

22.1 INTRODUCTION

Federal agencies are required to identify disproportionately high and adverse effects of their actions on minority and low-income populations (environmental justice populations) and, where such effects are identified, to identify mitigation for those effects and conduct outreach to the affected populations to seek their input on the impacts and mitigation. This chapter provides an analysis of the Preferred Alternative's effects on environmental justice populations.

This chapter contains the following sections:

- 22.1 Introduction
- 22.2 Analysis Methodology
 - 22.2.1 Regulatory Context
 - 22.2.2 Analysis Techniques
- 22.3 Identification of Environmental Justice Populations
 - 22.3.1 New Jersey
 - 22.3.2 New York
- 22.4 Impacts of No Action Alternative
- 22.5 Benefits and Impacts of the Preferred Alternative and Measures to Avoid, Minimize, and Mitigate Impacts
 - 22.5.1 New Jersey
 - 22.5.2 New York
- 22.6 Determination of Disproportionately High and Adverse Effects on Environmental Justice Populations
 - 22.6.1 Overview
 - 22.6.2 New Jersey
 - 22.6.3 New York
- 22.7 Environmental Justice Conclusion
 - 22.7.1 Further Mitigation Measures or Alternatives that Would Avoid or Reduce the Disproportionately High and Adverse Effect are Not Practicable
 - 22.7.2 A Substantial Need for the Action Exists and Lesser-Impact Alternatives are Not Available
- 22.8 Public Participation

22.2 ANALYSIS METHODOLOGY

During development of this Environmental Impact Statement (EIS), the Federal Railroad Administration (FRA) and NJ TRANSIT developed methodologies for evaluating the potential effects of the Hudson Tunnel Project in coordination with the Project's Cooperating and Participating Agencies (i.e., agencies with a permitting or review role for the Project). The methodologies used for analysis of environmental justice are summarized in this chapter.

22.2.1 REGULATORY CONTEXT

Executive Order (EO) 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* (February 11, 1994), requires Federal agencies to identify and address disproportionately high and adverse effects of their actions on minority and



low-income populations. EO 12898 also requires federal agencies to work to ensure greater public participation in the decision-making process. The Council on Environmental Quality (CEQ), which has oversight of the Federal government's compliance with EO 12898 and the National Environmental Policy Act (NEPA), has developed guidance to assist Federal agencies with their NEPA procedures so that environmental justice concerns are effectively identified and addressed (*Environmental Justice Guidance under the National Environmental Policy Act*, December 1997, referred to in this chapter as CEQ guidance). Federal agencies may supplement this guidance with more specific procedures tailored to their particular programs or activities. The U.S. Department of Transportation (USDOT) issued additional guidance in its Updated Environmental Justice Order 5610.2(a), *Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*¹ (referred to in this chapter as the USDOT Order) and the Federal Transit Administration (FTA) issued guidance in its *Environmental Justice Policy Guidance for Federal Transit Administration Recipients* (FTA C4703.1, effective August 15, 2012, referred to in this chapter as the FTA Circular). These documents establish policies and procedures for the agencies to use in complying with EO 12898.

At the state level, New Jersey's EO 131 commits to ensuring that communities of color and low-income communities are afforded fair treatment and meaningful involvement in decision-making. The New Jersey Office of Environmental Justice within the New Jersey Department of Environmental Protection (NJDEP) supports environmental protection through public involvement. In New York State, projects seeking certain permits from the New York State Department of Environmental Conservation (NYSDEC) that may impact environmental justice areas must confer with and obtain input from the affected community. NYSDEC's guidance for incorporating environmental justice concerns into the agency's permit review process is provided in CP-29, *Environmental Justice and Permitting* (issued March 19, 2003).

Identification of a disproportionately high and adverse effect on minority or low-income populations does not preclude a project from moving forward. The USDOT Order requires that projects that would disproportionately affect minority or low-income populations may proceed only if: (1) further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effects are not practicable; and (2) a substantial need for the action exists, and other alternatives that would have less adverse impacts on the subject population and still satisfy the need, would either have other adverse impacts that are more severe or involve increased costs of extraordinary magnitude.

Additionally, as set forth in the USDOT Order (Section 8.b.), "In making determinations regarding disproportionately high and adverse effects on minority and low-income populations, mitigation and enhancement measures that will be implemented and all offsetting benefits to the affected minority and low-income populations may be taken into account, as well as the design, comparative impacts, and the relevant number of similar existing system elements in non-minority and non-low-income areas."

22.2.2 ANALYSIS TECHNIQUES

This environmental justice analysis was prepared to comply with the guidance and methodologies set forth in the USDOT Order, the FTA Circular, and the CEQ guidance. It also complies with New Jersey and New York State guidance (EO 131 and CP-29).

¹ This Order updates USDOT's original Environmental Justice Order, which was published April 15, 1997.

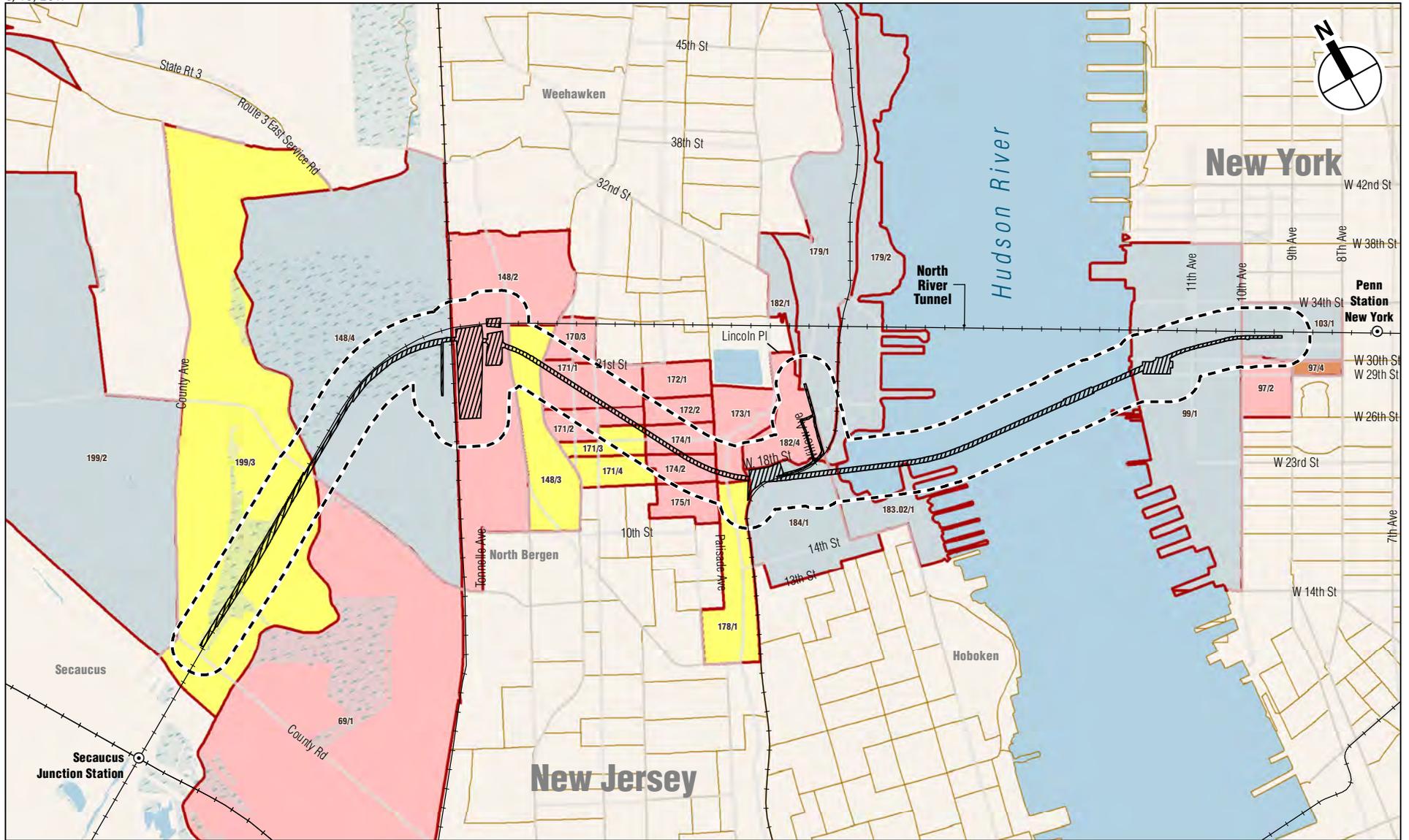
Consistent with those documents, this analysis involved five basic steps:

1. Identify the area where the Preferred Alternative may cause impacts (i.e., the study area);
2. Compile race and ethnicity and income data for the census block groups in the study area and identify minority and low-income populations;
3. Identify the Preferred Alternative's potential adverse impacts on minority and low-income populations;
4. Evaluate the Preferred Alternative's potential adverse effects on minority and low-income populations relative to its effects on non-minority and non-low-income populations to determine whether the Proposed Action would result in any disproportionately high and adverse effects on minority or low-income populations; and
5. For projects that would result in disproportionately high and adverse effects on minority or low-income populations, determine whether: (1) further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effects are not practicable; and (2) a substantial need for the action exists, and other alternatives that would have less adverse impacts on the protected population and still satisfy the need would either have other adverse impacts that are more severe or involve increased costs of extraordinary magnitude.

In addition, where minority and low-income populations are present in the study area, conduct outreach targeted to those populations.

22.2.2.1 DELINEATION OF STUDY AREA

The environmental justice analysis study area encompasses the area most likely to experience impacts during construction and operation of the Preferred Alternative. The study area therefore includes the census block groups that are within 500 feet of the Project site. FRA and NJ TRANSIT excluded the underground footprint of the North River Tunnel from the Project site used to define the environmental justice study area, since the analyses provided in other chapters of this EIS conclude that underground construction work would not result in adverse environmental impacts. Because of their physical separation and different statistical points of reference, FRA and NJ TRANSIT treat the New Jersey and New York portions of the study area separately in this analysis. As shown in **Table 22-1** and **Figure 22-1**, the environmental justice study area includes 24 census block groups in New Jersey and 4 census block groups in New York.



Environmental Justice Communities
in the Study Area
Figure 22-1



**Table 22-1
Environmental Justice Study Area Block Groups**

State / County	Municipality	Census Tract	Block Group
New Jersey / Hudson	Jersey City	69	1
New Jersey / Hudson	North Bergen	148	2, 3, 4
New Jersey / Hudson	Union City	170	3
New Jersey / Hudson	Union City	171	1, 2, 3, 4
New Jersey / Hudson	Union City	172	1, 2
New Jersey / Hudson	Union City	173	1
New Jersey / Hudson	Union City	174	1, 2
New Jersey / Hudson	Union City	175	1
New Jersey / Hudson	Union City	178	1
New Jersey / Hudson	Weehawken	179	1, 2
New Jersey / Hudson	Weehawken	182	1, 4
New Jersey / Hudson	Hoboken	183.02	1
New Jersey / Hudson	Hoboken	184	1
New Jersey / Hudson	Secaucus	199	2, 3
New York / New York	Manhattan	97	2, 4
New York / New York	Manhattan	99	1
New York / New York	Manhattan	103	1

22.2.2.2 IDENTIFICATION OF ENVIRONMENTAL JUSTICE POPULATIONS

Within the environmental justice study area, this analysis identifies whether minority and/or low-income populations (also referred to as environmental justice populations) are present that may be affected by the Preferred Alternative. FRA and NJ TRANSIT used the following definitions for this identification:

- Minority Populations:** As defined in the FTA Circular, 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. This environmental justice analysis also considers minority to include persons identified as being either “some other race” or “two or more races” in the census data.

Following CEQ guidance, minority populations were 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. For this analysis, FRA and NJ TRANSIT used Hudson County as the primary statistical reference area for the New Jersey portion of the study area and New York County (Manhattan) as the primary statistical reference area for the New York portion of the study area. Approximately 70.6 percent of the population in Hudson County and 52.9 percent of the population in New York County is minority; to be conservative, the CEQ guidance threshold of 50 percent was used as an indicator of minority population for both portions of the study area.

- Low Income Populations:** According to the FTA Circular, low income means a person whose median household income is at or below the Department of Health and Human Services (HHS) poverty guidelines. 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 USDOT program, policy or activity. The FTA Circular notes that FTA grant recipients are encouraged to use a locally developed threshold or a percentage of median income for the area, provided that the threshold is at least as inclusive as the HHS poverty guidelines. Therefore, in accordance with that guidance, the percentage of individuals below poverty level in each census block group was used to identify low-income residents. In Hudson County, approximately 17.5 percent of individuals live below the Federal poverty threshold; therefore, FRA and NJ TRANSIT considered any census block group with more than 17.5 percent of its individuals living below the poverty level to be a low-income area. In New York County, approximately 17.9 percent of individuals live below the Federal poverty threshold; as a conservative approach, FRA and NJ TRANSIT considered any census block group with more than 17.9 percent of its individuals living below the poverty level to be a low-income area. This methodology is more inclusive than the HHS poverty guidelines.

Within the study area, FRA and NJ TRANSIT collected demographic data at the census block group level from the American Community Survey (ACS) 2011-2015 Five-Year Estimates. The data were aggregated and mapped to illustrate the location of environmental justice populations within the study area. FRA and NJ TRANSIT also took into account additional environmental justice populations beyond those thresholds where appropriate in accordance with FTA guidance.

22.2.2.3 IDENTIFICATION OF POTENTIAL ADVERSE EFFECTS AND POTENTIAL DISPROPORTIONATE IMPACTS

The next step in the analysis was to identify the adverse effects that would occur in the environmental justice study area as a result of the Preferred Alternative, based on the analyses presented in other chapters of this EIS, and then to determine whether those impacts would result in disproportionately high and adverse effects on environmental justice populations.

To determine whether disproportionately high and adverse effects would occur to identified environmental justice populations, FRA and NJ TRANSIT examined the potential for adverse effects on human health and safety and environmental resources that would occur to environmental justice populations in comparison to those that would occur to non-environmental justice populations, taking into account any mitigation that would eliminate or reduce effects to environmental justice populations. The FTA Circular notes that even when the minority or low-income population in an area is small, this does not eliminate the possibility of a disproportionately high and adverse effect of a proposed action. It is important to consider the comparative impact of an action among different population groups.

22.2.2.4 OUTREACH TO ENVIRONMENTAL JUSTICE POPULATIONS

FTA's Environmental Justice Circular notes that a key component of environmental justice is engaging environmental justice populations as part of the transportation planning process. This allows project sponsors to understand the needs and priorities of environmental justice populations and to balance the benefits of a proposed project against its adverse effects.

FRA and NJ TRANSIT have held public outreach meetings throughout development of the EIS documentation, including large meetings at key Project milestones and smaller, targeted meetings for specific stakeholders. Meetings have been held in parts of the study area where environmental justice communities live, and FRA and NJ TRANSIT have undertaken targeted outreach to affected property owners and stakeholders in these communities. Project materials have been provided in both English and Spanish to ensure participation by Limited English Proficient (LEP) communities. Future outreach in the design and construction phases will



continue to involve environmental justice communities in the study area, including targeted outreach to LEP populations.

22.3 IDENTIFICATION OF ENVIRONMENTAL JUSTICE POPULATIONS

This section presents an overview of demographic data (e.g., race/ethnicity and poverty status) in the New Jersey and New York portions of the study area to identify whether environmental justice populations are present. FRA and NJ TRANSIT used data from the 2011-2015 ACS Five-Year Estimates for this study, which are presented in **Table 22-2**.

22.3.1 NEW JERSEY

Based on 2011-2015 ACS Five-Year Estimates, the New Jersey portion of the study area had a population of 35,593 in 2015. Approximately 55.5 percent of this population identified themselves as Hispanic or Latino, comprising the largest race/ethnicity cohort. Overall, approximately 69.1 percent of the study area residents are minority. This is similar to Hudson County as a whole (70.6 percent). Of the 24 individual block groups in the study area, 17 have more than 50 percent minority residents and therefore meet the definition of minority populations.

Of the 24 block groups in the New Jersey portion of the study area, 12 have low-income percentages that are greater than 17.5 percent and are therefore considered to be low-income communities. Overall, approximately 15.2 percent of the study area population lives below the poverty level.

In sum, most of the New Jersey portion of the study area can be considered environmental justice communities because of the high minority population and percentage of low-income individuals. Waterfront block groups in Hoboken and Weehawken, and certain areas in the Meadowlands west of Tonnelles Avenue, were not found to be environmental justice communities based on the established thresholds. Further study in these areas did not reveal any small or localized environmental justice populations. This was determined based on the lack of any community facilities, dedicated housing communities, or other features of the built environment that would indicate the presence of such communities. Therefore, these areas are not considered environmental justice communities.

By the Project analysis year of 2030, some new development is planned in the New Jersey study area, including new residential development in Weehawken. Chapter 6A, "Land Use, Zoning, and Public Policy," Section 6A.4.1.1, describes the anticipated development. These developments may include areas that are home to new environmental justice communities in the study area.

22.3.2 NEW YORK

Based on 2011-2015 ACS Five-Year Estimates, the New York portion of the study area had a population of 9,162. Approximately 54.3 percent of this population identified themselves as White (non-Hispanic), comprising the largest race/ethnicity cohort. Approximately 45.7 percent of the study area residents are minority. This is less than New York County (the Borough of Manhattan), where approximately 52.9 percent of residents are minority. Only one of the four individual block groups in the study area has more than 50 percent minority residents and therefore meets the definition of a minority population.

**Table 22-2
Study Area Minority and Low-Income Characteristics**

State / Census Tract / Block Group	Total Population	Race and Ethnicity Percentage (%)						Percent Individuals Below Poverty Level (%)
		White (Non - Hispanic)	Black (Non - Hispanic)	Asian (Non - Hispanic)	Other (Non - Hispanic)	Hispanic or Latino	Total Minority	
NJ Tract 69 BG 1	24	16.7	45.8	20.8	16.7	0.0	83.3	37.5
NJ Tract 148 BG 2	1,722	5.2	4.2	2.3	0.0	88.3	94.8	21.7
NJ Tract 148 BG 3	3,045	17.3	5.2	4.1	0.5	72.8	82.7	13.8
NJ Tract 148 BG 4	0	N/A	N/A	N/A	N/A	N/A	N/A	N/A
NJ Tract 170 BG 3	1,077	17.6	3.9	11.5	1.7	65.4	82.5	32.7
NJ Tract 171 BG 1	1,498	10.1	0.0	1.3	3.1	85.6	89.9	23.4
NJ Tract 171 BG 2	1,478	13.3	0.0	2.6	0.0	84.1	86.7	21.5
NJ Tract 171 BG 3	1,077	8.6	2.0	7.2	0.0	82.2	91.4	12.6
NJ Tract 171 BG 4	1,217	3.3	1.1	0.0	0.0	95.7	96.7	8.4
NJ Tract 172 BG 1	1,368	16.5	3.4	0.0	0.0	80.2	83.6	24.1
NJ Tract 172 BG 2	1,656	9.1	1.4	2.5	0.0	87.1	90.9	23.8
NJ Tract 173 BG 1	2,585	22.2	1.0	5.5	0.0	71.3	77.8	20.1
NJ Tract 174 BG 1	1,165	8.4	1.6	0.0	1.0	89.1	91.6	25.9
NJ Tract 174 BG 2	1,560	9.7	0.6	0.3	2.7	86.8	90.3	30.2
NJ Tract 175 BG 1	2,329	6.9	2.6	10.4	1.5	78.6	93.1	20.0
NJ Tract 178 BG 1	1,301	34.4	3.2	10.8	1.8	49.9	65.7	6.5
NJ Tract 179 BG 1	765	59.5	0.9	22.2	6.4	11.0	40.5	2.0
NJ Tract 179 BG 2	1,208	51.6	3.3	39.4	0.0	5.7	48.4	1.9
NJ Tract 182 BG 1	908	62.9	2.0	11.3	1.9	21.9	37.1	11.5
NJ Tract 182 BG 4	498	48.2	15.7	7.0	0.0	29.1	51.8	24.9
NJ Tract 183.02 BG 1	3,607	73.8	1.2	16.0	3.1	5.9	26.3	2.4
NJ Tract 184 BG 1	1,351	85.6	0.0	2.2	0.0	12.2	14.4	15.8
NJ Tract 199 BG 2	3,162	60.0	0.6	24.7	3.1	11.6	40.0	2.0
NJ Tract 199 BG 3	992	30.1	2.7	41.3	0.0	25.8	69.9	14.2
NJ Portion of Study Area	35,593	30.9	2.2	10.1	1.3	55.5	69.1	15.2
Hudson County	662,619						70.6	17.5
NY Tract 97 BG 2	893	3.8	8.2	15.3	6.4	66.3	96.2	33.8
NY Tract 97 BG 4	1,490	54.3	2.3	28.6	1.5	13.3	45.7	34.0
NY Tract 99 BG 1	4,938	61.0	4.7	24.3	3.0	6.9	39.0	7.4
NY Tract 103 BG 1	1,841	60.9	7.7	22.2	5.1	4.1	39.1	8.4
NY Portion of Study Area	9,162	54.3	5.3	23.7	3.5	13.2	45.7	14.5
Borough of Manhattan	1,629,507						52.9	17.9
Notes:	Percentages in bold indicate minority or low-income areas. Total minority percentage consists of all population other than non-Hispanic Whites. Totals may not add up to 100 percent due to rounding.							
Source:	U.S. Bureau of the Census, 2011-2015 American Community Survey Five-Year Estimates.							

Of the four block groups in the New York portion of the study area, two have low-income percentages that are greater than 17.9 percent, and therefore are considered to be low-income communities. Overall, approximately 14.5 percent of the study area population lives below the poverty level.

In sum, some parts of the New York portion of the study area can be considered environmental justice communities because of their high minority population and percentage of low-income

individuals. Populations west of Tenth Avenue and north of West 30th Street were not found to be environmental justice communities based on the established thresholds. Further study in these areas did not reveal any small or localized environmental justice populations. This was determined based on the lack of any community facilities, dedicated housing communities, or other features of the built environment that would indicate the presence of such communities. Therefore, these areas are not considered environmental justice communities.

The New York study area will see extensive redevelopment in the future, including a number of large-scale mixed use (commercial and residential) developments, commercial developments, as well as several public transportation infrastructure and open space improvement projects (see Chapter 6A, “Land Use, Zoning, and Public Policy,” Section 6A.4.3.1). The addition of a large amount of new commercial office space and retail space, new hotels, and thousands of new apartments will change the economic profile and residential characteristics of the New York study area by the analysis year of 2030. The new buildings will be completed over approximately the next decade, so that some new residents will be present in the New York study area when the approximately seven-year construction period for the Preferred Alternative in New York is under way. The characteristics of this future population are unknown, but the new development will include a mix of market-rate and affordable housing.

22.4 IMPACTS OF NO ACTION ALTERNATIVE

The No Action Alternative assumes that the existing North River Tunnel remains in service, with continued maintenance as necessary to address ongoing deterioration to the extent possible. However, without a full rehabilitation of the North River Tunnel, damage to the tunnel caused by Superstorm Sandy will continue to degrade systems in the tunnel. This deterioration combined with the tunnel’s age and intensity of use will likely lead to increasing instability of rail operations in the tunnel, and may lead to its eventual closure.

Under the No Action Alternative, construction of the Preferred Alternative would not occur. As a result, there would be no Project-related impacts to environmental justice communities in the study area. However, the No Action Alternative would result in adverse effects on socioeconomic conditions in New Jersey, New York, and throughout the Northeast, which would directly and indirectly affect environmental justice communities in the study area (see Chapter 7, “Socioeconomic Conditions,” Section 7.5). Without proper maintenance of the transportation infrastructure, delays on Amtrak and NJ TRANSIT service for unplanned maintenance and repairs would continue to worsen. As trans-Hudson travel demand continues to grow, access to work, home, and areas of commerce may become more difficult in New Jersey, New York, and throughout the NEC as public transportation service becomes more unreliable. Increasing travel time required for work commutes and the movement of goods and services in the region would increase the cost of doing business and ultimately make the region a less desirable location to live and work. However, these effects of the No Action Alternative would not fall disproportionately on environmental justice communities because sizeable non-environmental justice communities are also served by trans-Hudson and other regional transportation infrastructure and would be equally affected.

22.5 BENEFITS AND IMPACTS OF THE PREFERRED ALTERNATIVE AND MEASURES TO AVOID, MINIMIZE, AND MITIGATE IMPACTS

22.5.1 NEW JERSEY

22.5.1.1 OVERALL PROJECT IMPACTS

In New Jersey, construction of the Preferred Alternative would result in temporary, but long-term, adverse impacts on the communities near the construction sites at the Tonnelle Avenue staging areas and the Hoboken staging area. Construction activities would generally be disruptive to nearby land uses because of the appearance of the equipment and the traffic, noise, and dust associated with construction.

Construction activities for the surface tracks through the Meadowlands would require partial acquisitions of abutting industrial properties. Temporary easements would be required to accommodate installation of below-grade drainage infrastructure and to allow construction access for workers installing the railroad embankment and structures. In most instances, access to commercial establishments adjacent to construction sites would be maintained at all times and temporary and permanent fee acquisition and easements would be limited to partial takings of vacant land. However, certain businesses would experience temporary disruptions to parking areas or loading docks, generally for six months to a year, and one business would be adversely affected for four years because part of its property would be used for a temporary construction access road.

Construction activities at the Tonnelle Avenue construction site in North Bergen, New Jersey would occur over an 11-year period, including utility relocation and construction of a new roadway bridge over the railroad alignment, staging for the surface track construction, staging for the Palisades tunnel, and staging for rehabilitation of the North River Tunnel. During this time there would be heavy truck activity and the use of noisy construction equipment (see Chapter 12, “Noise and Vibration,” Sections 12.6.2.1.2 and 12.6.2.1.4). A Maintenance and Protection of Traffic (MPT) plan would be developed in consultation with the local municipality to minimize traffic disruptions. As with any construction project, construction activities would at times be disruptive to nearby activities. Adverse noise impacts would occur at residences on Paterson Plank Road and Grand Avenue above the staging area, at a religious facility (Hindu temple) close to the staging area on Tonnelle Avenue, and on Tonnelle Avenue near 10th Street and Secaucus Road from increased truck traffic.

Construction activities at the Hoboken staging site would occur over a seven-year period, during which time there would be heavy truck activity and the use of noisy construction equipment (see Chapter 12, “Noise and Vibration,” Section 12.6.2.1.3). Traffic on major north-south routes, such as Willow Avenue, Park Avenue, and JFK Boulevard East, would experience delays caused by the introduction of haul trucks or material delivery trucks. An MPT plan would be developed in consultation with the local municipality to minimize traffic disruptions. A temporary access road (i.e., haul route) to the Hoboken staging site would shift truck traffic away from the nearby residential neighborhood, but even with this haul route, truck traffic on the local streets would still affect access to the businesses along Willow Avenue and Park Avenue. Adverse noise impacts would occur for four years at residences along the truck routes—i.e., residences along the Park Avenue service road and Willow Avenue service road and Willow Avenue between the Hudson-Bergen Light Rail (HBLR) right-of-way and 19th Street.

Once the construction is complete and the Project is in operation, there would be few permanent adverse effects of the Preferred Alternative in New Jersey. Permanent infrastructure would be

present along the NEC, at Tonnelle Avenue, and at the Hoboken fan plant. The fan plant would be similar in shape and character to the adjacent light industrial uses and would be designed to be compatible with the visual character of the surrounding area. The shape, size, and design treatment of the fan plant will be refined during preliminary and final engineering. The Project Sponsor for the Hudson Tunnel Project will coordinate with the local community and seek input in determining the appropriate design for the visible portions of the fan plant. The fans within the fan plant would operate intermittently, as needed to provide cool air to the tunnel below and exhaust hot air, to exhaust smoke in emergencies, and for testing. The fan plant would be equipped with silencers and dampers and this operation would not result in adverse noise or air quality impacts on the adjacent neighborhood.

As detailed in previous chapters of this EIS, the benefits and adverse impacts of the Preferred Alternative on the New Jersey study areas evaluated in this EIS and the associated mitigation that the Project Sponsor will implement to address these impacts would include the following:

- Transportation services
 - Benefit: Would rehabilitate the existing North River Tunnel and provide new resiliency against severe weather and redundancy for operational flexibility
 - Benefit: NEC rail passenger service (Amtrak and NJ TRANSIT) would be maintained during rehabilitation of North River Tunnel
- Traffic
 - Impact: Construction traffic would result in disruptions to nearby intersections on Tonnelle Avenue in North Bergen during construction at the Tonnelle Avenue staging area in North Bergen (11 years) and on streets in Weehawken during construction at the Hoboken staging area (seven years)
 - Mitigation: Implementation of Maintenance and Protection of Traffic (MPT) plans; changes to traffic signal timing at affected intersections
- Land use and community character
 - Impact: Temporary but long-term disruption to nearby activities during construction because of construction activities, trucks, noise, dust; may affect religious facility and businesses on Tonnelle Avenue in North Bergen (11 years); residences on Paterson Plank Road, Grand Avenue, and along Tonnelle Avenue in North Bergen (11 years); and residents in Weehawken in the Shades neighborhood adjacent to the Hoboken construction staging area and truck routes (seven years)
 - Mitigation: Outreach program to local neighborhoods, mitigation for traffic, noise, dust
 - Mitigation: Creation of a special off-road haul route that would connect to the existing street network at Willow and/or Park Avenues in Hoboken to divert construction traffic headed to and from the Hoboken staging area away from the nearby Shades neighborhood of Weehawken
- Property acquisition
 - Impact: Temporary and permanent surface easements would need to be acquired in Secaucus and North Bergen. One fee acquisition of an industrial property in Hoboken may be required to accommodate a truck route, if that route is selected to avoid other adverse effects.
 - Mitigation: Agreements with private property owners regarding how access would occur to minimize adverse impacts on business activities
 - Mitigation: Property acquisition in accordance with Federal and state laws

- Socioeconomic conditions
 - Impact: Temporary, short-term disruption to businesses in the Meadowlands near the NEC because of the need to use portions of parking lots and storage yards for Project construction access (generally 6 to 12 months per property, duration of four years at the New York, Susquehanna & Western Railway lumber reload facility)
 - Mitigation: Coordination with business owners regarding timing of outages
- Parks and recreational resources
 - Impact: Disruption from construction noise at five neighborhood parks in Weehawken and Hoboken from construction activities and trucking
 - Mitigation: Measures to mitigate noise impacts
- Historic and archaeological resources
 - Impact: Adverse impact on historic North River Tunnel and NEC
 - Mitigation: North River Tunnel to be documented to the standards of Historic American Engineering Record prior to rehabilitation work; interpretive displays about the tunnel to be located in a station along the NEC in New Jersey and at the new Moynihan station in New York
 - Impact: Potential for accidental construction damage to historic structures near construction
 - Mitigation: Implementation of Construction Protection Plan to protect Substation No. 3 and Bergen Portal on Tonnelle Avenue in North Bergen
 - Impact: Potential for archaeological resources to be present in Hoboken construction zone that could be affected by construction
 - Mitigation: Archaeological testing or monitoring for potential historic sea wall in Hoboken
- Visual and aesthetic considerations
 - Impact: Large new fan plant in Hoboken adjacent to Shades neighborhood in Weehawken
 - Mitigation: To be designed to be compatible with neighborhood character; visible elements of design to be coordinated with local community
- Natural resources
 - Impact: Wetland impacts in the Meadowlands and Hoboken. Temporary impact to 4.3 acres of wetlands and open waters in the Meadowlands and 0.44 acres of wetlands in Hoboken. Permanent impacts to 7.85 acres of wetlands and open water in the Meadowlands
 - Mitigation: Measures to minimize impacts (erosion and sediment controls, best management practices, restoration of wetland areas after construction). Purchase of wetland credits from bank in same or nearby watershed
 - Impact: Construction disturbance to species inhabiting the Meadowlands (11 years)
 - Mitigation: Any required clearing will occur only between October 1 and March 14, outside of bird breeding season
 - Mitigation: Develop and implement transplantation plan for protected floating marsh-pennywort population in Penhorn Creek
- Noise and vibration
 - Impact: Overall construction noise at staging areas and along truck routes (11 years at Tonnelle Avenue staging site, 7 years at Hoboken staging site)

- Mitigation: Coordinate construction activities with affected municipalities; establish noise and vibration complaint procedure to address community concerns; meet with affected buildings to identify activities sensitive to noise and schedule construction activities around those where practicable
- Mitigation: Limit blasting to daytime hours (i.e., not after 7 PM) in residential areas unless permission from the relevant regulatory agency (i.e., North Hudson Regional Fire and Rescue) is provided; provide community outreach related to anticipated times of blasting.
- Mitigation: Use acoustical noise tents and mufflers for loud equipment as practicable; noise to comply with applicable standards; vehicles routed through sites to minimize use of backup alarms
- Mitigation: Pre-construction inspection and vibration monitoring for buildings adjacent to construction sites
- Mitigation: A noise barrier along the construction staging area boundary in Hoboken
- Mitigation: Offer installation of improved windows for affected residents in North Bergen (along truck routes and above staging area) and Weehawken (along truck routes)
- Mitigation: Use of haul route along HBLR to take trucks away from local streets
- Air quality
 - Impact: Construction air pollutant emissions (11 years at Tonnelle Avenue staging site, 7 years at Hoboken staging site)
 - Mitigation: Implement dust control plan and idling restrictions
 - Mitigation: Use of ultra-low sulfur diesel and Best Available Tailpipe Reduction Technologies for all diesel engines, and electrically powered equipment to the extent practicable. Use of newer equipment
- GHG emissions and resilience
 - Impact: GHG emissions associated with construction (4.5 years at surface tracks in the Meadowlands, 11 years at Tonnelle Avenue staging site, 7 years at Hoboken staging site)
 - Mitigation: Sustainability design guidelines; construction contracts to include provisions related to locally produced, recycled building materials and biodiesel
 - Impact: GHG emissions associated with Project operation
 - Mitigation: Sustainability design guidelines; construction contracts to require Energy Star and other high-efficiency building components; efficient lighting and energy systems. Use of Building Management Systems for fan plant
 - Impact: Potential vulnerability to severe storms during construction
 - Mitigation: Implement a storm risk management plan for construction
 - Impact: Potential vulnerability to severe storms for permanent Project elements
 - Mitigation: Use of Design Flood Elevation (DFE) established for the Project; all elements to be designed so additional protection can be included at a later date if necessary
- Contaminated materials
 - Impact: Potential for contaminated materials to be encountered during construction
 - Mitigation: Implement Health and Safety Plan and Project-wide Materials Management Plan
 - Mitigation: All disturbed areas will be restored using engineering controls to prevent direct human exposure to contaminated materials

22.5.1.2 PROJECT IMPACTS ON ENVIRONMENTAL JUSTICE COMMUNITIES

As discussed above, most of the New Jersey study area is within environmental justice communities. The Project site—including the surface tracks in the Meadowlands, the tunnel beneath the Palisades, the tunnel east of the Palisades, and the Hoboken staging area and fan plant site—is set within environmental justice communities and therefore any adverse impacts resulting from the construction and operation of the Preferred Alternative in New Jersey would occur to one or more environmental justice communities. In New Jersey, these effects would occur to environmental justice communities and not to other communities; therefore, these impacts are borne entirely by environmental justice communities.

22.5.2 NEW YORK

22.5.2.1 OVERALL PROJECT IMPACTS

In New York, construction of the Preferred Alternative would result in temporary, but long-term adverse impacts on the areas near the construction site at Twelfth Avenue. Construction activities would generally be disruptive to nearby land uses because of the appearance of the equipment and the traffic, noise, and dust associated with construction.

Construction activities for the Preferred Alternative would include staging and other work centered on the western third of the block between West 29th and West 30th Streets, Twelfth Avenue, and Eleventh Avenue (Manhattan Block 675, Lots 1 and 12), as well as related work within the streetbed of West 30th Street. This work would last approximately seven years, during which time there would be lane closures, traffic diversions, heavy truck activity, and the use of noisy construction equipment. As with any construction project, construction activities would at times be disruptive to nearby activities. Construction noise impacts would occur at the two new residential buildings planned at the east end of Block 675 once they are occupied but the construction for the Preferred Alternative is still underway; construction noise impacts would also occur at other residential buildings in the vicinity and along the portion of the High Line closest to the staging area. These impacts would last approximately two years. In addition, a potential adverse construction impact could occur at the new residential buildings on the east end of Block 675 during construction for the Preferred Alternative.

Once the construction is complete and the Project is in operation, there would be few permanent adverse effects of the Preferred Alternative in New York. The only visible element of the Preferred Alternative in New York would be the Twelfth Avenue fan plant which would be designed to be compatible with the character of the surrounding area and any urban design goals that the City of New York has established for the area. The fans within the fan plant would operate intermittently, as needed to provide cool air to the tunnel below and exhaust hot air, to exhaust smoke in emergencies, and for testing. The fan plant would be equipped with silencers and dampers and this operation would not result in adverse noise or air quality impacts on the adjacent neighborhood.

As detailed in previous chapters of this EIS, the benefits and adverse impacts of the Preferred Alternative on the New Jersey study areas evaluated in this EIS and the associated mitigation that the Project Sponsor will implement to address these impacts would include the following:

- Transportation services
 - Benefit: Would rehabilitate the existing North River Tunnel and provide new resiliency against severe weather and redundancy for operational flexibility
 - Benefit: NEC rail passenger service (Amtrak and NJ TRANSIT) would be maintained during rehabilitation of North River Tunnel

- Traffic and pedestrians
 - Impact: Construction traffic would result in disruptions to traffic on streets used as truck routes during construction in Manhattan (seven years)
 - Mitigation: Implementation of Maintenance and Protection of Traffic (MPT) plans; changes to traffic signal timing at affected intersections
 - Impact: Temporary pedestrian detours on Tenth Avenue between West 31st and 33rd Streets would result in temporary impacts on sidewalks and crosswalks
- Land use and community character
 - Impact: Temporary but long-term disruption to nearby activities during construction because of construction activities, trucks, noise, dust; may affect residents, businesses, and park users in Manhattan (seven years)
 - Mitigation: Outreach program to local neighborhoods, mitigation for traffic, noise, dust
- Open space and recreational facilities
 - Impact: Temporary construction activities in Hudson River Park for tunnel segment beneath the park (total of 18 months)
 - Mitigation: No open cut excavation in Hudson River Park (ground freezing to avoid excavation); bikeway and a minimum 8-foot-wide segment of Hudson River Park walkway can be kept open
- Socioeconomic conditions
 - Temporary construction activities for tunneling affecting the West 30th Street Heliport, requiring relocation of helicopter fueling facilities and rendering one or more of the landing pads inaccessible for 18 months
- Historic and archaeological resources
 - Impact: Adverse impact on historic North River Tunnel and NEC
 - Mitigation: North River Tunnel to be documented to the standards of Historic American Engineering Record prior to rehabilitation work; interpretive displays about the tunnel to be located in a station along the NEC in NJ and at the new Moynihan station in NY
 - Impact: Adverse impact on historic Hudson River Bulkhead
 - Mitigation: Preparation of documentation related to bulkhead based on information gathered during design; implementation of construction monitoring plan
 - Impact: Potential for accidental construction damage to historic structures near construction
 - Mitigation: Implementation of Construction Protection Plan to protect High Line and Master Printers building
 - Impact: Potential for archaeological resources to be present in construction zone that could be affected by construction
 - Mitigation: Archaeological testing or monitoring for various resources in NY
- Visual and aesthetic considerations
 - Impact: Large new fan plant building in Manhattan
 - Mitigation: To be designed to be compatible with neighborhood character of nearby areas; visible aspects of design to be coordinated with the New York City Department of City Planning (NYCDCP)
- Natural resources
 - Impact: Potential for impacts to aquatic species in Hudson River, including endangered species, during in-water work within cofferdam in Hudson River (15 months)

- Mitigation: Installation and removal of sheet piles using vibratory hammer. No sheet pile installation between November 1 and April 30, to minimize impacts to fish species. Sequence cofferdam installation so that area closest to shoreline occurs first, with deeper water installation last
- Noise and vibration
 - Impact: Overall construction noise (seven years at Twelfth Avenue staging site)
 - Mitigation: Coordinate construction activities with City of New York; establish noise and vibration complaint procedure to address community concerns; meet with affected buildings to identify activities sensitive to noise and schedule construction activities around those where practicable
 - Mitigation: Limit blasting to daytime hours (i.e., not after 10 PM) in residential areas unless permission from appropriate regulatory agency (i.e., the Fire Department of New York) is provided; provide community outreach related to anticipated times of blasting
 - Mitigation: Use acoustical noise tents and mufflers for loud equipment as practicable; noise to comply with applicable standards; vehicles routed through sites to minimize use of backup alarms
 - Mitigation: Pre-construction inspection and vibration monitoring for buildings adjacent to construction sites
 - Mitigation: Noise barriers at Manhattan construction sites
- Air quality
 - Impact: Construction air pollutant emissions (seven years at Twelfth Avenue staging site)
 - Mitigation: Implement dust control plan and idling restrictions
 - Mitigation: Use of ultra-low sulfur diesel and Best Available Tailpipe Reduction Technologies for all diesel engines, and electrically powered equipment to the extent practicable. Use of newer equipment
- GHG emissions and resilience
 - Impact: GHG emissions associated with construction (seven years at Twelfth Avenue staging site)
 - Mitigation: Sustainability design guidelines; construction contracts to include provisions related to locally produced, recycled building materials and biodiesel
 - Impact: GHG emissions associated with Project operation
 - Mitigation: Sustainability design guidelines; construction contracts to require Energy Star and other high-efficiency building components; efficient lighting and energy systems. Use of Building Management Systems for fan plant
 - Impact: Potential vulnerability to severe storms during construction
 - Mitigation: Implement a storm risk management plan for construction
 - Impact: Potential vulnerability to severe storms for permanent Project elements
 - Mitigation: Use of Design Flood Elevation (DFE) established for the Project; all elements to be designed so additional protection can be included at a later date if necessary.
- Contaminated materials
 - Impact: Contaminated materials encountered during or after construction
 - Mitigation: Implement Health and Safety Plan and Project-wide Materials Management Plan



- Mitigation: All disturbed areas will be restored using engineering controls to prevent direct human exposure to contaminated materials

22.5.2.2 PROJECT IMPACT ON ENVIRONMENTAL JUSTICE COMMUNITIES

As discussed above, the New York study area includes block groups that are environmental justice communities. These are located east of Tenth Avenue and south of West 30th Street, several blocks from the major construction activities for the Preferred Alternative, which would be focused on the Twelfth Avenue staging site. Construction disruption closest to the identified environmental justice communities would be related to cut-and-cover construction in Tenth Avenue between West 31st and West 33rd Streets to accommodate the tunnel alignment as it crosses the avenue, construction within the building at 450 West 33rd Street between West 31st and West 33rd Streets on the east side of Tenth Avenue (the Lerner Building), and traffic impacts on neighborhood streets from construction vehicles. Most of the adverse construction and operational impacts in the New York study area would not fall on environmental justice communities.

The permanent, visible features of the Preferred Alternative in New York would consist of the new Twelfth Avenue fan plant and modifications to the street-level façade of the west side of the Lerner Building. Neither would adversely affect environmental justice communities.

22.6 DETERMINATION OF DISPROPORTIONATELY HIGH AND ADVERSE EFFECTS ON ENVIRONMENTAL JUSTICE POPULATIONS

22.6.1 OVERVIEW

The methodology presented in the FTA Circular involves identifying any adverse effects and benefits that may occur to minority and/or low-income populations as a result of a proposed action and then determining whether adverse effects would be disproportionately high and adverse on the environmental justice population. According to the Environmental Justice Circular, if after consideration of the adverse effects and potential benefits of a proposed project, it is determined that the proposed action would have disproportionately high and adverse effects on an environmental justice population, the project sponsor must determine whether further mitigation measures or alternatives are practicable, and any practicable measures must be implemented before moving forward with the proposal.

As defined in the FTA Circular, based on the USDOT Order, a disproportionately high and adverse effect on an environmental justice population is an adverse effect that is predominantly borne by a minority population and/or low-income population, or will be suffered by the minority population 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. Offsetting benefits and mitigation measures are taken into consideration when determining whether a project has disproportionately high and adverse effects on minority and low-income populations.

22.6.2 NEW JERSEY

Because the Preferred Alternative's alignment would be located predominantly in environmental justice communities in New Jersey, the adverse construction effects associated with the Preferred Alternative would fall disproportionately on environmental justice communities. Even considering the mitigation measures described above in Section 22.5.1, Project-related impacts would result in disproportionately high and adverse effects to environmental justice communities.

Section 22.7 provides the two-step evaluation required by the USDOT Order when disproportionately high and adverse effects on environmental justice communities are identified.

22.6.3 NEW YORK

In the New York study area, environmental justice communities are located in the portion of the study area east of Tenth Avenue and south of West 30th Street. Adverse construction impacts would occur in this area as described in above in Section 22.5.2, but similar or greater adverse construction impacts would also occur closer to the Twelfth Avenue staging area, which is not within an environmental justice community. Therefore, in the New York study area, the Preferred Alternative would not result in disproportionately high and adverse effects on environmental justice communities.

22.7 ENVIRONMENTAL JUSTICE CONCLUSION

The USDOT Order requires FRA to identify whether its actions may have a disproportionately high and adverse effect on low-income and minority populations, after accounting for mitigation and offsetting benefits. For any actions that are found to have a disproportionately high and adverse effect on minority or low-income populations, these actions will be carried out only if:

- (1) Further mitigation measures or alternatives that would avoid or reduce the disproportionately high and adverse effect are not practicable. In determining whether a mitigation measure or alternative is practicable, the social, economic (including cost), and environmental effects of avoiding or mitigating the adverse effects will be taken into account.
- (2) A substantial need for the action exists, based on overall public interest, and alternatives that would have less adverse effects on protected populations (and that still satisfy the need for the project) would have other adverse social, economic, environmental, or human health impacts that are severe; or would involve increased costs of extraordinary magnitude.

As described above in Section 22.6.2, since the Preferred Alternative's alignment would be located predominantly in environmental justice communities in New Jersey, the adverse construction effects associated with the Preferred Alternative in New Jersey would fall disproportionately on environmental justice communities. The two steps identified in the USDOT are considered in the two sections that follow.

22.7.1 FURTHER MITIGATION MEASURES OR ALTERNATIVES THAT WOULD AVOID OR REDUCE THE DISPROPORTIONATELY HIGH AND ADVERSE EFFECT ARE NOT PRACTICABLE

As described in Chapter 2, "Project Alternatives and Description of the Preferred Alternative," FRA and NJ TRANSIT conducted a multistep alternatives development and evaluation process to identify practicable alternatives that met the purpose and need for the Project and were feasible and reasonable. The process involved developing an initial long list of potential alternatives, comprising many different possible means of providing a Hudson River rail crossing, and conducting a high-level qualitative evaluation to determine which of those alternatives were feasible, reasonable, and met the Proposed Action's purpose and need. That process resulted in a determination that only a single Build Alternative, the Preferred Alternative, would meet the purpose and need for the Project. A detailed description of the alternatives development and evaluation process is provided in the Hudson Tunnel Project Alternatives Development Report, included in **Appendix 2** of this EIS.

In all locations where adverse impacts were identified, mitigation measures were developed if practicable. These measures will be implemented to avoid, minimize, or reduce the adverse



impacts of the Preferred Alternative on environmental justice communities. Mitigation measures are summarized above in Section 22.5 and detailed in the previous chapters of this EIS. FRA and NJ TRANSIT will continue to work with environmental justice communities to identify any other further mitigation measures that are practicable.

22.7.2 A SUBSTANTIAL NEED FOR THE ACTION EXISTS AND LESSER-IMPACT ALTERNATIVES ARE NOT AVAILABLE

As described in Chapter 1, “Purpose and Need,” there is a substantial need for the Hudson Tunnel Project. The Preferred Alternative would preserve the current functionality of Amtrak’s NEC service and NJ TRANSIT’s commuter rail service between New Jersey and PSNY by repairing the deteriorating North River Tunnel, and would strengthen the NEC’s resiliency to support reliable service by providing redundant capability under the Hudson River for Amtrak and NJ TRANSIT NEC trains between New Jersey and PSNY. The Preferred Alternative would achieve these improvements while maintaining uninterrupted commuter and intercity rail service and optimizing the use of existing infrastructure.

Other alternatives that would have less adverse effects on the protected population and would still satisfy the need are not available. As discussed above, the alternatives evaluation conducted for the Project concluded that only a single Build Alternative, the Preferred Alternative would meet the Project purpose and need. Several alignment options were identified for the Build Alternative and were evaluated in the Alternatives Development Report (provided in **Appendix 2**), but each of these options would have affected environmental justice populations and several of them would have other adverse effects that are more severe.

22.8 PUBLIC PARTICIPATION

As noted in FTA’s Environmental Justice Circular, a key component of environmental justice is engaging environmental justice populations as part of the transportation planning process. This allows project sponsors to understand the needs and priorities of environmental justice populations and to balance the benefits of a proposed project against its adverse effects.

Public participation initiatives conducted during the NEPA process for the Hudson Tunnel Project are described in Chapter 25, “Process, Agency Coordination, and Public Involvement,” Section 25.4. As discussed there, FRA and NJ TRANSIT have held public outreach meetings throughout development of the EIS documentation, including large meetings at key Project milestones (e.g., during NEPA scoping and after identification of the Preferred Alternative) and smaller, targeted meetings for specific stakeholders. Meetings have been held throughout the Project area, including two public meetings (a public scoping meeting and a public information open house on the Preferred Alternative) in parts of the study area where environmental justice communities live. FRA and NJ TRANSIT have undertaken targeted outreach to affected property owners and stakeholders in these communities. Project materials have been provided in both English and Spanish to ensure participation by Limited English Proficient (LEP) communities. Meeting materials have been translated into Spanish, which is the predominant language other than English that residents of the study area speak at home, and Spanish translators have been provided at all meetings to which environmental justice communities have been invited.

Future outreach in the design and construction phases will continue to involve environmental justice communities in the study area, including targeted outreach to LEP populations. Public hearings on the Draft EIS will be conducted in summer 2017, and outreach efforts will also include open houses, stakeholder meetings, communication with the Project email and mailing lists, Project newsletters, and updates to the Project website. After completion of the environmental review process, community coordination and outreach will continue through the

design and construction phases of the Project. During construction, complaint procedures will be established to promptly address community concerns and implement additional control methods where necessary. *