

SOCIOECONOMICS AND LAND USE TECHNICAL MEMORANDUM

I-66 CORRIDOR IMPROVEMENTS TIER 2 ENVIRONMENTAL ASSESSMENT

VDOT Project Number: 0066-96A-297; UPC 105500

From: US Route 15 (James Madison Highway) in Prince William County

To: I-495 (Capital Beltway) in Fairfax County

May 12, 2015

1. INTRODUCTION

The Virginia Department of Transportation (VDOT), in cooperation with the Federal Highway Administration (FHWA), is studying the environmental consequences of transportation improvements along Interstate 66 from US Route 15 in Prince William County to the Capital Beltway (I-495) in Fairfax County (see **Figure 1**). The purpose of this Technical Memorandum is to identify social and economic conditions and land use and analyze potential impacts that could result from implementation of the Build Alternatives. Information in this memorandum supports discussions presented in the Environmental Assessment (EA).

- **Section 1** provides an overview of the study and outlines the methods used to assess socioeconomic and land use impacts.
- **Section 2** provides an examination of existing and future land use and potential impacts to land use within a 500-foot buffer around the existing I-66 right-of-way.
- **Section 3** provides a demographic profile of the local jurisdictions including neighborhoods, communities, and an examination of population numbers, and potential impacts to these populations.
- **Section 4** analyzes minority and low income populations and potential impacts to these populations.
- **Section 5** provides an examination of community facilities within a 500-foot buffer around the existing I-66 right-of-way and potential impacts to these resources.
- **Section 6** provides an examination of economic data and potential impacts to the economy and businesses.
- **Section 7** provides an assessment of potential relocations of residents and businesses, of the availability of replacement residences and businesses in and around I-66, and of the costs associated with acquiring and relocating residents and businesses.

Data and information on land use, demographics, community facilities, emergency services, community characteristics, access, employment, income, and the local economy provide a baseline for analysis of potential impacts. These were compiled from aerial photos, local comprehensive and land use plans, the US Census web site (including the American Community Survey), Geographic Information System (GIS) databases, city/county tax parcel databases, conceptual drawings, and field inspections.

2. PROJECT DESCRIPTION

The proposed improvements would provide two express lanes and three general purpose lanes in each direction from US 15 to I-495, a total distance of approximately 25 miles. This would result in five travel lanes in each direction within the proposed right of way. Auxiliary lanes would be provided between interchanges as needed for exiting and entering traffic. The express lanes would be tolled using automatic toll collection equipment. Tolls would vary based on the traffic volume. High occupancy vehicles (HOV) with three or more occupants (including transit vehicles) would travel free. To promote

usage of transit services in the corridor, infrastructure elements such as park-and-ride lots also would be provided. Two build alternatives, 2A and 2B, are being considered, the typical cross sections of which are shown in **Figure 2**. The difference in typical section between Alternatives 2A and 2B is the treatment of the median. With **Alternative 2A**, a 42-foot-wide median would be set aside for future fixed guideway transit service, resulting in a total typical section width of 246 feet from edge of shoulder to edge of shoulder. **Alternative 2B** would provide concrete barrier separation between the opposing lanes of traffic and the typical section width would decrease to 206 feet. Alternative 2B would essentially eliminate much or most of the existing median in some sections.

Both Alternatives 2A and 2B would use a buffer system to separate the managed lanes from the general-purpose lanes in each direction, i.e., a buffer area that contains a physical marker that is less durable but more flexible than those used in barrier-separated systems. Tubular markers, pylons, stanchions, or plastic bollards are one type of marker used in buffer-separated systems. They consist of a series of painted lightweight plastic tubes, often with reflective coating (this technique is currently in use on the Capital Beltway to separate the express lanes from the general purpose lanes).¹

There are also various differences between the two alternatives with respect to interchange configurations, access points to enter and exit the express lanes, park-and-ride lots, and bicycle and pedestrian elements. Note that at the conclusion of this Tier 2 study, an alternative may be selected that includes a combination of elements that have been identified as part of either Alternative 2A or 2B. For example, the Alternative 2A and 2B typical sections may be selected for different sections of the corridor based on potential impacts at particular locations. Similarly, the interchange configurations associated with either Alternative 2A or 2B may be chosen for each interchange location. This method of mixing-and-matching allows for flexibility in the planning and design of I-66 improvements.

The No-Build Alternative also has been retained to serve as a baseline for comparison of alternatives and their potential effects.

3. LAND USE

3.1 Existing Land Use

The existing land uses within a 500-foot buffer around the existing right of way were identified based on available planning documents from local jurisdictions and regional entities, GIS mapping from the jurisdictions, aerial photography, and any additional information received from local and regional officials.

The land use (built environment) and land cover (natural environment) around I-66 are typical of a densely developed urban and suburban setting. The population and employment growth of the greater Washington D.C. region has directly influenced the land use/land cover and development of the jurisdictions adjacent to I-66: Fairfax County, the Town of Vienna, the City of Fairfax, the Town of Haymarket, and Prince William County. The counties include a wide variety of land uses/land covers: residential, commercial, industrial, recreation/open space, and public uses (**Table 1**). The City of Fairfax is primarily residential with business/commercial uses along Main Street and Lee Highway/Fairfax Boulevard. Within the 500-foot buffer, the highest proportion of land use is residential. Office, retail, and industrial development are more prevalent at the interchanges with I-66. Even though some areas of each jurisdiction are densely developed, each has been able to maintain parks/open space, preservation/environmental resources, and/or recreational areas.

¹ Alternative 1, which was dismissed from further consideration, would have had concrete barrier separating the express lanes from the general purpose lanes. This alternative would have required a wider swath of right of way, which would result in greater environmental impacts.

Some of the most highly developed land and most intensely used in the area includes:

- The business and industrial uses and high density housing surrounding both the Dunn Loring/ Merrifield Metrorail and Vienna Metrorail stations, including the Vienna MetroWest development adjacent to I-66;
- Office complexes north of I-66, and Fairfax Shopping Center south of I-66 at the interchange with Chain Bridge Road (VA 123);
- Fair Oaks Mall, Fairfax Corner, Fair Lakes Shopping Center, multiple colleges, and office complexes surrounding the I-66 interchanges with Lee-Jackson Memorial Highway (US 50) and Fairfax County Parkway;
- Office development, high density residential development, Columbia College, and two parks (Rocky Run Stream Valley Park and Ellanor C. Lawrence Park) all surround the I-66 interchanges with VA 28 and US 29 in Fairfax County;
- Multiple colleges, and industrial development at the I-66 interchange with Sudley Road (VA 234), which is surrounded on the north side of I-66 by Manassas National Battlefield Park; and
- Industrial, office, and retail development clustered at the I-66 interchange with US 29 in and around Gainesville, in Prince William County.
- Office, retail, and residential development, as well as the Haymarket Medical Center clustered at the I-66 interchange with US 15 in and around Haymarket, in Prince William County.

Table 1. Existing Land Use

LAND USE/LAND COVER CLASSIFICATION	TOTAL AREA WITHIN 500 FOOT BUFFER	PERCENT OF TOTAL
Agricultural	65	1.1%
Commercial	361	6.2%
Industrial	210	3.6%
Institutional	95	1.6%
Office	296	5.0%
Transportation*	2,002	34.1%
Preserved Open Space	748	12.7%
Residential	2010	34.2%
Vacant	89	1.5%
TOTAL	5,876	100%

Sources: City and County Land Use GIS databases. *Includes existing I-66 right-of-way.

3.2 Status of Local Planning and Future Land Use

3.2.1 City of Fairfax

The City, as stated in its comprehensive plan, is “built out” (City of Fairfax, 2012). There is less than one percent of vacant land in the city. The comprehensive plan describes any new or future development as redevelopment of previously developed areas. There are no new developments planned, nor is there available land for any induced development. Therefore, future land use is expected to be similar to existing land use. In its Transportation Strategies, the City does support “projects that promote alternatives to single-occupant vehicles during the peak period on major transportation routes”, such as I-66 (City of Fairfax, 2012). The City also supports regional initiatives, such as “improved accessibility and capacity of the region’s interstate routes, particularly I-66” (City of Fairfax, 2012).

3.2.2 Fairfax County

The Fairfax County Comprehensive Plan notes that the County “should have a land use pattern which increases transportation efficiency, encourages transit use, and decreases automobile dependency” (Fairfax County, 2014). The county also wishes to “concentrate most future development in mixed-use Centers and Transit Station Areas” and “concentrate the highest level of development intensity in areas of transportation advantage, i.e., the Tysons Corner Urban Center, cores of Suburban Centers, and Transit Station Areas” (Fairfax County, 2014). The comprehensive plan also notes that due to rapid growth over the past decades, the amount of available vacant land is diminishing and redevelopment in the identified areas (mixed-use centers, transit station areas, suburban centers) will be more prevalent in the future. Some of these areas are along the I-66 corridor (the two Metrorail stations, Centreville, the shopping malls surrounding the US 50 and Fairfax County Parkway interchanges with I-66), and development could intensify in these areas in the future.

In regards to transportation, the County supports “a multi-modal transportation system that provides transportation choices, reduces single-occupancy-vehicle (SOV) use and improves air quality” and that would “provide HOV lanes on freeways and major arterials where substantial travel benefits can be realized”, such as I-66 (Fairfax County, 2014). The plan also supports “mass transit service in major commuter corridors”, which includes I-66. The County has identified I-66 as an “Ongoing Study” within the High Quality Transit Network in its Countywide Transit Network Study (Fairfax County, 2015). The network also includes light rail transit and bus rapid transit on VA 28 and VA 123, which would connect I-66 with Dulles International Airport and Loudoun County. Finally, the comprehensive plan’s objectives link transportation and land use to present and future economic development within the County.

The Town of Vienna lies within Fairfax County and has its own comprehensive planning process. The Town’s most recent comprehensive plan (2010) notes that almost 90% of the land use is built-out (residential, commercial/industrial, or governmental/institutional). The remaining land is for recreational uses. The town has successfully planned transitions between high density commercial development to townhouse and multifamily zones to low-density single-family detached homes (Town of Vienna, 2010). Development trends in the town have followed town policies to preserve and enhance the town character. The plan notes that Fairfax County has worked with the town to support its land-use goals.

3.2.3 Prince William County

The county is broken up into two general land use areas: the “Development Area”, where development has already happened or is expected to occur at residential densities greater than the rest of the county; and the “Rural Area” which contains agricultural, open space, forestry, large-lot residential uses, and the Federal Parks (Manassas National Battlefield Park and Prince William Forest Park). The current comprehensive plan (2012) encourages infill development of the Development Area instead of more intense development occurring within the Rural Area. The land area surrounding I-66, other than Manassas National Battlefield Park and Conway-Robinson Memorial State Forest, is all part of the Development Area, and includes Regional and Community Employment Centers, Industrial Employment, Regional Commercial Centers, and some high density suburban residential uses between Gainesville and Haymarket. At Haymarket in the Development Area, US 15 is a part of an American Byway, Journey through Hallowed Ground National Heritage Area. The title National Heritage Area is an honorary distinction designated by the US Congress and is not a formal historic designation of US 15. In the area of US 15 and I-66, the County has designated future land use as a Regional Employment Center.

The County acknowledges that growth will continue to occur but is positioning itself to include county-specific “Smart Growth” strategies to channel and shape growth into designated growth areas within the

Development Area. The County will “direct new development to areas served by transit corridors; particularly designated centers of commerce, centers of community, and Mass Transit Nodes” (Prince William County, 2012). The County also proposes “centers of commerce at appropriate locations that promote high-density, mixed-use development near existing and planned multi-modal transit centers” (Prince William County, 2012). The County has focused specific plans on several sectors (geographic areas), including Gainesville/Haymarket. The concept for the Gainesville/Haymarket sector is similar to a town center, with more dense commerce and employment opportunities around US 29 adjacent to I-66, including access to mass transit options, transitioning to lower density commercial and residential uses to the west. Development pressures on land surrounding this area could intensify in the future based on the land uses identified by the county as compatible in the Gainesville/Haymarket sector.

The County does specifically mention this project in the comprehensive plan and wishes to “quicken the process of extending” I-66 HOV lanes to their termini (the Fauquier County line to the Fairfax County line) (Prince William County, 2010).

The Town of Haymarket lies within Prince William County and has its own comprehensive planning process. The Town’s most recent comprehensive plan (2008) notes that development and property values have increased and the “future of Haymarket must be adjusted from previous plans to embrace and exploit this growth” (Town of Haymarket, 2008). The town wishes to continue its “commitment to a well-balanced land use pattern” to include employment opportunities for residents and to consider the conditions for economic development, including proximity to I-66, US 15, US 29, and US 55. The town expects expansion of residential and commercial uses within the Town and the surrounding area based on available vacant land in Town, projected growth of surrounding county areas, and transportation improvements (Town of Haymarket, 2008).

3.2.4 Metropolitan Washington Council of Governments

The Metropolitan Washington Council of Governments (MWCOC) is a regional planning entity that encompasses jurisdictions in Maryland, Virginia, and the District of Columbia. As a part of the transportation planning process for the region, MWCOC identifies Regional Activity Centers. These centers range across the entire region. Surrounding I-66, there are five: Gainesville, Centreville, Fairfax Center, Vienna, and Merrifield/Dunn Loring. The region wishes to pursue “transportation projects that aim to better connect Regional Activity Centers” (MWCOC, 2014).

3.3 Land Use Impacts

3.3.1 Land Use Conversions

The No-Build Alternative requires no right-of-way acquisition and therefore requires no land use conversion and has no direct impacts to land use.

The Build Alternatives require different amounts of right of way acquisition (**Table 2**). The transition of these land uses to transportation use is a direct effect of the project but is an extension of the existing adjacent transportation land use and is not out of character with the area.

3.3.2 Compatibility with Local Land Use and Transportation Planning

The City of Fairfax, Fairfax County, and Prince William County have directly addressed the importance of I-66 to local and regional mobility in their respective comprehensive planning processes. The Town of Vienna’s most recent comprehensive plan (2010) states that “further expansion of the carrying capacity of I-66 is not likely to satisfy the increasing demands being placed on this road”. The plan does note that

Table 2. Land Use Impacts

LAND USE/LAND COVER CLASSIFICATION	ALTERNATIVE 2A ACRES (% OF TOTAL)	ALTERNATIVE 2B ACRES (% OF TOTAL)
Agricultural	0	0
Commercial	11 (0.6%)	39 (1.9%)
Industrial	9.5 (0.5%)	6 (0.29%)
Institutional	1 (0.04%)	1 (0.04%)
Office	9 (0.4%)	4 (0.19%)
Transportation - Existing	1,792 (87.8%)	1,818 (88.0%)
Transportation - New	6 (0.3%)	7 (0.3%)
Preserved Open Space	71 (3.5%)	72 (3.5%)
Residential	99 (4.9%)	114 (5.5%)
Vacant	41 (2.0%)	3.6 (0.20%)
TOTAL	2,040	2,065

Sources: City and County Land Use GIS databases.

the Dulles Toll Road and the extension of the Metrorail silver line will alleviate traffic in the Town. The City of Fairfax and Fairfax and Prince William counties have recognized the importance of I-66 to residents, local businesses, regional connections, and economic vitality. I-66 is a key corridor for all of these reasons, and in particular the social and economic well-being of the surrounding jurisdictions. The Build Alternatives are compatible with the respective comprehensive planning for the City of Fairfax, Fairfax County, and Prince William County. The Town of Vienna comprehensive planning does not specifically preclude improvements to I-66, but does raise concerns regarding the effectiveness of them.

4. DEMOGRAPHIC PROFILE

Data products from the US Census Bureau were used for demographic information, primarily the 2009-2013 American Community Survey (ACS). I-66 traverses parts of 37 census tracts in the City of Fairfax (2), Fairfax County (26), and Prince William County (9). The demographic data of these census tracts were examined to determine the presence of any potential minority and low-income populations, also referred to as environmental justice populations, and any persons with Limited English Proficiency (LEP).

The total population in these jurisdictions has been increasing steadily for many years. Fairfax County is the most populous jurisdiction in the Commonwealth. **Table 3** and **Table 4** show historic population trends from 1990 through 2013 and population projections through 2040, respectively. All localities have been experiencing steady growth from 1990 through 2013. Prince William County has experienced the highest level of growth, nearly doubling in population during that time frame. Population projections by the Weldon Cooper Center predict continued growth in all three localities. Lower growth is predicted in Fairfax County at 22% between 2013 and 2040. Population growth is expected to continue in Prince William County with a 58% increase in population predicted by 2040.

5. ENVIRONMENTAL JUSTICE

5.1 Methods

Executive Order 12898, “Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations”, states that each Federal agency “shall make achieving environmental justice part of its mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations”. The US Department of Transportation’s most recent order on implementing environmental justice requirements (DOT Order 5610.2(a), issued May 2, 2012) states that:

Table 3. Total Population over Time

LOCATION	1990	2000	2010	2013	PERCENT CHANGE 1990-2013
Fairfax County*	818,584	969,749	1,081,699	1,101,071	34.51%
Prince William County**	215,686	280,813	402,002	416,668	93.18%
City of Fairfax	19,622	21,498	22,565	23,027	17.35%
Total	1,053,892	1,272,060	1,506,266	1,540,766	46.20%

Sources: US Census Bureau: 1990, STF1; 2000, SF3; 2010 SF1; 2013, American Community Survey 2009-2013.

*Includes Town of Vienna. **Includes Town of Haymarket.

Table 4. Projected Population over Time

LOCATION	2013	2020	2030	2040	PERCENT CHANGE 2013-2040
Fairfax County*	1,101,071	1,182,609	1,271,995	1,350,245	22.63%
Prince William County**	416,668	487,768	573,535	659,301	58.23%
City of Fairfax	23,027	23,751	24,758	25,543	10.93%
Total	1,540,766	1,694,128	1,870,288	2,035,089	32.08%

Sources: 2013, US Census Bureau: American Community Survey 2009-2013; 2020-2040, Weldon Cooper, 2012

*Includes Town of Vienna. **Includes Town of Haymarket.

“It is the policy of DOT to promote the principles of environmental justice (as embodied in the Executive Order) through the incorporation of those principles in all DOT programs, policies, and activities. This will be done by fully considering environmental justice principles throughout planning and decision-making processes in the development of programs, policies, and activities, using the principles of the National Environmental Policy Act of 1969 (NEPA), Title VI of the Civil Rights Act of 1964 (Title VI), the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended, (URA), the Safe, Accountable, Flexible, Efficient Transportation Equity Act: A Legacy for Users (Public Law 109-59; SAFETEA-LU) and other DOT statutes, regulations and guidance that address or affect infrastructure planning and decision-making; social, economic, or environmental matters; public health; and public involvement.”

The FHWA implemented the DOT order via FHWA Order 6640.23A, “FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations” (June 14, 2012). The order provides methods to comply with existing applicable regulations and requirements as well as administering FHWA’s “governing statutes so as to identify and avoid discrimination and disproportionately high and adverse effects on minority populations and low-income populations”.

Accordingly, demographic data for Fairfax County, the City of Fairfax, and Prince William County were analyzed to determine whether the Build Alternatives would have disproportionately high and adverse human health or environmental effects on minority and low-income populations. As defined in FHWA Order 6640.23A, minority populations include citizens or lawful permanent residents of the U.S. who are:

- Black: a person having origins in any of the black racial groups of Africa;

- Hispanic or Latino: a person of Mexican, Puerto Rican, Cuban, Central, or South American or other Spanish culture or origin, regardless of race;
- Asian American: a person having origins in any of the original peoples of the Far East, Southeast Asia, or the Indian subcontinent;
- American Indian and Alaskan Native: a person having origins in any of the original people of North America or South America (including Central America) and who maintains cultural identification through tribal affiliation or community recognition; or
- Native Hawaiian and Other Pacific Islander: a person having origins in any of the original peoples of Hawaii, Guam, Samoa, or other Pacific Islands.

Low-income populations are defined as those whose median household income is below the U.S. Department of Health and Human Services poverty guidelines.

Executive Order 13166 “Improving Access to Services for Persons with Limited English Proficiency” directs federal agencies to “examine the services they provide, identify any need for services to those with limited English proficiency (LEP), and develop and implement a system to provide those services so LEP persons can have meaningful access to them”. As a part of EO 13166, the Department of Justice issued guidance on implementing the LEP regulations because of the connection between Title VI barring of discrimination based on national origin and EO 13166. Data collection to determine the presence of persons with LEP has occurred as a part of this project.

The environmental justice analysis is based on whether the minority population percentage of a census tract is greater than 50% or meaningfully greater than the minority population percentage in the general population. There is no formal guidance available on what constitutes “meaningfully greater.” For this study, the minority population for each census tract is “meaningfully greater” than the surrounding census tracts if it is greater than the value for the jurisdiction (City of Fairfax, Fairfax County, or Prince William County) with the lowest percentage of minority population, plus an additional 10 percent of that value. The City of Fairfax has the lowest percentage of minorities, 39.18 percent. Ten percent greater than that is 43.10 percent. Using the jurisdiction with the lowest percentage of minority population yields the highest number of census tracts considered to have minority populations versus using the average of the jurisdictions or the statewide average for comparison.

Median household income census data at the tract level has been acquired from the American Community Survey (ACS) 2009-2013 ACS 5-Year Estimates. The average household size ranges from 2.8 to 3.1 persons within the jurisdictions. Therefore, the 2013 US Department of Health and Human Services (HHS) poverty threshold for a family of 3, \$19,530, was used for comparison. The individual tract data has been compared to the HHS 2013 Poverty Guidelines (78 FR 5182, January 24, 2013) because they are both for the same year, 2013. Those tracts with median household income at or below the threshold, \$19,530, are deemed to contain low-income populations in accordance with FHWA’s definition in FHWA Order 6640.23A.

5.2 Census Data

Table 5 provides the census data on race, income, and LEP for the three jurisdictions. Only Prince William County has a minority population greater than 50 percent of the total population. All three jurisdictions have high median household income. Fairfax County has the highest percentage of persons with LEP.

Table 5. Demographic Data in 2013

LOCATION	TOTAL POPULATION	MINORITIES (%)	MEDIAN HOUSEHOLD INCOME	TOTAL LEP (%)*
Fairfax County**	1,101,071	507,651 (46.11%)	\$110,292	150,041 (14.61%)
Prince William County***	416,668	217,574 (52.22%)	\$98,071	45,533 (11.90%)
City of Fairfax	23,027	9,022 (39.18%)	\$97,242	2,647 (12.28%)
Total	1,540,766	734,247 (47.65%)	--	198,221 (13.85%)

Sources: US Census Bureau: 2009-2013 American Community Survey.

Note: *Based on the population aged 5 years and over. **Includes Town of Vienna. ***Includes Town of Haymarket.

Census tracts (**Table 6**) were compared to the meaningfully greater percentage of 43.10 percent for minorities. Those census tracts with any groups greater than 50 percent of the population are highlighted in orange. Those tracts with groups meaningfully greater are highlighted in yellow. Eighteen census tracts have minority populations above 50 percent of the total populations. An additional five tracts have minority populations that are meaningfully greater percentages than other tracts along the study corridor.

There are no census tracts along the study corridor with median household income below the poverty level.

Some of the census tracts did not have a higher proportion of persons with LEP than the region, but still had high numbers of persons that spoke a specific language other than English. The most predominant language spoken in each tract is provided in Table 6. There is a wide spectrum of each of the demographic groups in the jurisdictions. The regional average for populations with limited English proficiency is 13.85 percent. There are twenty-three census tracts with an LEP population greater than the regional average. One tract is in the City of Fairfax. Nineteen are located in Fairfax County and three are located in Prince William County. There are no census tracts within the project area with LEP populations greater than 50%.

Table 6. Census Tract Demographic Data in 2013

LOCATION	TOTAL POPULATION	MINORITIES (%)	MEDIAN HOUSEHOLD INCOME	TOTAL LEP (%)*
Census Tract 4606, Fairfax County	4,190	1,251 (29.86%)	\$148,889	337 (8.75%)
Census Tract 4607.01, Fairfax County	3,487	1,566 (44.91%)	\$107,065	957 (29.71%) Spanish
Census Tract 4612.02, Fairfax County	5,070	2,900 (57.20%)	\$135,575	544 (11.96%)
Census Tract 4615, Fairfax County	6,434	2,780 (43.21%)	\$152,113	706 (11.98%)
Census Tract 4616.01, Fairfax County	6,142	2,262 (36.83%)	\$125,332	946 (16.54%) Korean, Chinese
Census Tract 4616.02, Fairfax County	4,204	2,817 (67.01%)	\$109,449	660 (16.48%) Spanish
Census Tract 4618.01, Fairfax County	1,359	608 (44.74%)	\$98,355	201 (16.34%) Vietnamese, Spanish

LOCATION	TOTAL POPULATION	MINORITIES (%)	MEDIAN HOUSEHOLD INCOME	TOTAL LEP (%)*
Census Tract 4618.02, Fairfax County	5,467	2,547 (46.59%)	\$100,694	849 (16.58%) Spanish, Korean
Census Tract 4619.01, Fairfax County	3,585	2,201 (61.39%)	\$73,393	892 (27.24%) Spanish, Korean
Census Tract 4619.02, Fairfax County	2,081	1,562 (75.06%)	\$59,602	764 (40.40%) Spanish, Urdu
Census Tract 4713.03, Fairfax County	3,863	1,515 (39.22%)	\$96,250	439 (11.87%)
Census Tract 4713.04, Fairfax County	1,796	393 (21.88%)	\$180,268	89 (5.22%)
Census Tract 4901.01, Fairfax County	5,404	1,860 (34.42%)	\$123,125	491 (9.63%)
Census Tract 4912.01, Fairfax County	5,590	2,928 (52.38%)	\$85,966	793 (15.00%) Spanish, Korean
Census Tract 4912.02, Fairfax County	1,698	1,090 (64.19%)	\$62,927	341 (21.90%) Korean
Census Tract 4913.01, Fairfax County	6,648	3,874 (58.27%)	\$107,308	1,095 (17.90%) Spanish, Korean
Census Tract 4913.02, Fairfax County	3,729	1,875 (50.28%)	\$98,984	689 (20.91%) Korean, Spanish
Census Tract 4913.03, Fairfax County	4,821	3,635 (75.40%)	\$78,285	1,512 (34.13%) Spanish, Korean
Census Tract 4915.01, Fairfax County	7,047	5,318 (75.46%)	\$112,236	1,508 (22.96%) Korean, Chinese
Census Tract 4915.02, Fairfax County	6,642	2,395 (36.06%)	\$201,979	557 (8.75%)
Census Tract 4917.01, Fairfax County	3,557	1,618 (45.49%)	\$96,625	557 (16.62%) Korean
Census Tract 4917.02, Fairfax County	7,681	4,846 (63.09%)	\$85,129	1,181 (17.11%) Spanish, Chinese
Census Tract 4917.03, Fairfax County	4,705	2,584 (54.92%)	\$77,077	910 (20.64%) Korean, Spanish
Census Tract 4917.04, Fairfax County	4,814	2,070 (43.00%)	\$84,730	782 (17.66%) Korean, Persian
Census Tract 4917.05, Fairfax County	3,410	1,957 (57.39%)	\$195,455	779 (23.44%) Vietnamese, Chinese
Census Tract 4918.01, Fairfax County	2,141	1,298 (60.63%)	\$76,750	431 (21.15%) Korean
Census Tract 9014.07, Prince William County	3,570	2,721 (76.21%)	\$71,448	1,031 (30.65%) Spanish
Census Tract 9014.08, Prince William County	6,818	5,197 (76.22%)	\$53,780	1,656 (27.81%) Spanish
Census Tract 9014.10, Prince William County	8,029	3,007 (37.45%)	\$134,107	333 (4.60%)
Census Tract 9015.03, Prince William County	6,217	1,216 (19.56%)	\$151,343	292 (5.03%)
Census Tract 9015.04, Prince William County	3,388	505 (14.91%)	\$91,531	99 (2.99%)
Census Tract 9015.06, Prince William County	5,056	2,594 (51.31%)	\$103,082	356 (7.98%)
Census Tract 9015.07, Prince William County	2,296	583 (25.39%)	\$117,059	101 (4.83%)
Census Tract 9015.10, Prince William County	5,032	1,336 (26.55%)	\$153,125	197 (4.31%)

LOCATION	TOTAL POPULATION	MINORITIES (%)	MEDIAN HOUSEHOLD INCOME	TOTAL LEP (%)*
Census Tract 9016.02, Prince William County	7,976	5,013 (62.85%)	\$72,184	1,205 (16.94%) Spanish
Census Tract 3001, Fairfax city	4,684	1,902 (40.61%)	\$72,853	566 (12.83%)
Census Tract 3002, Fairfax city	4,947	1,657 (33.50%)	\$128,977	695 (14.91%) Spanish

Sources: US Census Bureau: 2009-2013 American Community Survey.

Notes: *Based on the population aged 5 years and over. Above 50%; Meaningfully Greater.

Managed lanes already exist throughout the Washington, DC metropolitan region, including on I-66 inside the Capital Beltway where HOV restrictions are imposed during peak travel periods, and on the Capital Beltway where express tolled lanes similar to those proposed for this project were recently constructed. The Build Alternatives both represent an expansion of the existing system. Therefore, many of the challenges of implementing a new system, particularly public involvement surrounding general use and implementation, have already been addressed. Nevertheless, because the Build Alternatives include the expansion of an existing tolled network (I-495 and I-95 express lanes), the effects of tolls on potential environmental justice populations are being evaluated. The prevalence of congestion pricing strategies, such as tolled facilities or managed lanes, has been increasing throughout the United States. Lessons learned from other facilities as well as research and analysis on these facilities have been examined to address equity issues, implementation options, public outreach, and mitigation strategies.

The equity of the project can be assessed through transportation options available to users of the corridor and through financial/economic impacts to users. The non-tolled options for low-income users are wide-ranging and offer flexibility for users of all income levels. Other transportation options include the existing general purpose lanes, existing transit, existing Metro, and expanded park and ride facilities throughout the corridor. The number of general purpose lanes will not change between the existing facility and the Build Alternatives. The Build Alternatives include expansions in the number of and size of park and ride lots along I-66. The transit alternatives proposed as a part of this project include expanded commuter bus service, expanded Rapid Bus Service, with both additional origins and destinations, as well as increased frequency of service. Eight total proposed routes would be implemented by the opening year, with 17 total new routes by 2040. The Transit/TDM Technical Report contains more specific details on the transit/TDM alternatives. All of these options are viable for low-income users of I-66, and, in addition, the formation of carpools to avoid a toll altogether. The FHWA has noted in a compendium of congestion pricing research that congestion pricing “places responsibility for travel choices squarely in the hands of the individual traveler, where it can best be decided and managed” (FHWA, 2008). This is a function of the value of using the express lanes relative to the available alternatives. When the value of time savings for a potential user exceeds the toll charge, that user is benefited by taking a priced alternative. The express lanes would experience less congestion and therefore would provide a more reliable travel time for both vehicles and express buses. These results benefit all users regardless of income level because they provide better access and mobility. The actual use would depend on the availability of adjustments to other personal choices within a particular commute, such as joining a carpool and/or “flexibility of time” (working hours or other commitments, such as child care) (FHWA, 2008). Some users may choose not to pay for express lane access every day, but “all income groups value the choice of a reliable trip travel time that is available to them” (FHWA, 2008). The decision to use the express lanes is based on the value of an individual’s time, when the user must choose between the free or priced alternative, because “all income groups value the ‘insurance’ of a reliable trip time when they absolutely need it” (FHWA, 2008).

Public outreach on this project has been extensive throughout the NEPA process, from the Tier 1 FEIS to the scoping process and public meetings held for the Tier 2 EA. Use of e-mail blasts, social media, letters to property owners, and the project website has ensured that the public has the opportunity to participate in the development of the alternatives including tolling.

One of the most substantial challenges to mitigation of tolled options throughout the country has been addressing the needs of “unbanked” users. In the past, the EZPass system, and other transponder systems, have been available only to credit-card holders. EZPass has recently changed to allow the use of cash-based top-up cards to be linked to an EZPass account. The cards are available throughout the I-66 corridor and replenishment of the cards is also available at retailers (e.g., 7-11) throughout the corridor (<http://www.ezpassva.com/reloadcard/>). This system allows users operating via a cash-basis to choose the express lanes as an alternative to other modes of travel. Between this option for the express lanes and other modes of travel, the Build Alternatives provide multiple choices to low-income users of I-66. The Metro SmarTrip card is also available to be used for those who wish to operate on a cash basis and is valid on WMATA Metrorail and Metrobus, Maryland Transit Administration Local Bus, Light Rail and Metro Subway, Montgomery County RideOn, Prince George’s County TheBus, Potomac and Rappahannock Transportation Commission OmniRide, Alexandria DASH, Arlington Transit (ART), Fairfax Connector, Fairfax CUE, and Loudoun County Transit.

5.3 Impacts

The No-Build Alternative requires no right-of-way acquisition and therefore requires no relocations and has no direct adverse impacts to environmental justice populations. Under the No-Build Alternative, beneficial impacts also would not be realized. Congestion and lack of mobility would continue to affect individuals and communities. These problems also could continue to impact businesses and economic activity within the jurisdictions, which would, in turn, result in additional impacts to individuals and communities.

Build Alternatives 2A and 2B have the potential to displace 15 and 11 residences, respectively. These relocations occur only in Fairfax County. None occur in census tracts with high minority populations as defined previously and shown in **Table 7**. The table identifies the number of residential relocations in each Census Tract. For residents in those tracts that are not relocated, other impacts may be incurred, such as noise, air quality, and partial losses of property.

Even though there are minority populations in the census tracts where relocations are occurring, no disproportionate relocation impacts to low-income and minority populations are expected. Further, the acquisition of right of way and the relocation of displacees would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Assurance is given that relocation resources would be available to all residential displacees without discrimination.

Table 7. Residential Relocations by Census Tract

LOCATION	ALTERNATIVE 2A	ALTERNATIVE 2B	TOTAL MINORITIES (PERCENT MINORITIES)	MEDIAN HOUSEHOLD INCOME
Fairfax County Total	15	11	507,651 (46.11%)	\$110,292
Tract 4606	5	5	1,251 (29.86%)	\$148,889
Tract 4713.03	4	0	1,515 (39.22%)	\$96,250
Tract 4713.04	6	3	393 (21.88%)	\$180,268
Tract 4915.02	0	3	2,395 (36.06%)	\$201,979
Total	15	11	--	--

6. COMMUNITIES

I-66 is a major transportation corridor for communities throughout the Northern Virginia and Washington, DC region. As a limited-access roadway, I-66 connects to the communities and neighborhoods with access only at designated interchanges. It is the major east-west route between Washington, DC and the counties, cities, and towns to the west in Virginia.

The project corridor is located within the towns of Haymarket and Vienna, the City of Fairfax, and Fairfax and Prince William counties. Communities adjacent to the corridor include: Gainesville, Wellington, Sudley, Bull Run, Uniontown, Centreville, Oakton, Merrifield, and Dunn Loring. Large residential neighborhoods adjacent to the corridor include: Piedmont South, Carterwood, Parks at Piedmont South, Crossroads Village, Ballsford, Centreville Farms, Willow Springs, Crystal Springs, Penderlan, Dixie Hill, Fairfax Farms, Fairchester, Fairfax Woods, Mosby Woods, Mosby Glen, Cobbdale, Dunn Loring Woods, and Vienna Woods.

6.1 Community Impacts

Community impacts have been minimized to the greatest extent possible, primarily due to the location of the Build Alternatives within and immediately adjacent to the existing right of way of I-66.

The residential development of Centreville Farms is expected to be potentially affected by the Build Alternative 2B through right of way acquisition between I-66 and streets that are just north of I-66: Eastcliff Circle, Fox Meadow Court, Audrey Drive, Fernbrook Drive, Bebe Court, and Emeric Court. Only three homes are expected to be displaced under Alternative 2B.

In Dunn Loring Woods and Dunn Loring, right-of-way acquisition would occur between Wesleyan Street and Bowling Green Drive, at Stenhouse Place, near Walters Glen Way and Sandburg Street, near Pioneer Lane and Shelby Lane, and on Wincanton Court. In these locations, 15 residential displacements are expected to occur under Alternative 2A and 8 under Alternative 2B. These communities have already been affected by transportation infrastructure, including I-66 and I-495, which is already a large presence near the communities. The Build Alternatives continue the fragmentation of the edge of these communities via the expansion of the existing transportation infrastructure.

6.2 Community Facilities

Twenty community facilities are located within the 500-foot buffer around I-66, including schools, places of worship, and emergency services facilities (**Table 8**). Park and recreation facilities available to the public are presented in the Section 4(f) Evaluation.

Table 8. Community Facilities within 500-foot Buffer

FACILITY NAME	TYPE OF FACILITY
Marshall Road Elementary	School
Stenwood Elementary School	School
George G. Tyler Elementary	School
Oakton High School	School
Providence Elementary School	School
DeVry University	School
ECPI College of Technology – Northern Virginia Campus	School
University of Northern Virginia - Manassas	School
Manassas Mosque	Religious Facility
Living Hope Church	Religious Facility

FACILITY NAME	TYPE OF FACILITY
Centreville Church of Christ	Religious Facility
Church of the Ascension	Religious Facility
Fairfax County Public Safety Center (under construction)	Emergency Services
Haymarket Medical Center	Emergency Services
Monroe Cemetery	Cemetery
Cemetery near Antioch Road	Cemetery
Centreville Regional Library	Library
Oakton Post Office	Post Office
Sully Senior Center (formerly Centreville Methodist Church)	Other
National Firearms Museum	Other

6.3 Community Facility Impacts

The No-Build Alternative has no direct impacts on community facilities within the 500-foot buffer surrounding I-66. Only three community facilities are within the proposed right-of-way. Right of way acquisition would be required from the Fairfax County Public Safety Center, Stenwood Elementary School, and George G. Tyler Elementary School/PACE School property. Alternative 2A would use a narrow strip of land along Monument Drive at the location of the Fairfax County Public Safety Center currently under construction. Both Build Alternatives would use approximately 0.7 acres of land from the Stenwood Elementary School property. This consists of a narrow strip of land adjacent to the existing I-66 right of way. Approximately 0.2 acres of the impact would be on portions of two ball fields and a portion of a rockdust trail ringing one of the ballfields. Four private recreational facilities are within or adjacent to the Build Alternatives. The impacts are detailed in the following paragraphs.

The Izaak Walton League of America is a national non-profit conservation and public recreation advocacy group. The Arlington-Fairfax Chapter of the League owns and administers a facility on Mt. Olive Road in Centreville. It has rifle, archery, and skeet ranges and fishing ponds, but it is not open to the public. Minor right of way acquisition would occur due to Alternative 2A and is not expected to adversely affect any of the recreational facilities.

Englewood Muse Homeowners Association owns a long parcel of land along the I-66 eastbound on-ramp from Sully Road. This parcel contains a stormwater management pond, two tennis courts and a basketball court. These facilities are not open to the public; access is restricted to homeowners and their guests. Minor right-of-way acquisition would occur due to either Build Alternative and is not expected to adversely affect any of the facilities.

Treebrooke Recreation Association is a condominium association in Oakton which owns two tennis courts adjacent to I-66 off of Bushman Drive. The facility is not open to the public; access is restricted to condominium owners and their guests. Minor right-of-way acquisition would occur due to either Build Alternative, but neither Alternative is expected to displace the facility.

Dunn Loring Village Homeowners Association owns the open spaces between the condominiums and I-66 as well as the tennis courts at the western end of the development at the end of Dellway Lane. These facilities are not open to the public; access is restricted to homeowners and their guests. Minor right-of-way acquisition would occur due to Alternative 2B, but is not expected to displace the facility.

7. ECONOMICS

7.1 Methods

Economic data, including employment, income, and the economic base, provide a baseline for analysis of potential impacts. These were compiled from local, regional, and national economic studies and databases and the Virginia Employment Commission (VEC).

7.2 Economic Base

The City of Fairfax, Fairfax County, and Prince William County are all within the greater Washington DC metropolitan area. Washington DC has been a significant contributor to the growth and development of the jurisdictions that surround it. The jurisdictions closest to the District have become almost completely built-out and additional businesses and residents have moved to what was traditionally suburban and rural areas like those within the jurisdictions. This is most immediately displayed in the population data previously presented in Section 3. The economy is based primarily on the Federal Government. Within Fairfax County, the largest employers include the County itself, as well as the US Department of Defense (DOD), government contractors, the Federal Home Loan Mortgage Corporation (Freddie Mac), and George Mason University (VEC, 2015). This is similar within Prince William County, where the largest employers are the County, the DOD, the Morale, Welfare and Recreation division of the Armed Services, but also includes several big box stores such as WalMart, Target, and Wegmans. These latter employers are typical of more suburban areas that house the employees of the metropolitan area. The City of Fairfax has a more varied list of largest employers including a security company, the City, health care entities, car dealers, big box stores, and Dominion Power.

7.3 Employment Patterns

According to the VEC Community Profile for Prince William County, over 62,000 people commute into the county, but over 145,000 commute out – predominantly to Fairfax County and the District. In the City of Fairfax, over 22,000 people commute into the City while over 9,000 commute out. The largest amount of commuting occurs in Fairfax County; almost 353,000 people commute into the County, while over 273,000 commute out of the County. Specific city and county data from the VEC are noted in **Table 9**.

Table 9. Employment Data

LOCATION	TOTAL EMPLOYMENT 2Q, 2014	TOTAL WORKERS* 2013	UNEMPLOYMENT RATE NOV. 2014
City of Fairfax	19,511	12,194	3.5%
Fairfax County	582,315	591,056	3.6%
Prince William County	120,629	214,965	4.1%

Source: Community Profiles, Virginia Employment Commission. *Census Bureau, ACS 2009-2013.

I-66 provides primary access between Fairfax and Prince William counties and therefore between many employees and their places of employment. I-66 and the Orange Line of the Metrorail provide direct access to the District itself.

7.4 Impacts

The No-Build Alternative has no direct impacts on the economic environment. The Build Alternatives do not have direct impacts on the economy through business relocations.

8. RIGHT OF WAY AND RELOCATIONS

8.1 Methods and Assumptions

The acquisition of right of way and the relocation of those displaced would take place in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended (42 USC 4601). This technical report has been prepared based on guidance in VDOT's Right of Way Manual of Instructions (last revised 8/25/2011). Data and information were collected on social demographics, property values, and potential relocations, including individual tax parcel data, within the limits of disturbance of the Build Alternatives. This information was compiled from: county/city tax parcel databases, USGS mapping, aerial photos, the US Census web site, Geographic Information System (GIS) databases, conceptual drawings, and field inspections. All field inspections were conducted from within the public right of way. Given that potential property impacts are only being estimated at this time, local citizens/property owners were not contacted for any data to determine family size, household size, property value, owner/renter status, or any other demographic information. Similarly, individual businesses potentially subject to relocation were not contacted to determine their number of employees. Rather, these data were estimated using the sources noted above.

Potential relocations were determined based on overlaying the Build Alternatives on county/city tax parcel digital data through the use of GIS. The individual parcel data were then compiled and the area that may be acquired with implementation of a Build Alternative was computed. Potential relocations were identified as residential (individuals/families) and non-profit organizations; the latter includes Fairfax County-owned land.

8.2 Census Data and Relocations

This document represents a preliminary examination of the potential relocations and therefore direct contact with individual residents, landowners, and business owners did not occur. Social and economic characteristics of the displaced population are based on US Census data from the 2009-2013 American Community Survey.

Alternative 2A would require the relocation of 15 residences in Fairfax County, and Alternative 2B, 11 residences in Fairfax County.

8.3 Replacement Housing /Business Locations

In Fairfax County, 15 potential displacements would occur. Fairfax County and the City of Fairfax had over 5,000 properties for sale in January 2015. Of these, approximately 200 listings had the phrase I-66 within their description and were in or adjacent to the I-66 corridor. Therefore, there appear to be adequate housing replacement sites within the area based on current real estate listings (www.zillow.com).

There is a wide range of housing available in varying locations and at an array of prices within the respective jurisdictions. VDOT has the ability and, if necessary, is willing to provide housing of last resort, including the purchase of land or dwellings; repair of existing dwellings to meet decent, safe, and sanitary conditions; relocation or remodeling of dwellings purchased by VDOT; or construction of new dwellings. Assurance is given that all displaced families and individuals would be relocated to suitable replacement housing, and that all replacement housing would be fair housing available to all persons without regard to race, color, religion, sex, or national origin and would be within the financial means of the displacees. Each person would be given sufficient time to negotiate for and obtain possession of replacement housing. No residential occupants would be required to move from property needed for the Build

Alternatives until comparable decent, safe, and sanitary replacement dwellings have been made available to them.

The acquisition of right of way and the relocation of displacees would be in accordance with the Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970, as amended. Assurance is given that relocation resources would be available to all residential, business, farm, and nonprofit displacees without discrimination.

All structures being demolished, renovated, and/or removed would be checked for asbestos-containing materials (ACM) and lead-based paint (LBP) prior to demolition. If ACM or LBP are found, in addition to the federal waste-related regulations mentioned above, State regulations 9VAC 20-80-640 for ACM and 9VAC 20-60-261 for LBP would be followed.

REFERENCES

City of Fairfax, Virginia

2012 Comprehensive Plan, City of Fairfax, Virginia. Fairfax, VA.

Fairfax County, Virginia

2014 Policy Plan: The Countywide Policy Element of the Comprehensive Plan for Fairfax County, Virginia. Fairfax, VA.

Metropolitan Washington Council of Governments

2014 Regional Transportation Priorities Plan for the National Capital Region. Washington, DC.

Prince William County

2008 Comprehensive Plan: 2008. Prince William, Virginia. Updates to individual chapters through 2014.

2014 **Prince William County Rural Preservation Study Report.**

Town of Haymarket

2008 Comprehensive Plan: Town of Haymarket, 2008-2013. Haymarket, Virginia.

Town of Vienna

2010 Town of Vienna, Virginia Comprehensive Plan: 2010. Vienna, Virginia.

US Census Bureau

1990 US Decennial Census, 1990. Washington, DC.

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Virginia Employment Commission

2015 Community Profile: City of Fairfax. Richmond, VA.

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Weldon Cooper Center for Public Service

2012 Total Population Projections for Virginia and its Localities. Charlottesville, VA.

The JTHG Partnership

2008 Corridor Management Plan for the Journey through Hallowed Ground Corridor