

7.0 EFFECTS OF THE EVALUATED ALTERNATIVES ON SOCIAL AND ECONOMIC CONDITIONS

7.1 Introduction

This chapter addresses the topics of demographics, economics and housing, community character and neighborhood cohesion, and environmental justice. For each topic, an introduction (including an overview of applicable regulations), data collection and analysis methodology, existing conditions (affected environment) and impacts are presented for the No Build and Build Alternatives.

7.2 Demographics, Economics and Housing

7.2.1 Introduction

Typical impacts of roadway projects on demographics, economics and housing can occur from direct displacements of residences and businesses, reductions in local property tax revenue as a result of right-of-way acquisition of property, and regional economic impacts from construction. Regional economic impacts during the construction period are discussed in Chapter 16: Construction Impacts of the Evaluated Alternatives.

The Uniform Relocation Assistance and Real Property Acquisition Policies Act of 1970 as amended provides guidelines and standards for the acquisition of real property for federally funded projects. In addition, Vermont law for property acquisition for highway projects requires compensation to affected property owners to be based on the “most reasonable use of the property or right in the property, and of the business on the property, and the direct and proximate decrease in the value of the remaining property or right in the property and the business on the property” (19 V.S.A § 501).

7.2.2 Methodology

Data Collection

U.S. Census data use utilized as the primary source of information on socioeconomic conditions in the project area municipalities (Williston, Essex and Essex Junction). The census block groups that intersect the VT 2A and Circ A/B corridors were selected as the socioeconomic study area. Specific types of data collected included:

- Population – Total, Race and Ethnicity, Hispanic Origin, Age, Educational Attainment, Linguistic Isolation
- Housing Stock – Median Housing Value, Median Contract Rent, Occupied and Vacancy
- Income – Median Household Income, Per Capita Income and Percent in Poverty
- Labor Force – Size, Participation Rate and Unemployment Rate
- Journey to Work – Mean Travel Time, Mode of Travel, Major Origins and Destinations
- Employment – Trends and Characteristics, Major Industries and Employers
- Commercial Space – Location of key commercial activity nodes, and trends in occupancy.

Property Acquisition and Related Impacts

The property acquisitions that would be required under each of the Build Alternatives were calculated using GIS parcel mapping and the preliminary engineering right-of-way plans. The property acquisition impacts form the basis for determining the residential and business displacements that would be required under each Build Alternative, as well as impacts to municipal tax base.

The existing uses of properties potentially to be acquired under various alternatives was field-verified, as necessary, to confirm the use and occupancy of residential properties, and the nature of affected businesses, details of tenants, and whether the site is active or derelict. The impact analysis of potential displacements resulting from property acquisition evaluated the availability of suitable sites for relocation in nearby comparable neighborhoods. This information was gathered from real estate publications and listings and through interviews with local real estate professionals.

Direct fiscal impacts were estimated by applying Fiscal Year 2007 tax rates for each jurisdiction to estimates of the value of land and improvements (buildings) to be acquired. The fair-market values for the property acquisitions for each alternative estimated by VTTrans Right-of-Way Section were adjusted to reflect their likely assessed value on each municipality's Grand List based on 2007 estimated Common Level Appraisal (CLA) ratios calculated by the Vermont Department of Taxes (a ratio reflecting the average assessed value to full fair market value in each municipality). Tax rates used in the estimation included municipal, local agreement and highway rates for all properties, and education tax rates for homestead (residential) and non-residential (commercial) properties. Essex municipal taxes (general, capital, and local agreement taxes) were estimated for property acquisitions in Essex Junction. There are no anticipated right-of-way acquisitions in the Essex outside the Village. The estimated tax loss in each jurisdiction was compared to the annual tax revenues in each category to derive a percentage estimate of the overall tax base effects.

7.2.3 Affected Environment

Demographic and economic trends in Chittenden County and Northwest Vermont are described in Chapter 17: Indirect Effects and Cumulative Impacts of the Evaluated Alternatives. This section summarizes key demographic and economic indicators in the VT 2A and Circ A/B corridor Census block groups in comparison to the project area municipalities (Williston, Essex and Essex Junction) and to Chittenden County. More detailed information, including information on employment by industry sector, commuting characteristics, and linguistic isolation is provided in the Appendix M: Socioeconomics Technical Report.

Population and Minorities

Table 7-1 shows the total population and minority population of the VT 2A and Circ A/B corridor block groups, project area municipalities and Chittenden County.

Age Characteristics

Table 7-2 shows the population age characteristics of the VT 2A and Circ A/B corridor block groups, project area municipalities and Chittenden County.

**Table 7-1
Population and Minorities**

	VT 2A Corridor Block Groups		Circ A/B Corridor Block Groups		Williston		Essex		Essex Junction		Chittenden County	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
White Alone	15,664	96.4%	10,881	96.4%	7,455	97.5%	17,763	95.4%	8,209	95.6%	139,446	95.1%
Non-Hispanic White	15,531	95.6%	10,810	95.8%	7,392	96.6%	17,651	94.8%	8,139	94.7%	138,422	94.4%
Hispanic-White	133	0.8%	71	0.6%	63	0.8%	112	0.6%	70	0.8%	1,024	0.7%
Non-White Alone	577	3.6%	402	3.6%	195	2.5%	863	4.6%	382	4.4%	7,125	4.9%
Black or African American Alone	97	0.6%	90	0.8%	38	0.5%	164	0.9%	59	0.7%	1,328	0.9%
American Indian and Alaska Native Alone	32	0.2%	17	0.2%	11	0.1%	36	0.2%	21	0.2%	403	0.3%
Asian Alone	295	1.8%	193	1.7%	92	1.2%	419	2.2%	203	2.4%	2,914	2.0%
Native Hawaiian and Other Pacific Islander	1	0.0%	3	0.0%	1	0.0%	4	0.0%	0	0.0%	32	0.0%
Other*	152	0.9%	99	0.9%	53	0.7%	240	1.3%	99	1.2%	2,448	1.7%
Total	16,241	100.0%	11,283	100.0%	7,650	100.0%	18,626	100.0%	8,591	100.0%	146,571	100.0%
Minority Population Total **	710	4.4%	473	4.2%	258	3.4%	975	5.2%	452	5.3%	8,149	5.6%
Hispanic Population Total	171	1.1%	83	0.7%	73	1.0%	158	0.8%	98	1.1%	1,561	1.1%

*The Other category includes census categories 'some other race alone' and 'two or more races'.

** The total minority population includes all those who have classified themselves as Black or African-American, Hispanic (White and Non-White), Asian Alone, American Indian or Alaskan Native, Native Hawaiian and Other Pacific Islander and Others.

**Table 7-2
Age Characteristics**

	VT 2A Corridor Block Groups		Circ A/B Corridor Block Groups		Williston		Essex		Essex Junction		Chittenden County	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Under 5 Years	1,030	6.3%	763	6.8%	519	6.8%	1,144	6.1%	511	5.9%	8,487	5.8%
5 to 9 Years	1,266	7.8%	1,008	8.9%	650	8.5%	1,455	7.8%	616	7.2%	10,012	6.8%
10 to 14 Years	1,302	8.0%	995	8.8%	595	7.8%	1,633	8.8%	707	8.2%	10,193	7.0%
15 to 17 Years	773	4.8%	548	4.9%	342	4.5%	965	5.2%	431	5.0%	5,821	4.0%
18 to 24 Years	975	6.0%	579	5.1%	317	4.1%	1,271	6.8%	658	7.7%	19,231	13.1%
25 to 34 Years	2,047	12.6%	1,256	11.1%	881	11.5%	2,356	12.6%	1,166	13.6%	21,205	14.5%
35 to 49 Years	4,660	28.7%	3,339	29.6%	2,263	29.6%	5,362	28.8%	2,397	27.9%	37,061	25.3%
50 to 64 Years	2,432	15.0%	1,773	15.7%	1,187	15.5%	2,921	15.7%	1,245	14.5%	20,781	14.2%
65 Years and Above	1,756	10.8%	1,022	9.1%	896	11.7%	1,519	8.2%	860	10.0%	13,780	9.4%
TOTAL	16,241	100.0%	11,283	100.0%	7,650	100.0%	18,626	100.0%	8,591	100.0%	146,571	100.0%

Education

Table 7-3 shows the educational level of the adult residents of the VT 2A and Circ A/B corridor block groups, project area municipalities and Chittenden County.

Housing

Table 7-4 shows the total number of households, occupied households, and of the occupied households, the number that are owner and renter occupied households for the VT and Circ A/B corridor block groups, project area municipalities and Chittenden County.

Income and Poverty

Table 7-5 shows the percentage of residents in poverty, per capita income and median household income for the VT and Circ A/B corridor block groups, project area municipalities and Chittenden County.

7.2.4 Impacts and Mitigation

No Build Alternative

Household and employment growth expected in the VT 2A and Circ A/B corridor study areas was estimated for 2030 using the Land Use Allocation Module of the Chittenden County Metropolitan Planning Organization (CCMPO) Transportation Model. Results for the estimation of future No Build household and employment growth in the VT 2A and Circ A/B corridor TAZs is provided in Section 6.2.4. Modeling methodology and results are described in more detail in Chapter 17.0: *Indirect Effects and Cumulative Impacts of the Evaluated Alternatives*.

Build Alternatives

VT 2A Alternatives

Full Property Acquisitions

As shown in Table 7-6, the VT 2A Alternatives would require the full acquisition of one to six residential units and four to five small businesses.

Based on the average household size of residential units in the VT 2A corridor study area, the acquisition of residential units under the VT 2A alternatives would result in the displacement of approximately:

- Eight persons under Alternative 2
- Fifteen persons under Alternative 3
- Three persons under Alternative 22

Although housing supply and vacancy rates in Chittenden County are substantially lower than the state, regional, and national averages, the market is capable of supporting the relocation of the affected households within the project area municipalities, based on housing availability and cost. This is further discussed below:

**Table 7-3
Education**

	VT 2A Corridor Block Groups		Circ A/B Corridor Block Groups		Williston		Essex		Essex Junction		Chittenden County	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
No Schooling Completed	5	0.0%	5	0.1%	5	0.1%	8	0.1%	0	0.0%	273	0.3%
Less than Ninth Grade	217	2.0%	89	1.2%	101	1.9%	181	1.5%	116	2.1%	2,961	3.2%
9th to 12th Grade	625	5.7%	305	4.2%	319	6.1%	513	4.2%	306	5.4%	5,459	5.9%
High School Graduate	2,352	21.6%	1,376	18.8%	1,205	23.0%	2,374	19.6%	1,147	20.3%	21,784	23.5%
Some College, No Degree	1,892	17.4%	1,104	15.1%	698	13.3%	2,278	18.8%	1,194	21.1%	15,481	16.7%
Associate Degree	1,262	11.6%	790	10.8%	580	11.1%	1,226	10.1%	682	12.1%	8,555	9.2%
Bachelor's Degree	2,765	25.4%	2,163	29.5%	1,342	25.6%	3,460	28.6%	1,423	25.2%	23,391	25.2%
Graduate or Professional Degree	1,769	16.2%	1,493	20.4%	982	18.8%	2,064	17.1%	787	13.9%	14,747	15.9%
TOTAL	10,887	100.0%	7,325	100.0%	5,232	100.0%	12,104	100.0%	5,655	100.0%	92,651	100.0%

**Table 7-4
Housing**

	VT 2A Corridor Block Groups		Circ A/B Corridor Block Groups		Williston		Essex		Essex Junction		Chittenden County	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Total Housing Units	6,537	100.0%	4,236	100.0%	3,036	100.0%	7,170	100.0%	3,501	100.0%	58,864	100.0%
Occupied	6,330	96.8%	4,109	97.0%	2,921	96.2%	7,013	97.8%	3,409	97.4%	56,452	95.9%
Vacant	207	3.2%	127	3.0%	115	3.8%	157	2.2%	92	2.6%	2,412	4.1%
Occupied Housing Units	6,330	100.0%	4,109	100.0%	2,921	100.0%	7,013	100.0%	3,409	100.0%	56,452	100.0%
Owner Occupied	4,899	77.4%	3,518	85.6%	2,478	84.8%	5,410	77.1%	2,421	71.0%	37,291	66.1%
Renter Occupied	1,431	22.6%	591	14.4%	443	15.2%	1,603	22.9%	988	29.0%	19,161	33.9%

**Table 7-5
Income and Poverty**

	VT 2A Corridor Block Groups		Circ A/B Corridor Block Groups		Williston		Essex		Essex Junction		Chittenden County	
	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent	Number	Percent
Persons Answering Question on Poverty	16,001		11,031		7,570		18,350		8,431		12,267	
Percentage below Poverty	362	2.3%	155	1.4%	114	1.5%	484	2.6%	248	2.9%	139,438	8.8%
Per-Capita Income (\$) 1999	\$26,787		\$30,238		\$29,757		\$25,854		\$24,142		\$23,501	
Median Household Income (\$) (1999) ***	\$58,719		\$66,158		\$61,467		\$58,441		\$53,444		\$47,673	

*** The median household income was calculated by taking the weighted average of the median incomes of all the census block groups in the study area.

**Table 7-6
VT 2A Alternatives
Full Acquisitions**

Parcel ID	Address	Acres	Number of Residential Units	Number of Businesses	Number of Employees	Property Description	Full Acquisition under Alternative		
							2	3	22
03:102:059:000	1136 Essex Road	0.54	1	0	0	Residence	X	X	X
03:102:111:000	500 Essex Road	1.80	0	1	10	Gas Station and Deli	X	X	X
10:292:120:00	3 Maple Street, Essex Junction	0.41	0	1	3	Commercial	X	X	X
03:102:057:000	VT 2A and Industrial Avenue, Williston	0.64	0	0	0	Vacant	X	X	X
03:102:080:000	1239 Essex Road, Williston	0.70	1			Residence	X		
10:210800:00	106 Park Street, Essex Junction	0.80	1			Residence	X	X	
08:102:001:000	2200 Essex Road, Williston	0.50		1	5	Gas Station	X		
08:102:008:000	2033 Essex Road, Williston	1.10		1	10	Restaurant	X		X
10:210:730:00	76 Park Street, Essex Junction	0.23	1			Residence		X	
10:210:690:00	70 Park Street Essex Junction	0.16	1			Residence		X	
10:210:680:00	68 Park Street, Essex Junction	0.22	1			Residence		X	
10:210:670:00	54 Park Street	0.17	1			Residence		X	
10:292:130:00	1 Maple Street, Essex Junction	0.20		1	3	Gas Station		X	X
10:290:470:00	1 Main Street, Essex Junction	0.19		1	3	Gas Station		X	X
03:102:055:000	VT 2A and Industrial Avenue, Williston	0.62				Vacant		X	X
	Total for Alternative 2	6.49	3	4	28	Total Number of Full Acquisitions	8	12	8
	Total for Alternative 3	5.98	6	4	19				
	Total for Alternative 22	5.50	1	5	29				

- *Housing Availability* – At the time of the U.S. Census 2000, there were 364 vacant housing units in Williston, Essex, and Essex Junction, with 108 vacant while actively offered for sale or rent. In 2005 there were 450 units transferred through sale accounting for four percent of the owner-occupied housing stock.
- *Housing Cost* – In the study area, most of the dwelling units were renting for \$470 to \$900 at the time of the U.S. Census 2000. The data also indicate that the median housing values of the owner occupied units along the VT 2A corridor Census block groups ranged from \$117,000 to \$196,000. Housing costs in the VT 2A corridor study area are comparable to those in Williston, Essex and Essex Junction. In 2000, median rents for the VT 2A corridor study area were three percent higher than the median rents for the three municipalities, and median housing values were seven percent lower.

With the potential for comparable housing in the area to absorb the affected households and the limited number of households affected, the full property acquisitions under the VT 2A Alternatives would not alter the demographic or socioeconomic characteristics of the existing population in the area.

The acquisition of businesses under the VT 2A Alternatives is unlikely to have broader impacts on the local employment base or industry composition because the businesses account for less than one percent of employment within the VT 2A corridor study area, the overall number of displacement is limited, and the businesses are in industries (auto service, food service, retail) that are currently well represented in the corridor study area. Given future land use plans for the immediate area (i.e., infill, grid streets, mixed use with auto-oriented uses at the gateway areas), it is likely that suitable locations will be available for relocation.

Partial Property Acquisitions

Table 7-7 summarizes the partial property acquisitions under the VT 2A Alternatives by the use of each property. These partial property acquisitions would not require the relocation of residences or businesses.

**Table 7-7
VT 2A Alternatives
Partial Acquisitions**

Alternative	Residential	Commercial	Manufacturing	Community	Vacant	Total
2	111	29	11	3	1	155
3	108	35	10	3	1	157
22	43	23	8	2	1	77

Fiscal Impacts

Table 7-8 summarizes the effect of the property acquisitions required under the VT 2A Alternatives on the tax base of the project area municipalities. The effect would be small—amounting to a decrease of no more than four-tenths of one percent to annual property tax revenues in each of the municipalities. These losses in tax revenues would be small enough to be absorbed in annual budgets without creating substantial upward pressure on tax rates.

**Table 7-8
VT 2A Alternatives
Fiscal Impacts**

Alternative	Williston				Essex Junction				Essex	
	Municipal Tax Impact	Percent of Grand List Revenues	Education Tax Impact	Percent of Grand List Revenues	Municipal Tax Impact	Percent of Grand List Revenues	Education Tax Impact	Percent of Grand List Revenues	Municipal Tax Impact	Percent of Grand List Revenues
2	\$9,489	0.4%	\$90,649	0.4%	\$3,057	0.1%	\$17,203	0.1%	\$3,928	0.1%
3	\$8,054	0.4%	\$76,940	0.4%	\$9,316	0.4%	\$53,120	0.4%	\$11,973	0.4%
22	\$7,904	0.4%	\$75,493	0.4%	\$3,961	0.2%	\$21,764	0.1%	\$5,091	0.2%

Circ A/B Alternatives

Full Property Acquisitions

In the Circ A/B corridor, Alternative 16a lies within the existing right-of-way and would require no additional property acquisition. The additional right-of-way needed under Alternative 16b would require the full acquisition of one residential parcel and one vacant parcel. Alternative 16c would also require the acquisition of one vacant parcel. The full property acquisitions under Alternatives 16b and 16c would not impact the socioeconomic character of the area. Based on housing availability and cost (see discussion under VT 2A Alternatives full property acquisitions), the single affected residence under Alternative 16b could be relocated in the project area municipalities.

In the VT 2A corridor, the VT 2A spot improvements would require the full acquisition of one vacant parcel.

Partial Property Acquisitions

In the Circ A/B corridor, Alternatives 16b, 16c and 17 would require five, four and three partial property takings, respectively, beyond the existing right-of-way.

In the VT 2A corridor, seven partial acquisitions would be required for the VT 2A spot improvements.

Fiscal Impacts

Table 7-9 summarizes the effect of the property acquisitions required under the Circ A/B Alternatives on the tax base of Williston (the only municipality where property acquisition would occur). The effect would be small—amounting to a decrease of no more than one-tenth of one percent to annual property tax revenues in Williston. These losses in tax revenues would be small enough to be absorbed in annual budgets without creating substantial upward pressure on tax rates.

**Table 7-9
Circ A/B Alternatives
Fiscal Impacts**

Alternative	Williston			
	Municipal Tax Impact	Percent of Grand List Revenues	Education Tax Impact	Percent of Grand List Revenues
16a	\$260	<0.1%	\$2,489	<0.1%
16b	\$2,538	0.1%	\$24,308	0.1%
16c	\$1,649	0.1%	\$15,792	0.1%
17	\$214	<0.1%	\$2,047	<0.1%

Hybrid Alternatives

Full and Partial Property Acquisitions

In the VT 2A corridor, the Hybrid Alternatives would have the impacts related to full and partial property acquisitions (with Alternatives 18, 19 and 23 corresponding to Alternatives 2, 3 and 22 respectively).

In the Circ A/B corridor, the Circ Street would require three partial property acquisitions beyond the existing right-of-way. These acquisitions would not have an impact on socioeconomic conditions.

Table 7-10 summarizes the total fiscal impact of the Hybrid Alternatives. The effect would be small—amounting to a decrease of no more than five-tenths of one percent to annual property tax revenues in each of the municipalities. These losses in tax revenues would be small enough to be absorbed in annual budgets without creating substantial upward pressure on tax rates.

7.3 Community Character and Neighborhood Cohesion

7.3.1 Introduction

A community is defined as a group of people that share common behavior patterns, such as social interactions, use of local facilities, participation in local organizations, shared attitudes, and identification with and commitment to a particular area. Other characteristics of communities may also include a common religion, ethnicity, or income level (FHWA, 1996).

Transportation improvements may affect community character through land acquisition that eliminates or reduces the size of an existing neighborhood. Roadways may be a barrier between neighborhoods if there are not adequate accommodations for pedestrian and bicycle crossings. The environmental effects of transportation improvements (e.g. noise) may also affect community character. Finally, transportation improvements may bring benefits of increased mobility, enhanced access, visibility, and improved non-motorized circulation.

7.3.2 Methodology

Neighborhood cohesion was evaluated by identifying residential neighborhoods within the project area; profiling the characteristics of each neighborhood through available data sources

**Table 7-10
Hybrid Alternatives
Fiscal Impacts**

Alternative	Williston				Essex Junction				Essex	
	Municipal Tax Impact	Percent of Grand List Revenues	Education Tax Impact	Percent of Grand List Revenues	Municipal Tax Impact	Percent of Grand List Revenues	Education Tax Impact	Percent of Grand List Revenues	Municipal Tax Impact	Percent of Grand List Revenues
18	\$9,702	0.5%	\$92,696	0.5%	\$3,057	0.1%	\$17,203	0.1%	\$3,928	0.1%
19	\$8,268	0.4%	\$78,987	0.4%	\$9,316	0.4%	\$53,120	0.4%	\$11,973	0.4%
23	\$8,118	0.4%	\$77,540	0.4%	\$3,961	0.2%	\$21,764	0.1%	\$5,091	0.2%

(i.e., U.S. Census block group data); and assessing the level of neighborhood cohesion within those neighborhoods.

Classification of a residential area as a neighborhood is based on patterns of development characterized by predominant housing types, and the physical configuration of housing into subdivisions. Profiling the demographic characteristics of the neighborhoods involved analyzing percentage of minority persons within the neighborhoods, percent poverty, range of incomes, dominant land uses, and predominant community facilities. The level of cohesion within a neighborhood is exhibited by age of the neighborhood and its housing stock; the level of involvement of residents and businesses in local political issues; and the extent to which residents and businesses have organized to address common concerns. Data gathered from regional and municipal plans, and public involvement was supplemented by consultations, as necessary with municipal planning officials and neighborhood associations.

7.3.3 Affected Environment

VT 2A Corridor

Williston Neighborhoods

Between I-89 and O'Brien Court, there are no formal neighborhoods or neighborhood associations. The land use in this area is predominantly commercial. On the west side of VT 2A, from O'Brien Court to Industrial Avenue there is an established residential neighborhood. Based on U.S. Census data, a majority of the housing units in this neighborhood were built between 1972 and 1974. Nearly ninety percent of the residents are owner-occupied and the vacancy rate in the block groups that encompass this area was around seven percent. This neighborhood has experienced a moderate turnover in population. Approximately sixty percent of the residents responding to the U.S. Census 2000 resided in the same homes which they had occupied in 1995. Per capita incomes of residents in this area are reported to be \$26,759. The median household income in this neighborhood is \$61,944.

East of VT 2A, from O'Brien Court to Industrial Avenue there are three residential neighborhoods: Chelsea Woods, Meadow Run, and Forest Run. Also known as Chelsea Commons, these condominium developments were built between 1992 and 1997. Census data for these block groups indicate that nearly fifty percent of the households are comprised of the same residents as in 1995.

Between Industrial Avenue and the Winooski River, there are numerous community facilities located to the east of VT 2A. These community facilities include the Christ Memorial Church and New England Theological Seminary, the Church of the Nazarene, Trinity Baptist Church, Little Lambs Preschool and the Trinity Baptist School. Residential neighborhoods in this area include single family homes located west of VT 2A in the vicinity of Bittersweet Circle and the neighborhood of Onion River. Two other neighborhoods identified east of VT 2A and north of Morgan Parkway include the condominium developments Eastview and Mountain View Estates. Based on U.S. Census 2000 figures, per capita incomes in the vicinity of these neighborhoods were estimated to be \$29,688. Median household incomes in these neighborhoods were \$60,383. Nearly ninety-seven percent of the housing units were reported as occupied and nearly fifty percent of the residents resided in the same house in 1995.

Areas east of VT 2A, between Industrial Avenue and River Cove Road are characterized by older single family homes. Per capita incomes were \$26,759 and median household incomes were \$61,944 in the Census block groups in this area. Nearly ninety percent of the housing

units were reported as owner-occupied and the median year of housing construction in this segment is estimated to be 1974. The rate of resident turnover is considered to be moderate. Nearly sixty percent of the resident population has lived in the same housing unit since 1995.

Essex Junction Neighborhoods

Between the Winooski River and Five Corners, the VT 2A corridor study area contains the Park Street Corridor and Village Center neighborhoods in Essex Junction.

The residential neighborhoods south of South Street/River Street are characterized by homes with a median year of construction of 1973. Nearly ninety-one percent of the housing units in the block groups in this area were reported as occupied and three-quarters of the units were owner occupied. Per capita incomes and median household incomes were reported as \$28,792 and \$56,806, respectively.

On Franklin Street on the east side of VT 2A are the New England Culinary Institute facilities and housing that will be part of the Riverside in the Village Development Project. The project will add an additional 265 apartments and condominiums to the area, of which eighty apartment units will be for New England Culinary Institute students and thirty-five units of senior housing.

The area of VT 2A around the Five Corners intersection is part of the Village Center neighborhood in Essex Junction. Land uses are predominantly characterized by commercial and retail activity. Some residential uses are observed bordering the VT 2A corridor study area along Maple and Pearl Streets.

The median year of housing construction for the residential units in the census block group between Maple and River Streets is reported as 1948, indicating the presence of residential units along this segment of the corridor for nearly sixty years. Nearly forty-six percent of the residents have lived in the same residential unit since 1995, indicating moderate levels of turnover in resident population. Per capita incomes and median household incomes of residents in this area were reported as \$19,118 and \$37,500, respectively.

There is a residential neighborhood to the west of VT 2A between South Street and Pearl Street. This residential neighborhood is characterized by single family homes with a median home construction year of 1958. Most of the homes are owner-occupied, with nearly forty-seven percent of the residents living in the same housing unit since 1995. Per capita incomes were \$21,850 and median household incomes were \$47,298 in the block group in this area. Just fewer than forty-seven percent of the residents have lived in the same residential unit since 1995, indicating modest levels of turnover in resident population.

The residential neighborhood north of Pearl Street between Lincoln and Summit Streets is characterized by single family units built in the early 1950s. Nearly sixty-five percent of the housing units are owner-occupied. Per capita incomes in this portion of the VT 2A corridor study area were \$20,235 and median household incomes were (\$48,036). Nearly sixty percent of the resident population has resided in the same dwelling unit since 1995, indicating modest levels of turnover in the area's population.

Circ A/B Corridor

Williston Neighborhoods

Between I-89 and the crossing of the Williston Alternative Transportation Path (WATP) near the Allen Brook School, there are two residential neighborhoods. The Taft Farm residential subdivision, located west of the corridor, and the South Ridge subdivision, located east of the corridor, are characterized by single family homes. Median household incomes within the block group in which these neighborhoods are located were reported to be \$63,394. Per capita incomes of the residents in the block group were reported to be \$30,495. Nearly fifty percent of the residents in this block group were reported as living in the same dwelling unit since 1995, indicating a moderate level of turnover in the area's population.

From the Williston Alternative Transportation Path (WATP) to Mountain View Road there are two residential neighborhoods, the Brennan Woods and Coyote Run subdivisions. Median household incomes within the block group in which these neighborhoods are located were \$60,383 and median per capita incomes were \$29,688. Nearly fifty percent of the residents were living in the same dwelling unit since 1995, indicating a moderate level of turnover in the area's population.

North of Mountain View Road to the Winooski River, the only residential neighborhood is a subdivision along Ledgewood Drive. Median household incomes within the block group in which this neighborhood is located were \$60,383 and median per capita incomes were \$29,688. Nearly fifty percent of the residents in this block group were reported as living in the same dwelling unit since 1995, indicating a moderate level of turnover in the area's population.

Essex Neighborhoods

North of the Winooski River, a residential neighborhood is located to the west of VT 289. As reported by the U.S. Census 2000, the larger block group encompassing these single family home residential subdivisions reported median household incomes of \$74,643 and per capita incomes of \$32,582. Nearly fifty-four percent of the residents in this block group were reported as living in the same dwelling unit since 1995, indicating a moderate level of turnover in the area's population.

7.3.4 Impacts and Mitigation

No Build Alternative

As indicated by the planning documents, Williston, Essex and Essex Junction expect future community character in the VT 2A and Circ A/B corridor study areas to be largely consistent with patterns observed today. Each community expects continued infill development and redevelopment along the VT 2A corridor and seeks in its land use plans to encourage mixed use development, pedestrian connections, grid street patterns, and bulk and setbacks consistent with existing structures. Along the Circ A/B corridor, residential development is to be concentrated in an extension of the Williston village center, and in vacant unconserved lands south of Mountain View Road. North of Mountain View Road much of the land is dedicated to utility and landfill uses.

As newly developed neighborhoods become established and connections between commercial and residential areas expand, it is anticipated that current levels of neighborhood cohesion in the VT 2A and Circ A/B corridors will strengthen.

VT 2A Alternatives

Impacts Related to Property Acquisitions

The VT 2A Alternatives would require the acquisition of one to six residential units and four to five businesses (See Table 7-6). These full property acquisitions are not concentrated in one location and would not result in a substantial reduction in population or diminishment of commercial uses that integral to the functioning of the community. Given the number and uses to be affected, there are opportunities for relocation within the project area.

The extent of partial property acquisitions under Alternatives 2 and 3, although individually small, could result in alteration of the character of the landscape in the areas to the north of Blair Park in Williston and along the Park Street corridor in Essex Junction. Acquisitions that result in the shortening of front yards and setbacks may result in alteration of the appearance of properties, the utility of the space, and the loss of shade trees.

Alternative 22 would also require property acquisitions in residential areas north of Blair Park in Williston, but would require fewer acquisitions along the Park Street corridor in Essex Junction.

Alternatives 3 and 22 would require more property acquisitions at the Five Corners intersection in Essex Junction than would Alternative 2.

Impacts Related to Roadway Width

The potential for increased traffic and speed, and the four-lane width of the roadway under the VT 2A Alternatives, could make crossing VT 2A by foot or bicycle more difficult, discouraging connectivity between neighborhoods and community facilities on opposite sides of the roadway. Public comments have also expressed concern that increased traffic and a four-lane profile would be incompatible with the character of these residential and village areas.

The VT 2A Alternatives would all involve roadway widening in Williston. Alternative 22 would involve roadway widening in Williston, but not in Essex Junction. The width of the roadway under Alternative 22 would not alter the appearance of properties or remove shade trees in Essex Junction, except at the Five Corners intersection to accommodate a roundabout.

Impacts Related to Roundabouts

During Design Workshops, members of the public were concerned that it could become more difficult for pedestrians and bicycles to cross the roundabout intersections proposed under Alternatives 3 and 22, because of the continuous nature of traffic flow at roundabout intersections (compared to the defined crossing sequence at signalized intersections) and the potential for vehicles to not yield to pedestrians waiting to cross the roundabout. The FHWA Report: *Roundabouts: An Informational Guide* provides design guidelines to maintain pedestrian mobility across roundabout intersections that have been incorporated into the design of Alternatives 3 and 22 to minimize potential effects on pedestrian mobility. Pedestrian crossings at roundabout intersections for the proposed project are located before the point where the roadway approach flares to meet the roundabout. This minimizes the distance pedestrians have to cross. In addition, splitter islands provide refuge for pedestrians to cross one direction of traffic at a time.

A recent comprehensive study of roundabouts in the United States concludes that roundabouts do not pose a substantial safety problem for pedestrians and bicyclists (NCHRP, 2007).

However, the study notes that if vehicle and/or pedestrian traffic increases over time, that the ability of pedestrians and bicyclists to use the roundabout may be compromised. The study also concludes that multilane roundabouts in particular may need additional measures to improve vehicle, pedestrian and bicycle behaviors, such as changes in design, operations, enforcement and education.¹³

In addition to potential drawbacks related to pedestrian and bicycle movement, roundabouts also have several potential advantages that can enhance community character in residential areas. Roundabout geometry is designed to calm traffic and slow vehicle movements through intersections. Roundabouts can also provide an attractive visual focus in residential and commercial areas through various landscaping options for the roundabout center island (FHWA, 2000).

Circ A/B Alternatives

Impacts Related to Property Acquisitions

Alternative 16b would require the acquisition of one residential unit to accommodate an interchange between the Circ A/B Limited Access Highway with US 2. The acquisition of a single residential unit would not have an effect on overall community character and cohesion. Alternatives 16a, 16b and 17 would not involve any full acquisitions that would require the relocation of residences or businesses. The limited number of partial property acquisitions under Alternatives 16b, 16c and 17 would not have an effect on community character.

Impacts Related to Physical Barriers

The Circ A/B Alternatives would not divide any existing neighborhoods. Accommodations would be made for pedestrian and bicycle connectivity between neighborhoods, including an overpass to carry the existing Williston Alternative Transportation Path (WATP) over the roadway.

Hybrid Alternatives

In the VT 2A corridor, Alternatives 18, 19 and 23 would have the same impacts as Alternatives 2, 3 and 22, respectively.

In the Circ A/B corridor, the Circ Street would not involve any full acquisitions that would require the relocation of residences or businesses. The limited number of partial property acquisitions in the Circ A/B corridor under the Hybrid Alternatives would not have an effect on community character.

The Circ Street would not divide any existing neighborhoods. The Circ Street would involve the construction of a multi-use path on the left side of the roadway from US 2 to Mountain View Road. The existing Williston Alternative Transportation Path (WATP) near the Allen Brook School would cross the Circ Street at-grade, maintaining pedestrian and bicycle connectivity between neighborhoods.

¹³ NCHRP Report 572: Roundabouts in the United States, 2007.

7.4 Environmental Justice

7.4.1 Introduction

Executive Order 12898, *Federal Actions to Address Environmental Justice in Minority Populations and Low-Income Populations*, signed by President Clinton on February 11, 1994, directs federal agencies to take the appropriate and necessary steps to identify and address disproportionately high and adverse effects of federal projects on the health or environment of minority and low-income populations to the greatest extent practicable and permitted by law. The fundamental principles of Environmental Justice are to:

- Ensure the full and fair participation by all potentially affected communities in the transportation decision-making process;
- Prevent the denial of, reduction in, or significant delay in the receipt of benefits by minority and low-income populations; and,
- Avoid, minimize or mitigate disproportionately high and adverse human health and environmental effects, including social and economic effects, on minority populations and low-income populations.

To address Executive Order 12898, U.S. DOT *Order to Address Environmental Justice in Minority Populations and Low-Income Population* and FHWA Order 6640.23 *FHWA Actions to Address Environmental Justice in Minority Populations and Low-Income Populations* requires a determination on whether proposed projects would have disproportionately high and adverse effects on minority and low-income populations. “Disproportionately high and adverse effects” are adverse effects predominantly borne by a minority or low-income population or suffered by the minority or low-income population and would be appreciably more severe or greater in magnitude than the adverse effects that would be suffered by the non-minority or non-low-income population.

For purposes of environmental justice, the DOT and FHWA orders define “minority populations” as those persons identifying as: Hispanic or Latino, Black or African-American, American Indian and Alaskan Native, Asian, and Native Hawaiian and other Pacific Islander. “Low-income” is defined as persons with household income at or below the federally-defined poverty threshold

7.4.2 Methodology

Addressing environmental justice in NEPA documents entails procedural considerations as well as technical considerations. Procedural considerations primarily involve reaching out to ensure that minority and low-income populations are effectively engaged in public involvement processes. Public meetings related to the EIS process were held in three locations to encourage attendance: one meeting in the core area comprising the cities of Burlington, South Burlington and Winooski; one meeting in the Circ-Williston Project Area; and one meeting at an outer-tier community such as Hinesburg, Richmond or Jericho/Underhill. Public outreach activities are summarized in Chapter 22 of the DEIS.

Identification of Minority and Low-Income Populations

Those communities and neighborhoods with a meaningfully greater population of minority and low-income residents were identified through use of 2000 U.S Census block (race) and block group (income) data in comparison to the proportion of minority and low-income populations in Chittenden County. Data on race and ethnicity is collected and reported by the U.S. Census at the most local level of geography, the Census Block. Data on income, housing, and other

indicators is reported for Census block groups, larger areas comprised of several Census blocks. The study area for the analysis was defined as the census block groups located within one quarter-mile of the centerline of each alternative corridor, and one half-mile around proposed interchanges. In locations where census geographic units are too large to identify small areas of minority or low-income population concentration, information gathered through the public involvement program and/or discussions with local planners supplements the census data analyses.

Assessment of Impacts and Benefits to Minority and Low-Income Populations

The environmental impacts of each Build Alternative, as identified through the analyses performed for other sections of the DEIS were reviewed to determine whether these impacts would be adverse. For any environmental subject areas in which impacts could be characterized as adverse, it was assessed whether the impacts would be appreciably more severe and greater in magnitude than the adverse impacts on non-minority and/or non-low-income populations.

7.4.3 Affected Environment

VT 2A Corridor

Minority Populations

Of the 102 census blocks along the VT 2A corridor study area, fifteen census blocks exhibited a higher percentage of minority residents than the County as a whole. These blocks are summarized in Table 7-11. Among the high minority census blocks, three blocks reported more than ten minority persons. Figures illustrating the percent minority populations by census block are provided in Appendix M, Socioeconomics Technical Report.

Low-Income Populations

None of the VT 2A corridor study area block groups contain poverty levels higher than those for Chittenden County as a whole. Figures illustrating the poverty status by census block group are provided in Appendix M, Socioeconomics Technical Report.

Circ A/B Corridor

Minority Populations

Of the fifty-three census blocks identified along the Circ A/B corridor study area, ten Census blocks exhibited a higher percentage of minority residents than Chittenden County as a whole (see Table 7-12). Among the high minority census blocks identified, four blocks reported more than ten minority persons. Figures illustrating the percent minority populations by census block are provided in Appendix M, Socioeconomics Technical Report.

Low-Income Populations

None of the Circ A/B corridor study area block groups contain poverty levels higher than those for Chittenden County as a whole. Figures illustrating the poverty status by census block group are provided in Appendix M, Socioeconomics Technical Report.

**Table 7-11
VT 2A Corridor
Census Blocks with Percentages of Minority Persons
Greater than that of Chittenden County**

Block	Block Group	Census Tract	Total Population	Minority Persons	Percentage of Minority Persons
4001	4	26.01	48	6	12.5%
4018	4	26.01	110	7	6.4%
4020	4	26.01	18	5	27.8%
6016	6	26.01	28	4	14.3%
6020	6	26.01	26	2	7.7%
1018	1	26.02	102	9	8.8%
5006	5	26.02	18	2	11.1%
5010	5	26.02	8	1	12.5%
1029	1	31	75	11	14.7%
2003	2	31	74	10	13.5%
2009	2	31	55	5	9.1%
2018	2	31	265	20	7.5%
2020	2	31	68	5	7.4%
2037	2	31	5	4	80.0%
2047	2	31	12	1	8.3%

Source: U.S. Department of Commerce, Bureau of Census, Census of Population and Housing, 2000.

**Table 7-12
Circ A/B Corridor
Census Blocks with Percentages of Minority Persons
Greater than that of Chittenden County**

Block	Block Group	Census Tract	Total Population	Minority Persons	Percentage of Minority Persons
3011	3	27.01	471	39	8.3%
3023	3	27.01	54	6	11.1%
3029	3	27.01	11	1	9.1%
3033	3	27.01	48	3	6.3%
1024	1	31	39	3	7.7%
1035	1	31	252	17	6.7%
1040	1	31	46	4	8.7%
1063	1	31	116	12	10.3%
1070	1	31	16	4	25.0%
1071	1	31	355	23	6.5%

Source: U.S. Department of Commerce, Bureau of Census, Census of Population and Housing, 2000.

7.4.4 Impacts and Mitigation

No Build Alternative

Projections of future demographic and employment conditions in the VT 2A and Circ A/B corridor study areas were made through the use of the Land Use Allocation Module (LUAM) component of the Chittenden County Transportation Model. However, LUAM does not provide

the capability to estimate the future location and characteristics of low-income and minority communities. Because future conditions for environmental justice evaluations are often subject to considerable uncertainty, recommended practice calls for evaluating potential impacts based on existing conditions and established data sets such as the U.S. Census.¹⁴

VT 2A Alternatives

Based on the U.S. Census 2000 data and the location of the housing units within the VT 2A corridor study area, none of the residential units that would be relocated by the VT 2A Alternatives would be located within communities of concern for environmental justice purposes. The percentage of minority and low income residents in the census blocks that could be affected is lower than the proportion of such residents in Chittenden County as a whole.

Circ A/B Alternatives

Under Alternative 16b, one residential unit would be acquired for right-of-way acquisition. This housing unit is not located in a community of concern for environmental justice purposes. The percentage of minority and low income residents in the census block that could be affected is lower than the proportion of such residents in Chittenden County as a whole.

For Alternatives 16a, 16c and 17, no households or businesses would be relocated and therefore no impacts to communities of concern associated with the relocation of households or businesses.

Hybrid Alternatives

In the VT 2A corridor, Alternatives 18, 19 and 23 would result in residential and business relocations identical to those under Alternatives 2, 3 and 22, respectively. None of the displacements would be located in a community of concern for environmental justice.

For the Circ Street portion of the Hybrid Alternatives, there would be no household or business relocations, and therefore no impacts to communities of concern associated with the displacement of households or businesses.

¹⁴ FHWA Environmental Justice guidance: <http://www.fhwa.dot.gov/environment/ejustice/facts/index.htm>