

17.0 Social and Economic Resources

17.1. Introduction

This chapter defines the social and economic resources pertinent to the Long Bridge Project (the Project), and defines the regulatory context, methodology, and Affected Environment. For each Action Alternative and the No Action Alternative, this chapter assesses the potential short-term and long-term impacts on social and economic resources. This chapter also discusses proposed avoidance, minimization, and mitigation measures to reduce adverse impacts of the Project.

This chapter describes the social and economic resources related to demographics, jobs, current economic conditions, taxes, revenue, community facilities, local government services, and commercial activity. The social and economic impact assessment considered the Project's potential to impact the socioeconomic environment, including community disruption or cohesion, demographic shifts, impacts to existing commerce and new commercial activity, job creation, and tax revenues.

17.2. Regulatory Context and Methodology

This section describes the most pertinent regulatory context for evaluating impacts to social and economic resources and summarizes the methodology for evaluating current conditions and the probable consequences of the alternatives. This section also includes a description of the Study Area. **Appendix D1, Methodology Report**, includes the complete list of laws, regulations, and other guidance considered, and a full description of the analysis methodology.

17.2.1. Regulatory Context

The Federal Railroad Administration *Procedures for Considering Environmental Impacts* require that the evaluation of impacts consider "impacts on the socioeconomic environment, including the number and kind of available jobs, the potential for community disruption and demographic shifts, the need for and availability of relocation housing, impacts on commerce, including existing business districts, metropolitan areas, and the immediate area of the alternative, and impacts on local government services and revenues."¹ The District Department of Transportation *Environmental Manual* also addresses socioeconomic resources.²

17.2.2. Methodology

The Local Study Area includes the Project Area, which spans from the midblock between 9th Street SW and 10th Street SW in the District and Long Bridge Park in Arlington County, Virginia, as well as 0.5 miles immediately adjacent to the Project Area. The U.S. 2010 Census block groups are the smallest geographic unit for which all the demographic data collected for this analysis are available; therefore, some analyses that rely on Census information capture data that extends beyond the Local Study Area.

¹ 64 FR 28550

² District Department of Transportation. 2012. *Environmental Manual*, 2nd Edition. Chapter 24: Environmental Justice. Accessed from http://ddotsites.com/documents/environment/Files/Chapters/Chapter_25_-_Socioeconomic_Resources.pdf. Accessed August 2, 2018.

The Local Study Area can be divided into District and Arlington County block groups to capture any unique conditions between the two jurisdictions. **Figure 17-1** identifies the geographic boundary of the Local Study Area. The study did not designate a Regional Study Area for social because social impacts of the Project are not expected to extend beyond the Local Study Area because social impacts typically relate to the potential for local community disruption or demographic shifts.

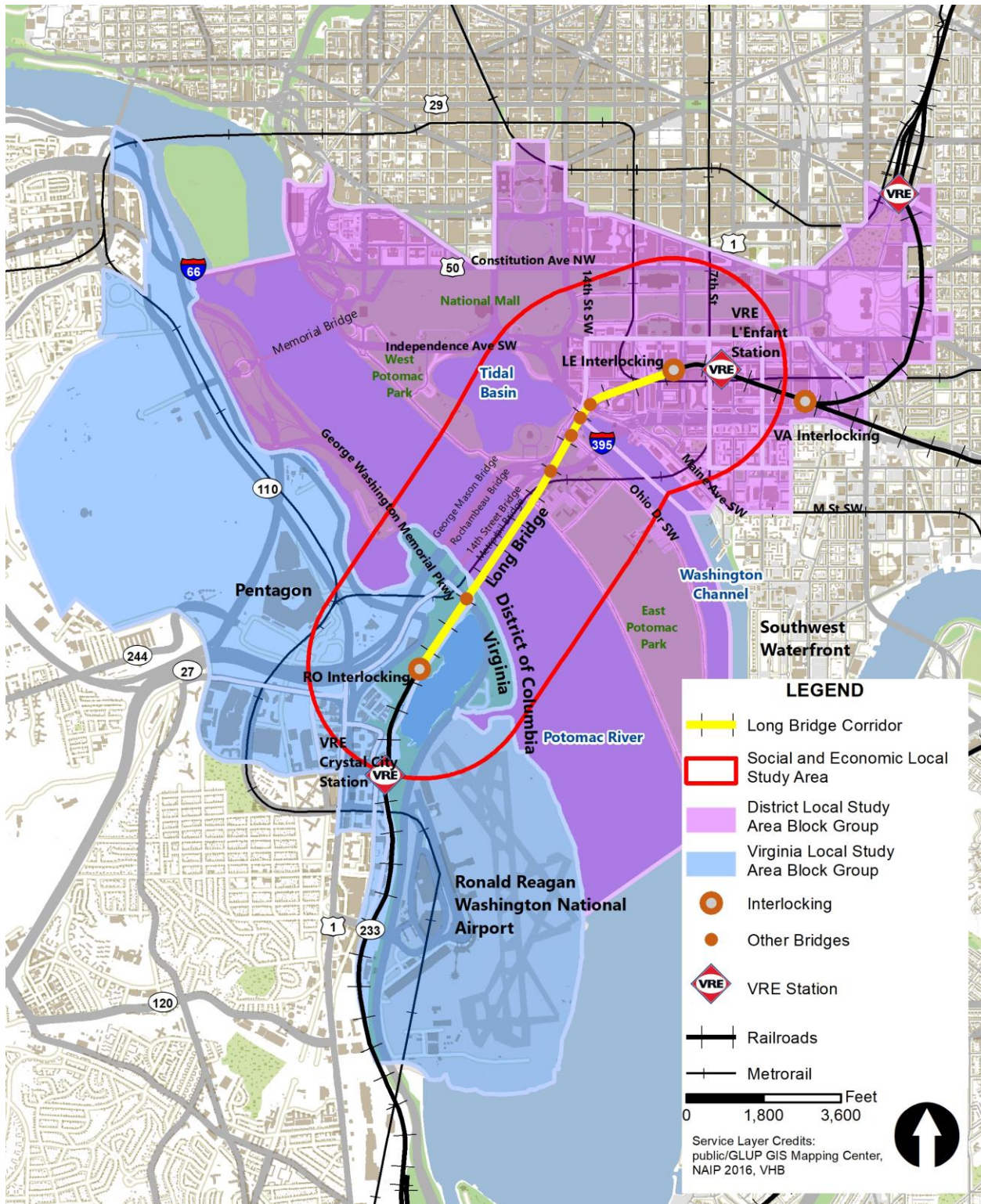
The analysis used two Regional Study Areas for economic impacts: Regional Study Area for Taxes, Public Revenue, and Local Government Services, and a Regional Study Area for Construction Employment. Given that the District measures tax receipts on a City-wide basis and Arlington County measures tax receipts on a County-wide basis, **Section 17.3.4, Taxes, Public Revenue, and Local Government Services**, includes discussion using the entirety of the District and Arlington County. Construction employment benefits are typically felt regionally; therefore, the analysis includes the following jurisdictions in the Washington Metropolitan Region: the District; Frederick, Montgomery, Calvert, Charles, and Prince George’s Counties in Maryland; Arlington, Clarke, Culpeper, Fairfax, Fauquier, Loudoun, Prince William, Rappahannock, Spotsylvania, Stafford, and Warren Counties, and the Cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas, and Manassas Park in Virginia; and Jefferson County in West Virginia. The analysis estimated construction employment using IMPLAN, an economic impact assessment modeling system.

The Affected Environment documentation identified existing social, demographic, and economic characteristics of the Local Study Area using data from the U.S. 2010 Census, the 2011–2015 American Community Survey (ACS) 5-year Estimates, the District of Columbia Office of Tax and Revenue, and the Arlington County Office of the Treasurer. This section drew from these data sources to build a socioeconomic profile and establish a baseline for existing social, demographic, and economic conditions in the Local Study Area.

The impact analysis evaluated the No Action and the Action Alternatives to determine whether the respective alternatives would result in direct and indirect permanent and temporary impacts to each social and economic resource. The analysis included a discussion of the potential for community disruption resulting from the Project and impacts on livability in the Local Study Area. In identifying potential impacts to communities, the communities and demographics analysis drew from the results of the analyses for air quality (**Chapter 10, Air Quality and Greenhouse Gas Emissions**), noise and vibration (**Chapter 13, Noise and Vibration**), visual impacts (**Chapter 14, Aesthetics and Visual Resources**), and traffic (**Chapter 9, Transportation and Navigation**). The analysis also determined potential physical impacts in the Local Study Area by comparing the proposed limits of disturbance and limits of construction to mapped community facilities.

The assessment of temporary impacts during the construction phase identified the limits of construction staging and likely phasing scenarios. The analysis evaluated social and economic impacts during the construction phase based on the following indicators: job creation, direct and indirect construction spending, potential disruptions to commercial activity, and potential disruptions to community cohesion and continuity. The analysis used IMPLAN software to estimate construction jobs and construction impacts.

72 **Figure 17-1 | Local Study Area for Social and Economic Resources**



17.3. Affected Environment

This section describes the existing social, demographic, and economic characteristics of the Local Study Area. For a complete description of the Affected Environment, see **Appendix D2, Affected Environment Report**.

As described in **Chapter 12, Land Use and Property**, the Project is located within relatively dense urban areas with prominent commercial and institutional districts and smaller but growing concentrations of residential and mixed-use neighborhoods. Significant employment sectors in the Local Study Area, including the Local Study Area Block Groups, are the Federal government; services, such as education institutions, hotels, and museums; and retail trade, including shopping malls. There are more employees than residents in both the District and Virginia portions of the Local Study Area; however, the Local Study Area also contains emerging mixed-use neighborhoods such as District Wharf in the District and Crystal City and Pentagon City in Virginia. These developing urban centers provide a mix of high-rise residential, commercial, and cultural uses contributing to the economic diversity of the Local Study Area.

17.3.1. Demographics

This section outlines the demographic characteristics of the Local Study Area residents within the District and Virginia block groups. As described below, a large proportion of Local Study Area residents are in their 20s and 30s and have relatively high incomes. Generally, however, residential uses make up a small proportion of land uses in the Local Study Area, as described in **Chapter 12, Land Use and Property**. The Virginia portion of the Local Study Area has a small proportion of the area devoted to residential uses, in portions of Crystal City, Pentagon City, and the neighborhood of Aurora Highlands. In the District, the Local Study Area mostly consists of public- and government-related land uses, with a small, but growing, proportion of residential uses, particularly in the Southwest neighborhood and the recent District Wharf development. In late 2017, the Wharf added 900 residences to the neighborhood; these new residents have not yet been captured in the ACS data or the analyses based on that data.

17.3.1.1. Age

According to the 2011–2015 ACS 5-Year Estimates, the total population of the Local Study Area in 2015 was 18,101, with 13,620 people residing within the Virginia block groups and 4,481 within the District block groups (see **Table 17-1**). The total Local Study Area population increased by 694, or 6.2 percent, from 2010. Most of this increase occurred within the District block groups. The 30- to 39-year-old age cohort experienced the largest population increase from 2010 (+24.5 percent). The 18- to 21-year-old age cohort experienced the greatest decline in population from 2010 (-16.4 percent).

17.3.1.2. Race

As described in **Chapter 20, Environmental Justice**, of the total 18,101 residents in the Local Study Area in 2015, 10,569, or approximately 58.4 percent, were White. Black or African Americans made up approximately 16.3 percent of the 2015 Local Study Area population. The Black or African American population made up a more significant portion of the population within the District block groups at 35.9 percent, compared with the Virginia block groups at 9.8 percent. The Asian Local Study Area (both the District and Virginia) population was 2,628 (14.5 percent) and the Hispanic or Latino population was 1,222 (6.8 percent) in 2015.

Table 17-1 | Local Study Area Population by Age

Age Cohort	2010			2015			Percent Change
	DC	VA	Total	DC	VA	Total	Total
Under 18 Years	216	842	1,058	308	848	1,156	9.3%
18 to 21 Years	63	248	311	20	240	260	-16.4%
22 to 29 Years	926	4,557	5,483	922	4,134	5,056	-7.8%
30 to 39 Years	834	3,006	3,840	1,440	3,342	4,782	24.5%
40 to 49 Years	522	1,663	2,185	448	1,899	2,347	7.4%
50 to 64 Years	759	2,027	2,786	766	1,882	2,648	-5.0%
65 Years and Over	480	1,264	1,744	577	1,275	1,852	6.2%
Total	3,800	13,607	17,407	4,481	13,620	18,101	4.0%
<i>Source: 2010 U.S. Census, 2011–2015 ACS 5-year Estimates</i>							

17.3.1.3. Median Household Income

The median household income for the Virginia block groups is \$102,037, comparable to the median household income of \$104,869 for Arlington County. The median household income for the District block groups is \$97,125, compared with a median household income of \$76,405 for the entire District.³

17.3.2. Community Facilities

Community facilities considered in this analysis include schools, libraries, community centers, recreational facilities, places of worship, emergency service centers, and childcare centers that are located within the Local Study Area. As the Project is located within relatively dense urban areas with prominent commercial and institutional districts, community facilities are largely concentrated closer to adjacent residential areas, including the residential areas of Crystal City in Virginia and the Southwest neighborhood in the District. **Figure 17-2** and **Table 17-2** show community facilities with the corresponding map identification numbers.

Several types of facilities in the Local Study Area may serve high concentrations of children, including the schools and open space or recreational facilities identified above, particularly the open spaces with fields or playground equipment. In addition, though not identified above, a number of childcare facilities, including day care centers and pre-school programs, exist within the Local Study Area in both the Virginia and District block groups.

³ ESRI Business Analyst. 2017. Community Profile, Forecasts for 2017. Accessed December 6, 2017.

131 **Figure 17-2 | Community Facilities in the Local Study Area**



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Table 17-2 | Community Facilities in the Local Study Area

Map ID	Name	Facility Type
1	National Mall	Park
2	West Potomac Park	Park
3	Long Bridge Park	Park
4	Gravelly Point	Park
5	Roaches Run Waterfowl Sanctuary	Park
6	East Potomac Park	Park
7	Saint Dominic Catholic Church	Place of Worship
8	Great Commission Community Church	Place of Worship
9	Washington Global Public Charter School	School
10	Jefferson Middle School Academy	School
11	AppleTree Early Learning Public Charter School	School
12	Mount Vernon Trail	Park
13	George Washington Memorial Parkway	Park

17.3.3. Employment, Commercial Activity, and Current Economic Conditions

Both the Virginia and District portions of the Local Study Area have substantially more employees than residents. Dominant employers in the Local Study Area include the Federal government, hotels, retail stores and shopping malls, cultural and educational institutions, and Federal contractors. **Table 17-3** shows the number of businesses and employees in each business sector in the Local Study Area. Long Bridge itself does not directly generate any employment.

17.3.3.1. Arlington, Virginia

The Virginia part of the Local Study Area has 23,432 employees at 1,150 businesses. The sectors with the most employees include services (50.9 percent of employees); retail trade (27.3 percent); finance, insurance, real estate (6.7 percent); and manufacturing and defense contractors (4.4 percent). Subcategories with the most employees in the services sector are hotels and lodging, legal services, and other services.⁴ These data only include civilian employees and therefore do not include an additional 23,000 employees at the Pentagon. Significant economic centers in the Virginia portion of the Local Study Area include Crystal City, Pentagon City, the Pentagon, and Ronald Reagan Washington National Airport.

17.3.3.2. District of Columbia

The District part of the Local Study Area has 81,797 employees and 1,800 businesses. The leading sectors in terms of employment include government (20.6 percent of employees), services (24.6 percent), and retail trade (5.0 percent). Subcategories with the most employees in the services

⁴ ESRI. Undated. Business Summary. Accessed December 6, 2017.

sector are educational institutions and libraries, motion pictures and amusements, and other services, which includes research institutions and museums.⁵

Significant economic centers in the District portion of the Local Study Area include the developing District Wharf neighborhood, the Portals development, and L'Enfant Plaza. The middle and northern portions of the Local Study Area on the District side of the Potomac River are mostly comprised of the National Mall, the White House, the United States Capitol, memorials, monuments, museums, and Federal offices. The primary economic sectors in this area are government services and tourism.

Table 17-3 | Local Study Area Employment

Industry Sector	District of Columbia			Arlington County, Virginia ¹		
	Businesses	Employees	Employees %	Businesses	Employees	Employees %
Agriculture and Mining ²	5	3,639	4.4%	2	5	0.0%
Construction	27	341	0.4%	35	860	3.7%
Manufacturing	28	2,422	3.0%	27	1,035	4.4%
Transportation	27	2,258	2.8%	24	458	2.0%
Communication	20	796	1.0%	14	484	2.1%
Wholesale Trade	15	141	0.2%	18	244	1.0%
Retail Trade	191	4,100	5.0%	346	6,405	27.3%
Finance, Insurance, Real Estate	97	1,563	1.9%	125	1,575	6.7%
Services	515	20,099	24.6%	427	11,920	50.9%
Government	687	45,950	56.2%	16	230	1.0%
Unclassified Establishments	188	488	0.6%	116	216	0.9%
Total	1,800	81,797	100.0%	1,150	23,432	100.0%

Source: ESRI Business Summary accessed on December 6, 2017. Sector is by Standard Industrial Classification (SIC) Codes.

Notes: ¹ U.S. Census data and ESRI estimates count civilian employees, which excludes people on active duty in the United States Armed Forces. The Pentagon is the headquarters of the United States Department of Defense and the approximately 23,000 people employed there are not included in U.S. Census data or ESRI estimates.

² Industry sector includes agriculture, mining, and forestry, and would include government jobs with the U.S. Department of Agriculture (USDA) and National Park Service (NPS).

⁵ ESRI. Undated. Business Summary. Accessed December 6, 2017.

17.3.4. Taxes, Public Revenue, and Local Government Services

17.3.4.1. Arlington, Virginia

Arlington County, Virginia, is the local governing entity that collects revenues and provides local services. Arlington collected approximately \$1.2 billion in revenues in Fiscal Year (FY) 2017. The largest revenue source is real estate taxes. The 2017 real estate property base tax rate was \$0.983 per \$100 of assessed value. Arlington cannot have differentiated rates for different property types without state authorization. The second largest revenue source was the personal property tax, levied on tangible property of individuals and businesses. The 2017 personal property and business tangible tax rate was \$5 per \$100 of assessed value. The 2017 sales tax was 1 percent, and the tax on food and beverages was 4 percent on top of the sales tax.⁶

Some revenue streams are dedicated to specific funds, but the majority is allocated to the general fund. Government services include police, fire, public safety communications and emergency management, public education, human services, parks and recreation, environmental services, and water and sanitation services. Several of these services are described in **Chapter 16, Parks and Recreation; Chapter 18, Security and Safety; and Chapter 19, Public Health, Elderly, and Persons with Disabilities.**

17.3.4.2. District of Columbia

The District provides services and collects revenues typical of states and local municipalities. The District's largest revenue sources are real property taxes, individual income taxes, sales taxes, and gross receipts taxes. In FY 2017, the District estimated it would collect approximately \$8.4 billion in revenue from taxes, fees, and other sources. Real property tax rates vary according to property type.

Some revenue streams are dedicated to specific funds or services; however, most revenue is allocated to the District's general fund. Government services include police, fire, emergency medical services, public education, human services, child and family services, parks and recreation, environmental protection, public health services, and sanitation services. Several of these services are described in **Chapter 16, Parks and Recreation; Chapter 19, Public Health, Elderly, and Persons with Disabilities; and Chapter 18, Security and Safety.** The District also provides other governmental services typical of state and local governments.

17.4. Permanent or Long-Term Effects

This section discusses the permanent or long-term effects following the construction of the No Action Alternative and Action Alternatives on social and economic resources within the Local and Regional Study Areas. For a complete description of the permanent or long-term effects, see **Appendix D3, Environmental Consequences Report.**

⁶ FY 2017 Proposed Budget. County Board Work Session Presentation. March 3, 2016.

17.4.1. Social

This section discusses potential permanent direct and indirect impacts to demographics, community facilities and local government services, property acquisition and displacement, and potential community disruption.

17.4.1.1. No Action Alternative

The No Action Alternative includes transportation projects in the Local Study Area likely to be implemented by 2040 including several railroad projects. Some of these projects, including improvements to the Virginia Railway Express (VRE) L'Enfant Station would improve community cohesion by making public transportation easier to access and more efficient. The Boundary Channel Drive Interchange Project would also enhance community cohesion by improving safety and accommodating various modes of transportation including pedestrian and bicycle facilities. These projects would have a positive impact on community cohesion and community livability. Adverse social impacts are not anticipated due to these projects.

17.4.1.2. Action Alternative A (Preferred Alternative)

Action Alternative A would not cause any permanent direct or indirect adverse impact to demographics, community facilities other than parks (schools, libraries, community centers, places of worship, emergency service centers, and childcare centers), or local government services. Action Alternative A would result in no direct or indirect displacement of residences or businesses. Action Alternative A would have minor permanent indirect beneficial impacts on social resources in the Local Study Area by enabling the expansion of train service to the local communities. For example, as stated in **Chapter 9, Transportation and Navigation**, the Maryland Area Rail Commuter (MARC) plans to run through service to Virginia, and VRE is expected to increase frequency with the additional capacity provided by Action Alternative A.

While Action Alternative A would require the acquisition or transfer of lands with Long Bridge Park, the George Washington Memorial Parkway, and East Potomac Park, the acquisition or transfer of these lands would not constitute a direct impact to social resources because the use and integrity of the parks would not change (see **Chapter 12, Land Use and Property**, and **Chapter 16, Recreation and Parks**, for further discussion).

Action Alternative A would not directly or indirectly cause community disruption or adversely affect community cohesion. Community disruption is the combined effect of physical impacts on the local community including barriers to community cohesion and impacts to livability in the Local Study Area. Action Alternative A would not cause permanent adverse impacts to the roadway network, traffic, the bicycle and pedestrian network, or vibration; therefore, these resources would not contribute to direct or indirect adverse impacts to communities. Action Alternative A would have permanent minor adverse direct effects to local and regional air quality, but these effects would not adversely impact communities, either directly or indirectly, see **Chapter 10, Air Quality and Greenhouse Gases**.

Action Alternative A would cause adverse direct impacts to the noise and the visual environment and a loss of parking in the Local Study Area. These impacts would affect a few specific locations but would not directly or indirectly affect livability or diminish overall quality of life in the existing communities in the Local Study Area. These impacts would not result in overall community disruption, and they would

not lessen community cohesion because they would not render buildings or community facilities unusable or uninhabitable. For additional information regarding adverse impacts to noise and visual conditions, see **Chapter 13, Noise and Vibration**, and **Chapter 14, Aesthetics and Visual Resources**.

17.4.1.3. Action Alternative B

Action Alternative B would cause the same permanent direct and indirect impacts to social resources as Action Alternative A.

17.4.2. Economic

This section discusses potential permanent direct and indirect impacts to jobs, the regional economy, tax/public revenue, and commercial activity.

17.4.2.1. No Action Alternative

The No Action Alternative would not cause any direct or indirect impacts to commercial activity in the Local Study Area. It would not cause direct or indirect impact to taxes or public revenues. Positive impacts from indirect job growth may occur.

In the No Action Alternative, train operators would increase train volumes in the Long Bridge Corridor from 76 trains per day to 112 trains per day. Additional trains would contribute to increased passenger trips, multimodal connectivity and freight activity in the region. The Long Bridge Corridor has insufficient capacity to effectively support the expected increase in train volume, which could lead to economic losses to the region due to the delayed movement of passengers and goods. The No Action Alternative would also not support the desired service levels for intercity passenger and commuter rail services. The No Action Alternative would not generate any new direct jobs, though indirect jobs may be created due to the increased train volume.

17.4.2.2. Action Alternative A (Preferred Alternative)

Jobs

Action Alternative A would have a negligible permanent indirect beneficial impact on employment in the region through indirect job creation.

Action Alternative A would not create any direct permanent jobs; therefore, it would not create any direct impact. Once in operation, Action Alternative A would result in greater capacity, enabling railroad operators (Amtrak, VRE, and MARC) to run additional trains between Virginia and the District. As described in **Chapter 9, Transportation and Navigation**, greater capacity would allow a 71 percent increase in passenger train volumes compared to the No Action Alternative. Action Alternative A would indirectly result in job creation by enabling expansion of railroad service, requiring railroad operators to hire more employees. Also, improved commuting would expand the labor pool for the economic centers located in the Local Study Area and would provide more access to employment opportunities for those who live in the Local Study Area.

Regional Economy

Action Alternative A would not directly impact the regional economy. Action Alternative A, however, would enable the expansion of railroad service, which would result in negligible indirect beneficial effects to the regional economy. The expanded railroad capacity would allow for more efficient movement of passengers, commuters and goods between Virginia and the District. With the additional capacity, MARC would run through service to Virginia, allowing more efficient access from Maryland to employment centers and tourist destinations in Arlington and the District. The Project would enable expanded economic activity and tourism within the Regional Study Area, generating a positive market response to the increased capacity.

Tax/Public Revenue

Action Alternative A would not directly impact taxes or public revenue in Virginia or the District because railroad infrastructure itself does not generate or impact tax or public revenue. Action Alternative A would be anticipated to have a moderate permanent indirect beneficial impact on tax revenue due to the increased economic activity described above. As noted in the Northern Virginia Transportation Commission's September 2017 report, *The Value of Metrorail and Virginia Railway Express to the Commonwealth of Virginia*, the presence of Metrorail and VRE currently supports an additional 85,000 households and 130,500 jobs in Northern Virginia, resulting in more than \$600 million annually in sales and income tax revenue.⁷

Commercial Activity

Action Alternative A would result in moderate adverse direct impacts to Washington Marina and minor adverse direct impacts to the National Park Service (NPS) due to the loss of parking spaces. Impacts are assessed based on whether the loss of parking would be anticipated to financially affect the business or entity. Action Alternative A would also indirectly benefit commercial activity in the region through increased ability to efficiently and reliably move commercial goods and commuters throughout the Regional Study Area. Action Alternative A would not cause any other impacts to commercial activity in the Local Study Area. While the Mandarin Oriental Hotel and Portals V development would experience noise impacts, these businesses were constructed long after the railroad bridge was built and have always experienced train noise. Operations of these businesses are not expected to be impacted by noise due to Alternative A.

Washington Marina, located adjacent to the existing tracks and Maine Avenue SW, would permanently lose approximately one-third of the approximately 88 existing spaces. The exact number of spaces removed, and the exact impacts to Washington Marina, would be determined as final design advances and through further coordination with Washington Marina. The loss of parking spaces would constitute a moderate direct adverse impact on Washington Marina without mitigation measures. With mitigation measures, including reconfiguration of the existing surface parking after the replacement pedestrian bridge is complete, the net loss of parking spaces would be negligible.

⁷ Northern Virginia Transportation Commission, *The Value of Metrorail and Virginia Railway Express to the Commonwealth of Virginia*. September 2017. Accessed from <http://www.novatransit.org/uploads/studiesarchive/2017%20Economic%20Value%20of%20Transit.pdf>. Accessed August 16, 2019.

NPS Parking Lot C, located in East Potomac Park, would permanently lose approximately 50 of the existing 67 metered parking spaces. This lot is one of three parking lots in the immediate area, which contain a total of approximately 250 parking spaces. The exact number of spaces removed, and exact impact due to loss of revenue, would be determined as final design advances and through further coordination with NPS. It is anticipated that the loss of parking spaces would result in a minor adverse direct impact to NPS due to loss of revenue associated with loss of metered parking spaces, with or without mitigation measures. Mitigation would include reconfiguration of the parking after construction to maximize the number of metered spaces. The surface parking area is currently lightly used except during special events such as the annual blooming of the Japanese cherry blossom plantings. Therefore, loss of parking is not anticipated to affect normal operations of the park. Minor adverse impact is anticipated because NPS would lose some revenue from loss of metered spaces during peak usage. NPS parking lots in East Potomac Park became metered in 2017; parking in these areas was free prior to 2017. Parking Lots B and C combined contain 143 parking spaces that raise approximately \$30,000 annually in revenue. Therefore, the permanent loss of 50 parking spaces would correlate to a loss of \$10,490 in revenue per year, if parking could not be accommodated in other NPS parking lots.

17.4.2.3. Action Alternative B

Permanent direct and indirect impacts to economic resources due to Action Alternative B would be the same as impacts due to Action Alternative A.

17.5. Temporary Effects

This section discusses the direct or indirect temporary effects of the No Action Alternative and Action Alternatives during construction, based on conceptual engineering design. For the complete technical analysis of the potential temporary impacts to social and economic resources, see **Appendix D3, Environmental Consequences Report**.

17.5.1. Social

This section discusses potential temporary direct and indirect impacts to demographics, community facilities and local government services, property acquisition and displacement, and potential community disruption.

17.5.1.1. No Action Alternative

Construction of the No Action Alternative projects could have temporary adverse impacts to the transportation network, noise conditions, visual resources, and air quality in the Local Study Area, as described in **Chapter 9, Transportation and Navigation; Chapter 10, Air Quality and Greenhouse Gases; Chapter 13, Noise and Vibration; and, Chapter 14, Aesthetics and Visual Resources**. These impacts could result in adverse direct impact to communities in the Local Study Area but would be temporary and would cease upon project completion.

17.5.1.2. Action Alternative A (Preferred Alternative)

Action Alternative A would not result in temporary direct or indirect impacts to community demographics, community facilities, or local government services. No temporary displacement or property acquisition of residences, businesses, or community facilities other than parks would occur.

Moderate temporary direct adverse impacts, due to construction, to GWMP and East Potomac Park are described in **Chapter 12, Land Use and Property** and **Chapter 16, Recreation and Parks**. Use of the parks for construction would not constitute a direct impact to community facilities because the community would still have access to the full range of recreational opportunities within the parks.

Community disruption refers to a population's ability to navigate their way around their community. Temporary moderate adverse direct impacts due to community disruption would occur at varying locations and for varying durations during the construction period. Community disruption would be due to temporary impacts to traffic and pedestrian and bicycle facilities during construction. Temporary construction impacts that would most affect community disruption would occur around Maine Avenue SW. **Chapter 9, Transportation and Navigation**, further describes these impacts. These impacts would disrupt community cohesion and wayfinding by creating longer travel times and rerouting travel patterns. These effects, however, would be temporary and would cease upon project completion. Most impacts would not last the full duration of the 5-year construction period because construction locations would shift.

17.5.1.3. Action Alternative B

Despite the longer overall construction duration of Action Alternative B (up to 8 years 3 months versus up to 5 years in Action Alternative A), the construction duration would be similar at the locations with greater impacts to community disruption. Therefore, Action Alternative B has similar temporary impacts as Action Alternative A.

17.5.2. Economics

This section discusses potential temporary direct and indirect impacts to jobs, the regional economy, tax/public revenue, and commercial activity.

17.5.2.1. No Action Alternative

Construction jobs and regional benefits associated with construction could have a temporary beneficial direct impact due to construction of the transportation projects included in the No Action Alternative. These impacts would be beneficial because these projects would support employment and business spending in the construction industry. The benefits would be commensurate with construction costs. Any adverse impacts to economic conditions due to construction are likely to be temporary.

17.5.2.2. Action Alternative A (Preferred Alternative)

Jobs and Regional Economy

Action Alternative A would cause minor temporary direct and indirect beneficial impacts to employment and the regional economy. Construction jobs and regional benefits associated with construction would occur for the estimated 5-year construction period. Construction employment benefits are typically felt regionally, especially in a metropolitan area where construction workers often live outside of the city and construction materials and business-to-business transactions also may take place outside of the city. Further, significant infrastructure projects, such as this Project, require specialized labor and equipment that would require a regional approach. The analysis of construction employment benefits used IMPLAN, a regional input-output model software system, and includes the following jurisdictions in the

Washington Metropolitan Area: the District; Frederick, Montgomery, Calvert, Charles, and Prince George’s Counties in Maryland; Arlington, Clarke, Culpeper, Fairfax, Fauquier, Loudoun, Prince William, Rappahannock, Spotsylvania, Stafford, and Warren Counties, and the Cities of Alexandria, Fairfax, Falls Church, Fredericksburg, Manassas, and Manassas Park in Virginia; and Jefferson County in West Virginia.⁸

The projection of construction employment, wages, and economic output is based on estimated construction costs, including both hard and soft construction costs. Action Alternative A is estimated to cost approximately \$1.9 billion (in 2019 dollars) over a construction period of 5 years.

The analysis defined jobs as full- and part-time annual average jobs for both employees and self-employed workers, including seasonal workers. **Table 17-4** shows construction jobs estimated annually and categorized as direct jobs (the number of construction jobs), indirect jobs (jobs supported by business-to-business transactions), and induced jobs (jobs supported by the household spending of direct wages). The analysis estimates that the Project would support an average of approximately 1,822 direct jobs annually and 1,239 indirect and induced jobs annually, for a total of 3,061 jobs annually. Direct jobs would occur primarily within the construction and architectural, engineering, and related services industries, while the indirect and induced jobs would occur in industries such as wholesale trade; restaurants; real estate; hospitals; retail; and services to buildings. These jobs are calculated based on multipliers and datasets for various industries identified in IMPLAN and reflect typical spending patterns by these industries and workers.

Table 17-4 | Annual Construction Employment, Action Alternative A

	Annual Jobs	Annual Labor Income	Annual Value Added	Annual Total Output
Direct Effect	1,822	\$146,391,519	\$177,651,493	\$299,229,546
Indirect Effect	441	\$34,838,259	\$50,329,256	\$78,567,865
Induced Effect	799	\$44,424,818	\$78,135,238	\$123,281,734
Total Effect	3,061	\$225,654,596	\$306,135,988	\$501,079,145
<i>Source: IMPLAN</i>				

Project construction would produce an estimated \$226 million in annual labor income (employee compensation and proprietor income). Annual value added—the combination of labor income, other property type income and indirect business taxes—would be approximately \$306 million. Annual total output, or the value of production, would be approximately \$501 million. These economic outputs would spread benefits throughout the Washington Metropolitan Region.

⁸ These jurisdictions are used because they comprise the Washington-Arlington-Alexandria, DC-VA-MD-WV, metropolitan statistical area as defined by the United States Office of Management and Budget and used by the U.S. Census Bureau.

Tax/Public Revenues

Temporary direct or indirect impacts to taxes and other public revenues are not anticipated.

Commercial Activity

Construction of Action Alternative A would cause major temporary adverse direct impacts to the Washington Marina without mitigation, and minor temporary adverse direct commercial impacts to NPS due to loss of revenue from NPS Parking Lots B and C.

Action Alternative A would require the demolition of the pedestrian bridge across Maine Avenue SW near the Mandarin Oriental Hotel that provides access to the Washington Marina and other waterfront locations. The pedestrian bridge would be replaced with a comparable permanent structure. Prior to the replacement of the pedestrian bridge, pedestrians would be rerouted using existing sidewalks, so there would still be access between the Mandarin Oriental Hotel and Washington Marina.

In addition to the permanent loss of parking at the Washington Marina and NPS Parking Lot C in East Potomac Park, temporary loss of additional parking spaces is expected to occur at both locations for purposes of construction staging and may last for the duration of construction. This would include temporary closure of most of the surface parking at the Washington Marina and would also include temporary closure of all parking at NPS Parking Lot B and NPS Parking Lot C. Loss of parking at NPS Parking Lots B and C would result in a temporary loss of revenue for NPS from the metered parking spaces, constituting a temporary minor adverse direct economic impact.

Temporary parking for Washington Marina would be established offsite for the duration of construction (the location of temporary parking for the marina will be identified later in the planning process as final design progresses and in coordination with the marina). Construction would have a potentially major direct impact to Washington Marina, considering both the temporary loss of parking and the inconvenience of the temporary removal of the pedestrian bridge for approximately 5 years. These impacts would be inconvenient for Washington Marina and its patrons and could result in the loss of patrons. However, with mitigation measures in place, such as temporarily relocated parking and pedestrian access, temporary adverse impacts, such as a loss of patrons, to Washington Marina would be considered minor.

17.5.2.3. Action Alternative B

Major temporary direct adverse impacts to the Washington Marina due to construction of Action Alternative B would be the same as those due to Action Alternative A as the construction duration near the Washington Marina will be the same. The minor adverse direct impacts anticipated to NPS due to loss of revenue from the closure of NPS Parking Lots B and C would be felt for an additional 3 years because Action Alternative B has a construction period of 8 years and 3 months. The higher cost and longer construction period for Action Alternative B would result in additional construction employment and economic benefit as discussed below.

Jobs and Regional Economy

Action Alternative B would cause minor beneficial direct and indirect effects to employment and the regional economy. Action Alternative B is estimated to cost approximately \$2.8 billion over a construction period of 8 years and 3 months.

The analysis defined jobs as full- and part-time annual average jobs for both employees and self-employed workers, including seasonal workers. **Table 17-5** shows construction jobs estimated annually and categorized as direct jobs (the number of construction jobs), indirect jobs (jobs supported by business-to-business transactions), and induced jobs (jobs supported by the household spending of direct wages). The analysis estimates that the Project would support an average of approximately 1,683 direct jobs annually and 1,145 indirect and induced jobs annually, for a total of 2,829 jobs annually. Direct jobs would occur primarily within the construction and architectural, engineering and related services industries while the indirect and induced jobs would occur in industries such as wholesale trade; restaurants; real estate; hospitals; retail; and services to buildings. The analysis calculated these jobs based on multipliers and datasets for various industries identified in IMPLAN and reflect typical spending patterns by these industries and workers.

Table 17-5 | Annual Construction Employment, Action Alternative B

	Annual Jobs	Annual Labor Income	Annual Value Added	Annual Total Output
Direct Effect	1,683	\$135,312,946	\$164,120,086	\$276,479,729
Indirect Effect	407	\$32,202,304	\$46,526,598	\$72,588,564
Induced Effect	738	\$41,063,000	\$72,222,394	\$113,952,472
Total Effect	2,829	\$208,578,250	\$282,869,078	\$463,020,765
<i>Source: IMPLAN</i>				

Project construction would produce an estimated \$209 million in annual labor income (employee compensation and proprietor income). Annual value added—the combination of labor income, other property type income and indirect business taxes—would be approximately \$283 million. Annual total output, or the value of production, would be approximately \$463 million. These economic outputs would spread benefits throughout the Washington Metropolitan Region.

17.6. Avoidance, Minimization, and Mitigation

This section describes proposed mitigation for the impacts to social and economic resources.

17.6.1. Social

The Project would result in impacts to parks, but no other community facilities. Mitigation measures for impacts to parks are discussed in **Chapter 16, Recreation and Parks**. Action Alternative A would not result in other impacts to social resources; therefore, no additional mitigation measures are proposed.

17.6.2. Economic

The Project would result in impacts to specific businesses, including the Washington Marina, NPS Parking Lots B and C, the Mandarin Oriental Hotel, and the Portals V development. These impacts are due to a loss of parking, change in access, and noise. Mitigation measures for these impacts are discussed in **Chapter 9, Transportation and Navigation; Chapter 12, Land Use and Property; Chapter 13, Noise and Vibration; and Chapter 16, Recreation and Parks**. In addition, the Virginia Department of Rail and Public Transportation, the project sponsor for final design and construction, would continue to coordinate with the Washington Marina and NPS to develop appropriate mitigation for adverse temporary and permanent impacts to these establishments due to the Project, including potential loss of revenue and patrons due to the temporary and permanent removal of parking.