria pollutants and GHGs associated with construction equipment and activities. Local levels of criteria pollutants and mobile-source air toxics from construction activities could cause localized effects in EJ census tracts and, more specifically, impacts to children living near power plants, temporary construction zones, and stations and parking facilities.

7.11.4.4   Safety and Public Health

The safe operation of passenger and freight rail systems is a critical element of the FRA's mission and is an important consideration in the planning and development of rail corridors. Operation of the Preferred Alternative is not anticipated to increase in EJ census tracts such that EJ populations bear a disproportionate burden of safety- or health-related impacts.

7.11.5 Context Area

Within the Context Area, the number of EJ census tracts increases significantly simply because the Context Area covers a wider area than the 1-mile-wide swath for the Affected Environment, encompassing 5 miles centered on the Preferred Alternative. The number of EJ census tracts within the Context Area is 1,923.

Table 7.11-7 provides the number of census tracts within the Context Area for the Preferred Alternative and Existing NEC + Hartford/Springfield Line. New York and New Jersey have the highest number of census tracts within the Context Area for the Preferred Alternative.

Table 7.11-7: Context Area: Total Environmental Justice Census Tracts by Geography

Geography	Existing NEC + Hartford/Springfield Line	Preferred Alternative
D.C.	93	93
MD	228	232
DE	34	34
PA	244	245
NJ	338	344
NY	565	589
CT	188	188
RI	51	51
MA	147	147
TOTAL	**1,888**	**1,923**

Source: NEC FUTURE team, 2016

7.11.6 Comparison to the Action Alternatives

All alternatives evaluated have the potential to affect EJ communities (based on the number of resources identified and the fact that all alternatives have the potential to affect EJ communities within the Study Area). The Preferred Alternative generally focuses on improvements to existing rail corridors, which minimizes the impacts to EJ communities; however, it also includes some new segments that have the potential to affect EJ communities. Similar to the Preferred Alternative, the Action Alternatives include improvements to existing rail corridors while also providing off-corridor routing.

When compared to Alternative 1, the Preferred Alternative has more potential impacts to EJ communities because of the off-corridor routing proposed and incorporation of the Existing Hartford/Springfield Line.

The Preferred Alternative has similar effects on EJ communities to those described for Alternative 2. However, the addition of the Bayview, MD, to Newport, DE, segment introduces additional impacts under the Preferred Alternative as compared to Alternative 2.

The Preferred Alternative minimizes off-corridor routing and therefore would affect fewer counties with EJ communities relative to Alternative 3. The Preferred Alternative does not include the Long Island route option, which had the greatest number of EJ communities affected by any of the Action Alternatives.

7.11.7 Potential Mitigation Strategies

Potential mitigation for resources affected is provided in their respective chapters of this Tier 1 Final EIS. Additional mitigation strategies for specific resources have also been proposed to include vehicle and track treatments, potential changes in the proposed construction type, building sound insulation treatments, sound barriers and track vibration isolation treatments, air monitoring during

site work and other associated measures specific to each environmental resource assessed. These mitigation strategies are located under each specific resource section for those resources that were considered in this Tier 1 Final EIS EJ analysis. However, mitigation for resource impacts identified specifically within EJ populations should be coordinated with those communities. The U.S. Environmental Protection Agency (EPA) letter provided comments on future outreach efforts. Tools and methods suggested for subsequent Tier 2 project studies include updating the public involvement plan, creating a more comprehensive EJ outreach plan, engaging the appropriate metropolitan planning organization's list of EJ advocates, hosting small group meetings with EJ groups and communities along the corridor and especially in high concentration areas, and incorporating grassroots outreach. Innovative outreach tools, such as the "What would you do" concept, which asks residents to provide feedback through text messages, could be utilized in Tier 2 projects.

7.11.8 Subsequent Tier 2 Analysis

Subsequent Tier 2 actions should include an update of demographic data and detailed EJ effects by each sponsoring agency for specific projects. The EPA recommends using its EJSCREEN tool for Tier 2 project studies to help identify minority and low-income populations. In addition, EJ outreach and engagement is critical. Specific EJ outreach plans should be developed and implemented for Tier 2 project studies. The EPA also suggested that Tier 2 project studies will include density of low-income populations, existing and reasonably foreseeable localized pollutions sources, and analysis of unique geographic features that would amplify negative impacts, such as wind patterns and pedestrian risks.

As part of each Tier 2 project study, the lead federal agency will ensure compliance with the EO 12898. The lead federal agency for subsequent Tier 2 project studies will review the demographic and detailed EJ data used in this analysis, as applicable, and identify necessary updates to the data set in order to fully assess the effects of Tier 2 project studies. Tier 2 project studies sponsored by the Federal Transit Administration will be subject to its EJ Circular and suggested EJ methodology.