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.

Key Resource: 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 EJ populations.

7.11.1.1 Definition of Resources

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."

Following the direction of EO 12898, federal agencies developed their own strategies to implement EJ. The guidance applicable to the NEC FUTURE program 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) (U.S. DOT 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 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]

[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 analyses, 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, cumulative human health, or environmental effect (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.

7.11.1.2 Effects-Assessment Methodology

The FRA developed a resource methodology for EJ that includes the methodology for developing demographic profiles and the identification of EJ populations (Appendix E, Section E.11). The effects-assessment methodology further defines the resource and data sources, explains how the Affected Environment was defined and established, and how the potential effects on EJ populations were evaluated and reported.

Appendix E, Section E.11, also includes more information on age distribution, income, auto ownership (relevant to transit dependency), and housing data broken out by county. Appendix A, Mapping Atlas, provides the general locations of EJ populations relative to the Tier 1 Draft Environmental Impact Statement (Tier 1 Draft EIS) Action Alternatives. 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 each Action 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 differences among alternatives with regard to the potential for an Action Alternative to either benefit or adversely affect EJ populations.

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

7.11.2 Resource Overview

This analysis identifies concentrations of EJ populations within the Study Area that coincide with effects identified on resources evaluated in this Tier 1 Draft EIS. Because this Tier 1 Draft EIS represents a high-level of analysis for all resources, identifying potential disproportionate effects on EJ populations is 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 an Action Alternative.

To identify EJ populations, it is important to understand the demographic characteristics of the Study Area. This understanding sets the background for identifying if a minority or low-income population comprises a larger than average portion of the population of a given area.

The Study Area covers eight states plus Washington, D.C., and 124 counties. According to the 2010 census there are approximately 51 million people living in the Study Area. The central region, consisting of New Jersey and New York City, contains almost half of the population in the Study Area, with approximately 23 million people. Approximately 24 million people are employed in the Study Area. Population and employment within the Study Area generally grew at a rate of 21 percent and 27 percent,[2] respectively, from 1980 to 2010, and are projected to grow at a rate of approximately 14 percent and 13 percent, [3] respectively, from 2010 to 2040. Table 7.11-2 lists additional demographic characteristics for the Study Area.

Table 7.11-2: Demographic Characteristics by Region

Region	2010 Population	2010 Employment	Total Housing Units	Median Household Income	% Households without Vehicles Available (Transit Dependent)	% Living Below the Poverty Level	% of Labor Force Unemployed
South (D.C., MD, DE, PA)	16,437,274	7,970,000	6,735,000	$69,199	11.2%	9.9%	6.7%
Central (NJ, NY)	22,996,246	10,547,000	9,271,000	$65,615	26.6%	12.3%	7.7%
North (CT, RI, MA)	11,993,380	5,866,000	5,104,000	$65,733	10.4%	10.0%	7.4%
Study Area	51,426,900	24,382,000	21,110,000	$66,791	17.7%	11.0%	7.3%

Source: U.S. Census Bureau, American Community Survey; Moody's Analytics U.S. County Forecast, December 2012.

The minority and low-income population totals for all states within the Study Area provide a framework for this Tier 1 Draft EIS EJ analysis. The FRA used these state totals as a benchmark for an overall comparison to the more detailed county level analysis conducted for each Action Alternative presented in Section 7.11.3.1. Approximately 20.1 million persons (39 percent) living in the Study Area are minorities and 5.5 million (11 percent) are low-income. Table 7.11-3 presents the overall minority and low-income composition of each state in the Study Area.

[2] U.S. Census Bureau, 2010 American Community Survey

[3] Moody's Analytics U. S. County Forecast, December 2012

Table 7.11-3: 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.	601,723	392,259	65.2%	101,767	18.5%
MD	5,773,552	2,615,594	45.3%	476,732	8.6%
DE	897,934	311,182	34.7%	93,857	11.0%
PA	12,702,379	2,607,727	20.5%	1,509,858	12.4%
NJ	8,791,894	3,577,016	40.7%	777,968	9.1%
NY	19,378,102	8,073,855	41.7%	2,650,166	14.2%
CT	3,574,097	1,027,835	28.8%	314,306	9.2%
RI	1,052,567	248,882	23.6%	123,396	12.2%
MA	6,547,629	1,562,829	23.9%	658,391	10.5%
TOTAL States	**59,319,877**	**20,417,179**	**34.4%**	**6,706,441**	**11.7%**
TOTAL Study Area	**51,426,900**	**20,092,566**	**39.0%**	**5,459,173**	**11.0%**

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

The No Action and Action Alternatives would affect minority and low-income populations throughout the Study Area. The key findings of the EJ analysis are:

- **Benefits**
  - All Action Alternatives improve the transportation network, which decreases travel time and increases service reliability and improved access, frequency, and mobility for the entire population, including EJ populations, throughout the Study Area.
  - Improved mobility provides for greater opportunities to reach jobs that may not currently be accessible for EJ populations living outside of major employment areas.
- **Impacts**
  - The No Action Alternative does not realize the same benefits as the Action Alternatives for the entire population, including EJ populations.
  - The FRA reviewed the effects-assessment of seven environmental resource areas in relation to EJ populations: parklands, hazardous materials, historic properties, visual and aesthetic resources, noise, vibration, and potential land conversions that could result in acquisitions and displacements. Through that analysis, the greatest number of potential impacts on those environmental resource areas occur in the following EJ populations:
    - Alternative 1 – Baltimore City, MD, and Fairfield County, CT.
    - Alternative 2 – Philadelphia County, PA; Middlesex County, NJ; Queens County, NY; and Fairfield County, CT.
    - Alternative 3 – Baltimore City and Harford Counties, MD; Philadelphia County, PA; Bronx and Queens Counties, NY; Fairfield and Hartford Counties, CT; Providence County, RI; Worcester County, MA. The FRA identified the greatest number of EJ census tracts in the New York City to Hartford via the Long Island route option of Alternative 3.

7.11.3 Affected Environment

The Affected Environment presents EJ at the census tract level. At this more detailed level, a qualitative assessment can determine the EJ census tracts that could be affected by the Action Alternatives.

Table 7.11-4 identifies EJ populations within the Affected Environment of the existing NEC and each Action Alternative. Also shown are the number of census tracts that meet the EJ thresholds as defined for the presence of minority or low-income populations. Table 7.11-5 presents detailed information by state, for each Action Alternative, on the location of EJ census tracts.

Table 7.11-4: Affected Environment: Total Environmental Justice Populations by Action Alternative

	Total Population	Total Minority Population	% Minority Population	Total Low-Income Population	% Low-Income Population	Total EJ Census Tracts
Existing NEC	4,412,318	2,381,775	54%	722,863	17%	647
Alternative 1	4,467,580	2,403,860	54%	727,599	17%	652
Alternative 2	4,889,216	2,533,830	52%	765,170	16%	693
Alternative 3	5,913,596–6,542,584	2,911,532–3,357,624	49%–52%	893,764–972,405	16%	787–926
TOTAL Study Area	**51,426,900**	**20,092,566**	**39%**	**5,459,173**	**11%**	**4,891**

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

Table 7.11-5: Affected Environment: Total Environmental Justice Census Tracts by Action Alternative

Geography	Existing NEC	Alternative 1	Alternative 2	Alternative 3	Study Area
D.C.	18	18	18	18	126
MD	103	106	106	126	638
DE	20	20	22	21	48
PA	108	108	95	138	513
NJ	129	132	132	139	788
NY	151	151	161	176–289	1,791
CT	69	70	107	115–122	258
RI	36	36	41	36–41	65
MA	42	42	42	43–77	431
TOTAL	**676**	**683**	**724**	**822–961**	**4,891**

Source: NEC FUTURE team, 2015

7.11.3.1 Existing NEC

New York, New Jersey, Pennsylvania, and Maryland contain the most EJ census tracts in the Affected Environment for the existing NEC.

Bronx County, NY (88); Philadelphia County, PA (79); Baltimore City, MD (60); Fairfield County, CT (41); and Suffolk County, MA (40) contain the most EJ census tracts in the Affected Environment for the existing NEC.

7.11.3.2 Alternative 1

Alternative 1 contains a slightly higher overall total number of EJ census tracts, and their distribution is approximately the same, as compared to the existing NEC. New York, New Jersey, Pennsylvania,

and Maryland have the most identified EJ census tracts in the Affected Environment for Alternative 1. However, the following counties have the most EJ census tracts in the Affected Environment for Alternative 1: Bronx County, NY (88); Philadelphia County, PA (79); Baltimore City, MD (63); Fairfield County, CT (42); and Suffolk County, MA (40).

7.11.3.3 Alternative 2

Alternative 2 contains a higher total number of EJ census tracts compared to Alternative 1 and the existing NEC. New York, New Jersey, Connecticut, and Pennsylvania have the most EJ census tracts in the Affected Environment of Alternative 2. However, the following counties contain the most EJ census tracts in the Affected Environment for Alternative 2: Bronx County, NY (86); Philadelphia County, PA (74); Baltimore City, MD (60); Queens County, NY (47); and Fairfield County, CT (43).

7.11.3.4 Alternative 3

To understand the differences in the number of EJ census tracts for the Alternative 3 route options, the FRA separated the total number of EJ census tracts by route option. Table 7.11-6 presents detailed information on the location of EJ census tracts for the Alternative 3 route options by geography.

Table 7.11-6: Affected Environment: Total Environmental Justice Census Tracts for Alternative 3

Geography	Existing NEC	Alternative 3				
			New York City to Hartford		Hartford to Boston	
		D.C. to NYC	via Central Connecticut	via Long Island	via Providence	via Worcester
D.C.	18	1718	—	—	—	—
MD	103	126	—	—	—	—
DE	20	21	—	—	—	—
PA	108	138	—	—	—	—
NJ	129	139	—	—	—	—
NY	151	—	176	289	—	—
CT	69	—	101	96	22	24
RI	36	—	—	—	41	36
MA	42	—	—	—	43	77
TOTAL	**676**	**442**	**277**	**385**	**106**	**137**

Source: NEC FUTURE team, 2015
— = Not applicable within that alternative/route option.

Washington, D.C., to New York City

Pennsylvania, Maryland, and New Jersey contain the most EJ census tracts in the Affected Environment of this portion of Alternative 3 from Washington, D.C., to New York City. Philadelphia County, PA (109); Baltimore City, MD (75); and Middlesex County, NJ (35) contain the most EJ census tracts in the Affected Environment for this portion of Alternative 3.

New York City to Hartford

Via Central Connecticut

Bronx County, NY (88); Queens County, NY (48); Fairfield County, CT (43); and Hartford County, CT (32) contain the most EJ census tracts in the Affected Environment from New York City to Hartford via Central Connecticut.

Via Long Island

The portion of Alternative 3 from New York City to Hartford via Long Island has 108 more EJ census tracts than the New York to Hartford via Central Connecticut segment. Queens County, NY (142); Bronx County, NY (88); and Fairfield County, CT (42) have the most EJ census tracts in the Affected Environment for this portion of Alternative 3.

Hartford to Boston

Via Providence

Suffolk County, MA (41); Providence County, RI (40); and Hartford County, CT (14) have the most EJ census tracts in the Affected Environment from Hartford to Boston via Providence.

Via Worcester

Suffolk County, MA (45); Providence County, RI (35); and Worcester County, MA (24) contain the most EJ census tracts in the Affected Environment from Hartford to Boston via Worcester.

7.11.4 Environmental Consequences

Table 7.11-7 summarizes the Tier 1 effects analysis for resource areas that the FRA used to determine potential effects to EJ populations. The table also describes each contributing resource and provides additional detail on the interaction between each resource and EJ populations. For the purposes of determining Environmental Consequences, the FRA determined the potential for cumulative effects in EJ census tracts without regard to intensity. This section presents an overview of Environmental Consequences in EJ census tracts for all applicable resources considered for the counties located along each Action Alternative.

Table 7.11-7: 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, 2015

7.11.4.1 No Action Alternative

The FRA did not quantify the effects of the No Action Alternative as part of this analysis as explained in the introduction of Chapter 7. The existing NEC services EJ populations and stations located in EJ census tracts; however, benefits and burdens to EJ populations will be assessed for each individual project as the planned projects included in the No Action Alternatives move forward.

In general, improvements included in the No Action Alternative will not greatly change the services provided along the existing NEC; therefore, benefits to EJ populations will likely be minimal. Likewise, physical improvements included in the No Action Alternative will generally focus within the existing right-of-way, and effects on EJ populations will be negligible. For some larger improvements included in the No Action Alternative that may take place outside of the existing right-of-way, effects could occur. The project sponsor/lead federal agency for each of those actions will determine whether those effects will be disproportionate and adverse.

7.11.4.2 Alternative 1

As shown in Table 7.11-8, Baltimore City, MD, and Fairfield County, CT, have the greatest number of potential environmental resource effects identified within EJ census tracts associated with Alternative 1. These two counties would have environmental impacts in six out of seven of the resource categories the FRA assessed. Baltimore City and Fairfield County both would have potential land cover changes resulting in acquisitions and displacements in developed areas. The FRA identified parkland, visual and aesthetic resources, noise impacts, and historic properties within the Affected Environment of Action Alternative that traverse these counties. In addition to these impacts, Fairfield County contains hazardous materials and contaminated waste sites in EJ census tracts.

Table 7.11-8: Alternative 1 – Summary of Potential Effects in Counties where Environmental Justice Census Tracts Exist

Geography	County	Parklands	Hazardous Materials	Historic Properties	Visual and Aesthetic Resources	Noise	Vibrations	Land Cover (Acquisitions and Displacements)
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		
PA	Delaware	X	X	X	X	X		
	Philadelphia	X	X	X	X	X		
NJ	Mercer	X	X	X		X		
	Middlesex	X	X	X	X	X		
	Union		X	X		X		
	Essex		X	X		X		
	Hudson		X	X		X		X
NY	Queens	X	X	X	X	X		
	Bronx	X	X	X	X	X		
CT	Fairfield	X	X	X	X	X		X
RI	Providence	X		X		X		
MA	Suffolk	X		X	X	X		

Source: NEC FUTURE team, 2015
Blank Cell = No effects identified for subject resource.

All counties within Alternative 1 that have identified EJ census tracts have potential noise impacts, and most of these counties have historic properties. Baltimore City, MD; Hudson County, NJ; and Fairfield County, CT, have potential acquisitions, which is necessary to accommodate proposed infrastructure. The FRA identified displacements that may also occur within the same three counties where EJ census tracts exist. However, the FRA has not yet identified specific locations of acquisitions and possible displacements. At this time, the FRA has been able to identify only a representative approximation of acreage that may be required for each Action Alternative. Vibration impacts are present only in one county where the FRA identified EJ census tracts (Baltimore City, MD).

The counties with the fewest number of environmental resource impacts in EJ census tracts associated with Alternative 1 are Prince George's County, MD; Union and Essex Counties, NJ; and Providence County, RI. However, environmental resource impacts would occur in these counties. Impacts on parklands, visual and aesthetic resources, and noise-sensitive land cover categories occur in Prince George's County, MD. Impacts to hazardous materials and contaminated waste sites (HMCW), historic properties, and noise-sensitive land cover categories occur in Union and Essex Counties, NJ. Impacts to parklands, historic properties, and noise-sensitive land cover categories occur in Providence County, RI.

7.11.4.3 Alternative 2

The greatest number of potential environmental impacts in EJ census tracts associated with Alternative 2 occurs in Philadelphia County, PA; Middlesex County, NJ; Queens County, NY; and Fairfield County, CT (Table 7.11-9). These four counties have potential environmental resource impacts in all seven environmental resource categories that the FRA assessed. All counties within Alternative 2 that have identified EJ census tracts have the potential to experience noise effects, and most of these counties have identified historic properties. Twelve counties have potential acquisitions and possible displacements, and seven counties have identified vibration effects.

Prince George's County, MD, has the fewest potential environmental resource impacts within EJ census tracts associated under Alternative 2, with impacts occurring on parklands, historic properties and noise-sensitive land covers

Table 7.11-9: Alternative 2: Summary of Potential Effects in Counties where Environmental Justice Census Tracts Exist

Geography	County	Parklands	Hazardous Materials	Historic Properties	Visual and Aesthetic Resources	Noise	Vibration	Land Cover (Acquisitions and Displacements
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
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
	Essex		X	X		X		X
	Hudson		X	X		X		X

Table 7.11-9: Alternative 2: Summary of Potential Effects in Counties where Environmental Justice Census Tracts Exist (continued)

Geography	County	Parklands	Hazardous Materials	Historic Properties	Visual and Aesthetic Resources	Noise	Vibration	Land Cover (Acquisitions and Displacements
NY	Queens	X	X	X	X	X	X	X
	Bronx	X	X	X	X	X		X
CT	Fairfield	X	X	X	X	X	X	X
	Hartford		X	X	X	X	X	X
RI	Providence	X		X	X	X	X	X
MA	Suffolk	X		X	X	X		

Source: NEC FUTURE team, 2015
X = Presence of resource; effects would be subject to Tier 2 analysis.
Blank Cell = No effects identified for subject resource.

7.11.4.4 Alternative 3

Washington, D.C., to New York City

Baltimore City and Harford Counties, MD, and Philadelphia County, PA (Table 7.11-10) have the greatest potential for environmental resource impacts in EJ census tracts associated with this portion of Alternative 3. These three counties have potential environmental resource impacts in all seven categories. These three counties contain HMCW locations, would require acquisitions and possible displacements, include historic properties and visual and aesthetic resources, and have noise and vibration impacts.

Table 7.11-10: Alternative 3 – Washington, D.C., to New York City: Summary of Potential Impacts in Environmental Justice Census Tracts

Geography	County	Parklands	Hazardous Materials	Historic Properties	Visual and Aesthetic Resources	Noise	Vibration	Land Cover (Acquisitions and Displacement)
D.C.		X		X	X	X		X
MD	Prince George's	X			X	X		X
	Baltimore City	X	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	X		X
	Middlesex		X	X	X	X	X	X
	Union	X	X	X	X	X		X
	Essex		X	X	X	X		X
	Hudson		X	X	X	X	X	X

Source: NEC FUTURE team, 2015
X = Presence of resource; effects would be subject to Tier 2 analysis.
Blank Cell = No effects identified for subject resource.

Counties within the Washington, D.C., to New York City portion of Alternative 3 that have identified EJ census tracts have impacts related to noise, acquisitions and displacements, and visual and aesthetic resources. Only five counties have vibration effects (Baltimore City, MD; Harford County,

MD; Philadelphia County, PA; Middlesex County, NJ; and Hudson County, NJ) that have identified EJ census tracts.

Prince George's County, MD, has the fewest environmental impacts associated with this segment of Alternative 3. Impacts identified for Prince George's County, MD, include parklands, visual and aesthetic resources, potential acquisitions and displacements, and noise impacts.

New York City to Hartford

Via Central Connecticut

Bronx County, NY, has the most potential environmental impacts in EJ census tracts associated with this option since it is affected in all seven environmental resource categories assessed (Table 7.11-11).

Queens County, NY, has the fewest environmental impacts in EJ census tracts associated with this option. Queens County has impacts to resources in five out of seven environmental categories assessed: noise, vibration, HWCM sites, historic properties and land acquisitions and displacements.

Via Long Island

Queens County, NY, and Fairfield County, CT, have the highest potential for environmental impacts in EJ census tracts associated with this route option. Both counties have potential environmental resource conflicts in all seven environmental resource categories assessed (Table 7.11-11). All counties within Alternative 3 New York City to Hartford via Long Island route option that have identified EJ census tracts have the potential for noise impacts and include identified hazardous materials and historic properties. Queens County, NY, and Fairfield County and Hartford County, CT, have potential vibration effects and land acquisitions and displacements.

Table 7.11-11: Alternative 3 – New York City to Hartford: Summary of Potential Effects in Counties where Environmental Justice Census Tracts Exist

State	County	Parklands	Hazardous Materials	Historic Properties	Visual and Aesthetic Resources	Noise	Vibration	Land Cover (Acquisitions and Displacement)
via Central Connecticut								
NY	Queens		X	X		X	X	X
	Bronx	X	X	X	X	X	X	X
CT	Hartford		X	X	X	X	X	X
via Long Island								
NY	Queens	X	X	X	X	X	X	X
	Bronx		X	X		X		
CT	Fairfield	X	X	X	X	X	X	X
	Hartford		X	X	X	X	X	X

Source: NEC FUTURE team, 2015

X = Presence of resource; effects would be subject to Tier 2 analysis.

Blank Cell = No effects identified for subject resource.

Bronx County, NY, has the fewest environmental impacts located in EJ census tracts; impacts occur in three out of seven environmental resource categories.

Hartford to Boston

Via Providence

Providence County, RI, has the highest number of potential environmental impacts in EJ census tracts within this route option since the FRA identified potential impacts in six out of seven environmental resource categories assessed. Hartford County, CT, has the fewest environmental impacts in EJ census tracts for this route option since three out of seven environmental impact categories are the source of potential impacts (Table 7.11-12).

Via Worcester

Hartford County, CT, and Worcester County, MA, have the highest potential environmental impacts in EJ census tracts for this route option because both counties have impacts in five out of seven environmental impact categories assessed. Impacts to EJ census tracts in counties within Alternative 3 Hartford to Boston via Worcester route option include noise, vibration, acquisitions and displacements, and visual and aesthetic resources (Hartford County, CT; Worcester County, MA; and Suffolk County, MA).

Providence County, RI, has the fewest environmental impacts in EJ census tracts for this route option. This county has noise impacts (Table 7.11-12).

Table 7.11-12: Alternative 3 – Hartford to Boston: Summary of Potential Impacts in Environmental Justice Census Tracts

State	County	Parks	Hazardous Materials	Historic Properties	Visual and Aesthetic Resources	Noise	Vibration	Land Cover (Acquisitions and Displacement)
via Providence								
CT	Hartford				X	X	X	
RI	Providence	X		X	X	X	X	X
MA	Suffolk		X	X	X	X		X
via Worcester								
CT	Hartford		X		X	X	X	X
RI	Providence					X		
MA	Worcester	X			X	X	X	X
	Suffolk				X	X	X	X

Source: NEC FUTURE team, 2015
X = Presence of resource; effects would be subject to Tier 2 analysis.
Blank Cell = No effects identified for subject resource.

7.11.4.5 Transportation

The FRA analyzed the transportation network to assess the potential for improvements and increased connectivity in the network caused by implementing the project. The Action Alternatives improve the overall transportation network. Increases in passenger rail and commuter rail options and additional station locations result in predicted decreases in automobile, air, and intercity bus travel, which in turn result in an increased share of passenger rail trips. 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 ridership estimate for the 2040 horizon year shows that the Action Alternatives increase levels of Intercity ridership 74–102 percent compared to the No Action Alternative. This is a potential benefit to EJ populations since these improvements would provide access to an extended network for job, educational, medical, and housing choices. Additionally, network improvements in Hartford, CT, would result in time savings and would encourage rail usage for trips from points south to Connecticut and points north.

7.11.4.6 Economic Effects

Economic analyses for this Tier 1 Draft EIS included the quantification and evaluation of operational costs, direct employment impacts, travel time savings, travel cost, and safety. For low-income and minority populations, the potential increase in employment opportunities via expanded travel options, reduction in overall trip travel time and a decrease in travel cost could be considered as positive effects. Capital investments in transportation improvements often lead to jobs and job training programs for skilled and unskilled workers. The most prevalent concern for EJ populations are travel costs. For this Tier 1 Draft EIS, the FRA estimated study travel costs for 2040. In this year, the cost of passenger rail would be less expensive than automobile ownership and operation for all of the Action Alternatives. However, most low-income households are typically zero-car households and are transit dependent. Bus travel in 2040 would still be the least expensive mode of transportation for all Action Alternatives. In any case, access to multiple modes provides user choice for EJ populations, and station location and access improvements are included throughout the Study Area, resulting in improved network options for all users including EJ populations.

7.11.4.7 Air Quality

Putnam, NY; Washington, Kent, and Providence, RI; and Bristol, MA, met the current federal air quality standards for criteria pollutants before the FRA considered project effects. The FRA determined air quality effects for this Tier 1 study at the regional level and were 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.

The Action Alternatives would reduce criteria pollutants and greenhouse gases (GHG) from roadway vehicles for all Action Alternatives since there would be a decrease in vehicle-miles traveled and associated vehicle emissions. Criteria pollutants and GHGs caused by aircraft travel and buses are expected to decrease under the Action Alternatives because of the potential mode shift from aircraft and bus travel to passenger rail. On the other hand, increased emissions from power plants due to the increased electrical requirements required by the expanded service proposed under the Action Alternatives would result in an increase in emissions of criteria pollutants and GHGs in all states for all Action Alternatives.

However, assuming an existing energy profile, the combined net effect of these transportation changes is a predicted reduction in all criteria pollutant burdens, with the exception of nitrogen

oxides under Alternatives 3 (via Central Connecticut/Providence, via Long Island/Providence, and via Long Island/Worcester route options) and sulfur dioxide under all Action Alternatives. When assuming a future energy profile (i.e., accounting for future increases in renewable energy use), the combined net effect of these transportation changes is a predicted reduction in all criteria pollutant burdens, with the exception of sulfur dioxide under all Action Alternatives. The net total of GHGs would decrease under all Action Alternatives regardless of the energy profile (existing or future) assumed.

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 could also increase near station locations and parking facilities. These more direct emissions could cause localized effects in EJ census tracts and, more specifically, impacts to children living near power plants, construction zones, and stations and parking facilities. However, EJ populations living near major roadways and airports within the Affected Environment could see a decrease in air pollutants and toxins.

7.11.4.8 Safety and Public Health

The safety analysis for this Tier 1 Draft EIS focuses primarily on modal safety, railroad operational safety, and railroad infrastructure safety and security. From an EJ perspective, the general assessment of safety focuses on the connection to health impacts and train operations near children and other vulnerable populations.

The FRA establishes safety regulations for passenger- and freight-rail operators, which are applicable for the No Action Alternative and the Action Alternatives. These regulations seek to protect the traveling public and those near operational trains.

Chapter 7.19, Public Health, provides a qualitative assessment of the effects of the Action Alternatives on public health. Temporary effects on public health from construction of any Action Alternative are more likely than long-term effects. Temporary effects on public health may result from things such as fugitive dust, construction noise and vibration, or an unexpected encounter of a contaminated site. Specific health-related conditions exacerbated by the construction and operation of an Action Alternative are not anticipated to increase in EJ census tracts such that EJ populations bear a disproportionate burden of 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, encompassing 5 miles centered on the Representative Route for each Action Alternative. However, potential impacts in EJ census tracts could increase depending on shifts in the Representative Route and the location of the environmental resources assessed for potential impacts in EJ census tracts. The number of EJ census tracts in the Context Area ranges 1,790–2,416 for the Action Alternatives.

Table 7.11-13 provides the number of census tracts within the Context Area for the Action Alternatives. New Jersey and New York have the highest number of census tracts within the Context Area of all the Action Alternatives.

Table 7.11-13: Context Area: Total Environmental Justice Census Tracts by Action Alternative

Geography	Existing NEC	Alternative 1	Alternative 2	Alternative 3
D.C.	93	93	93	93
MD	228	231	231	235
DE	34	34	34	34
PA	249	249	245	249
NJ	345	345	345	360–361
NY	566	566	590	604–1,031
CT	102	102	189	190–202
RI	51	51	51	51
MA	122	122	122	123–173
TOTAL	**1,790**	**1,793**	**1,900**	**1,909–2,416**

Source: NEC FUTURE team, 2015

7.11.6 Potential Mitigation Strategies

Because the FRA does not identify site-specific adverse effects for EJ populations, proposing potential mitigation strategies is premature. During Tier 2 studies, more analysis to identify site-specific impacts on EJ populations should occur. Mitigation should reflect the needs of the affected EJ communities.

Mitigation examples for resources that may potentially affect EJ communities are provided in the various resource-specific sections of this chapter of this Tier 1 Draft EIS. To potentially avoid or minimize adverse effects on EJ populations, consideration of the findings of this EJ analysis should occur during future phases of project planning and development.

7.11.7 Subsequent Tier 2 Analysis

Specific impacts to EJ populations were not available for the environmental resources assessed for this Tier 1 Draft EIS. However, highlighting the areas where concentrations of EJ populations live and understanding their proximity to potential environmental effects underscores the FRA's commitment to EJ principles. A more detailed analysis of environmental impacts that have the potential to be borne by EJ populations will be conducted during Tier 2 studies. As part of each Tier 2 study, the lead federal agency will ensure compliance with the EO 12898. The lead federal agency for subsequent Tier 2 actions should 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 actions. Tier 2 actions sponsored by the Federal Transit Administration (FTA) would be subject to the FTA's EJ Circular and suggested EJ methodology.