

CHAPTER 2 Purpose & Need

2.1 Introduction

This chapter documents the purpose and need for transportation improvements within the Burlington-Essex corridor. It recognizes that there is an interconnection of land use, economic and transportation issues that are critical to the future of Chittenden County.

2.2 Corridor Characteristics

The study area encompasses portions of the City of Burlington, and the Towns of Winooski, Essex, Essex Junction and Colchester. It includes some of the most densely populated areas of Chittenden County. The corridor is critical to the county's social and economic health, as the corridor towns include 49% of the population of Chittenden County, and 57% of the county's employment.

Centered on VT 15, the corridor provides a critical east-west transportation spine which acts as an intraregional connector, linking some of Vermont's most populated areas with its largest employers and institutions. The corridor takes in much of Burlington, including the central business district, the North End, Winooski, the well-developed corridor along VT 15, and Essex Junction. The University of Vermont campus, two Fletcher Allen Health Care Campuses, and IBM are all located within the corridor. The corridor also includes two significant special-use facilities: the Camp Johnson military base and the Champlain Valley Exposition Center.

2.2.1 Land use, Demographics, and Economic Growth

According to the *Economic and Demographic Forecast* prepared for the Chittenden County Metropolitan Planning Organization (CCMPO) and Chittenden County Regional Planning Commission (CCRPC), future economic growth will be focused on the central core area centered on Burlington, with population growth expanding outwards. As population growth extends outward, these communities become more residential in nature and employment is concentrated in the central core and secondary towns.¹ The major roadways in the area - I-89, U.S. 7, VT 15 and Route 100 - contribute to this pattern of population growth. According to the *Economic and Demographic Forecast*, the fastest population growth, greatest population density, and highest concentration of jobs follow these major routes.

Overall, the population in Chittenden County is expected to grow at an average rate of 1.78% per year during the period of 2000 to 2025. Population growth in the core cities of Burlington and Winooski during the same period is expected to be much slower than the county average, at 0.20% and 0.38% per year respectively. Population growth in Colchester

¹ *Economic and Demographic Forecast, Northwest Vermont and Chittenden County 2000 to 2035 and Beyond*, Prepared for the Chittenden County Regional Planning Commission and Metropolitan Planning Organization by Economic & Policy Resources, Inc., September 2000.

and Essex (including Essex Junction) during the same period however, is expected to be higher than the county average, at 2.44% and 2.53% per year respectively.²

Employment in Chittenden County is expected to grow by 54 % or 66,650 jobs in the period of 2000 – 2025 for a total of 190,583 jobs. In 1998, the Burlington area accounted for 62% of all jobs in northwest Vermont. This trend of job concentration is expected to continue in the future.

2.2.2 Existing Transportation Facilities

The principle transportation corridors in and around the study area are I-89, U.S. 2/7, and VT 15, 2A, 116, and 117. I-89 provides the major east-west connection and single largest north-south connection in the county. VT 7 provides an additional major north-south corridor, with VT 2A and 116 acting as secondary connectors. East-west corridors in the study area are comprised of VT 15, U.S. 2, and VT 117. The confluence of VT 15, 2A, and 117 at Five Corners in the Village of Essex Junction is an important regional highway node and the busiest intersection in Vermont.

The corridor is served by the Chittenden County Transportation Authority (CCTA). CCTA provides fixed route bus service on 12 routes, all of which serve some portion of the corridor, as the transit authority's central transfer hub is located within the corridor on Cherry Street in Burlington. CCTA provides bus service in all of the towns in the corridor, as well as a route (#2-Essex) linking the communities the full length of the corridor via VT 15. CCTA charges one dollar per ride, with free transfers between routes and a variety of discounted fare payment options.

Key bus routes in the corridor are the 9-Riverside/Winooski, #2-Essex, and #4-Essex Center. The Riverside/Winooski route provides local service within Winooski and line-haul service connecting Winooski and downtown Burlington via Riverside Avenue. Service is provided Monday through Saturday. The route departs from Cherry Street in Burlington at half-hour intervals during peak periods on weekdays (6:45-8:15 a.m. and 2:45-6:15 p.m., Monday through Friday), with hourly service during the midday period. On Saturdays, service is provided hourly from 6:15 a.m. to 6:40 p.m.

The Essex route provides the transit spine of the corridor. The route runs via between Burlington and Essex Junction via Colchester Avenue, VT 15 and VT 117, with deviations to provide local service. The route services the major institutions in the corridor. Half-hourly service is provided on the route for departures between 5:45 a.m. and 6:45 p.m. on weekdays. Hourly service is provided until 10:20 p.m. The route operates on Saturdays from 6:15 a.m. to 8:15 p.m. Half-hourly service is provided between 9:15 a.m. and 6:15 p.m.

The #4-Essex Center route operates as a clockwise loop originating at the Amtrak station in Essex Junction. It operates via VT 15, Sand Hill Road and VT 117, serving the Essex Outlet Fair, Essex Center, and IBM as well as Essex Junction. The route operates on weekday between 5:55 a.m. and 9:55 p.m. Frequent service is provided in the morning peak period,

² Growth rate estimates for period 2000 – 2025 developed from Table 10. Town Population Projections in Appendix E of *Economic and Demographic Forecast, Northwest Vermont and Chittenden County 2000 to 2035 and Beyond*

from 6:25 to 8:25. Service is generally hourly, with no service running between 10:25 a.m. and 1:00 p.m.

Commuter rail service is provided by the Vermont Transportation Authority on the Charlotte to Burlington line terminating at Union Station in central Burlington. Service was inaugurated in December 2000, and additional service was added in March 2001. Nine round trips are provided on weekdays, and seven on weekends. Trains serve stations in Charlotte, Shelburne and Burlington between 6:00 and 10:08 a.m. and 3:18 and 7:35 p.m.³. A station is under construction in South Burlington. This train uses right-of-way owned by the State of Vermont. Vermont Railway also has a long-term lease to operate freight trains on this line. There is a rail yard located in Burlington south of the central area and Union Station. It is used by both the Vermont Railway for freight purposes and by the Vermont Transportation Authority for storage of its commuter trains. In March 2001, when data for this study was collected, the line was carrying about 150 passengers per day. Fares at that time were free. A fare of \$1.00 was instituted subsequently, with partial fare integration with CCTA, to enable riders to transfer between buses and trains on a single fare.

Interstate passenger rail service is provided by Amtrak to a station in Essex Junction. This service connects Chittenden County with St. Albans to the north and with White River Junction and points south and east. Amtrak provides service with one train in each direction daily. The train operates on tracks owned by the Central Vermont Properties. New England Central Railroad also operates freight over these tracks.

Intercity bus service in Chittenden County is provided by Vermont Transit Lines, with a terminal located on Pine Street in Burlington. Vermont Transit Lines provides daily bus service to numerous locations throughout New England, New York, and Eastern Canada. Key routes include Boston, Albany, and Montreal.

Freight track extends north and east from Union Station through the corridor to Essex Junction. New England Central Railroad operates on this line, which is owned by Central Vermont Properties. The line passes through Burlington, over the Winooski River, then runs roughly parallel to VT 15 through the center of Winooski and Essex Junction and past the IBM facility, and consists of unsignalized single track. An additional Central Vermont Properties line extends north from a junction with the freight alignment in Essex Junction. This is the alignment used by Amtrak between Essex Junction and St. Albans. Freight service is operated on the line with the Charlotte-Burlington commuter rail line.

2.3 Regional Transportation Issues

2.3.1 Projected County Travel Patterns

Population and employment in Chittenden County and the Burlington-Essex corridor are projected to increase significantly over the next 25 years. In keeping with national trends, travel in the county and in the corridor is likely to increase even more. National studies have found that over the past twenty years, people make more trips per capita than they did previously. This is a reflection of both more complex lives and greater personal mobility.

³ Champlainflyer.com website, revised June 9, 2001.

This trend is expected to continue in Chittenden County during the study period, especially if land use and development trends continue in their current patterns. While the population of Chittenden County is projected to increase by 44% by 2025, and the county’s jobs are projected to increase by 53%, daily person trips in the county are projected to increase by 60%. Without action to accommodate the additional trips, this growth will result in slower travel, more hours of congestion, and a lessened quality of life.

Currently, about 676,000 person trips are made each day in Chittenden County, resulting in 3,886,000 miles of vehicle travel. This is projected to increase to 1,080,000 trips per day in 2025, and 5,875,000 miles of travel. About 95% of trips in the county are made by auto. This domination of the auto as the mode of transport in the county is projected to continue in the future. In addition to the convenience and mobility offered by the auto, a recent survey indicated that Burlington was among the ten least expensive cities in American in which to operate an auto.⁴

As a result of this growth in traffic, travel speeds will decrease, travel times will increase, and hours of congestion and delay will increase. Table 2-1 illustrates the changes projected in these key travel characteristics between now and 2025. The 2000 numbers reflect current travel conditions. The 2025 numbers are projections of travel conditions for a transportation network that consists of the existing network plus all projects included in the region’s transportation improvement program. These projects include Segments A and B of the Circumferential Highway between Williston and Essex Junction; improvements to Shelburne Road; improvements to Kennedy Drive; and construction of the Southern Connector in Burlington.

Table 2-1 - Travel Measure Change Present and 2025

Travel Measure	2000	2025	Change
Daily person trips	641,895	1,028,065	60%
Daily vehicle miles of travel (VMT)	3,885,952	5,874,810	51%
Average speeds	33.69	26.80	-20%
% of peak hour VMT congested	5.5%	25.8%	374%

2.3.2 Transit Issues

In this future of congested highways and declining travel speeds, less than 4% of trips are expected to be made by pedestrians, and less than 1% will be made on public transportation. Chittenden County, through its Metropolitan Planning Organization (MPO), has articulated a goal of increasing the share of trips made on public transit. An increase in transit use could reduce traffic congestion and improve air quality in the county. Reduction of the number of cars on the roads could also bring about a number of other benefits in the county, including less land required for parking, and less need for road construction and maintenance. Public transit in the region currently accommodates about 0.82% of trips in the region, with 97% of those trips being made on the CCTA. Transit ridership has fluctuated in recent years. Ridership grew from the creation of the authority in 1983 through

⁴ Runzheimer Study of Vehicle Standard Costs, August 2000

1997, when the system carried nearly 1,620,000 riders. However, since 1997, ridership has dropped slightly each year, to 1,541,364 riders in 2000.

Use of buses is projected to decline at both the county level and the corridor level when comparing current use to the projected 2025 demand. Actual bus trips are projected to increase at the county level, but the bus mode share is projected to decline, with a nearly identical increase in rail use. It is reasonable to believe that people who already ride transit will change to a mode that offers a higher level of service, if it meets their travel needs. At the corridor level, however, bus riders are projected to shift to autos, and a similar shift of pedestrians to autos is also projected. As a result, walk and bus mode shares for trips which originate and terminate in the corridor are projected to decrease, and the auto mode share to increase.

Several factors affect the desirability of transit as a transportation option. Two key factors are reliability and access. The CCTA provides good service, but is limited by external factors in its ability to perform in these two areas. The reliability of bus service, in Chittenden County and throughout the world, is affected by the traffic on the roads on which the buses run. On many of its routes, CCTA has been experiencing traffic-related delays which affect the transit authority's ability to meet its schedules. On some routes, CCTA has added buses to improve schedule adherence. Its ability to do this is limited, because of the additional capital and operating costs this entails.

The access provided by CCTA would be increased if the authority's service area were increased, and if service could be provided more frequently on some routes. CCTA is aware of the needs in this area, and the potential to increase transit use in the county if more widespread and frequent service were provided. However, the agency is subject to institutional and financial limitations that restrict its ability to provide such access. The agency provides bus service to communities who are members of the transportation authority and who contribute financially to its operations. Currently, CCTA member communities are Burlington, Essex, Winooski, South Burlington and Shelburne. Expansion of CCTA participation has been studied. The issues are complex, and will require considerable effort to resolve. CCTA's finances are limited not only by the small number of communities participating in the agency, but by the fact that those communities must support its services from property tax revenue, the only revenue source controlled by local communities in Vermont. CCTA's service is therefore limited not only by geographical constraints, but by financial constraints within those geographical limits. Financing of transit services by local governments also gives them a strong measure of control in designing the routes, which may sometimes be at the expense of a broader regional approach to developing a transit network.

2.4 State and Regional Goals

In part because of issues of growth, congestion and transit use discussed above, the Vermont Agency of Transportation (VTTrans), the CCMPO, and the CCRPC have developed goals for transportation development that emphasize limited expansion of highways and broadened mode choice. State and regional goals are discussed in more detail in preceding and following sections of this report. To note a few relevant goals:

State of Vermont Long Range Transportation Plan

- **Improve all modes of transportation to provide Vermonters with choices –** Vermont's transportation system is a multimodal system. No specific mode of transportation should receive all of the state's attention or funding. While highway transportation remains the dominant form of passenger transportation in the state, there is an increasing need for development of other transportation alternatives to provide greater travel choices for Vermonters, as well as to provide transportation services to those that do not drive.

The state should continue to provide balanced funding to all transportation modes so that opportunities for intermodal services can be fully achieved. A weak transportation mode (resulting from insufficient funding) affects the reliability of the entire transportation system.

- **Maintain existing transportation facilities –** An essential element of the long-range transportation plan is to maintain the transportation facilities that already exist in Vermont.

Chittenden County Metropolitan Planning Organization Long Range Transportation Plan

- **Smarter Mobility** - Ensure the mobility of people and goods by implementing transit capacity improvements. Programs designed exclusively to increase highway capacity for single-occupant vehicles should be undertaken only when no better alternative can be found.
- **Be a Change Agent** - Decrease automobile and truck dependency by offering sustainable transportation alternatives.

Chittenden County Regional Planning Commission Land Use Plan

- The regional transportation system should ensure the mobility of people and goods by implementing systematic maintenance programs, and transit capacity improvements. Congestion management programs should be used to increase highway capacity for single-occupancy vehicles only when no better alternative can be found.
- The regional transportation system should decrease automobile and truck dependency by offering sustainable transportation alternatives.

2.5 Burlington-Essex Corridor Travel Patterns

The Burlington-Essex corridor is an important transportation corridor in the county. Forty-two percent of the trips made in Chittenden County begin or end in the corridor. By 2025, this will increase to 44% of daily trips. The Burlington-Essex corridor contains many of the largest employers and institutions in the state. Located in the corridor and the University of Vermont, the Fletcher Allen Health Care campuses in Burlington and Colchester,

Burlington’s central business district, the IBM facility in Essex Junction, and St. Michael’s College. Each of these institutions draws thousands of trips daily.

The travel conditions in the study corridor differ from those in the county as a whole. This is primarily because the corridor includes the most densely developed areas of the region, and contains more alternatives with respect to transportation modes. Due to the density, and to the mixed use development which places housing, recreation, jobs, shopping, medical facilities and social institutions in close proximity, non-motorized transportation—walking and bicycling—is a more feasible and attractive as a transportation alternative than it is in less densely developed areas. Walk trips account for 5.9% of trips that begin or end in the corridor, in contrast with 4.19% of trips in the county. There is also a higher concentration of bus service in the corridor than is found in much of the county, but transit use is only marginally higher, standing at 0.85% versus 0.82% for trips throughout the county. However, transit use and pedestrian activity are much higher for trips that are made completely within the corridor. For these trips, 9.43% are made on foot, and 1.81% are made by transit.

Despite this higher level of walking and transit use, auto travel conditions are worse in the corridor than in the county as a whole. The average travel speed is less than half that of the county, at 15.59 miles per hour, as opposed to 33.69 miles per hour. The percent of peak hour vehicle miles traveled in congested conditions is 9.7%, compared to 5.5% countywide.

Travel conditions are projected to worsen in the corridor at a greater rate than countywide conditions, as well. Table 2-2 compares projected travel conditions in Chittenden County and in the Burlington-Essex Corridor. As can be seen, the number of trips will increase more rapidly; travel speeds will decline more rapidly, to an average of 8.5 miles per hour; and nearly 36% of peak hour VMT will be in congested conditions. Although transit use will increase, walking will decline, and the mode share for autos will rise to nearly 95% of trips with one end in the corridor.

Table 2-2 – Comparison of Travel Conditions in Chittenden County and the Burlington -Essex Corridor

MEASURE	COUNTY			CORRIDOR		
	CURRENT	2025	CHANGE 2000-2025	CURRENT	2025	CHANGE 2000-2025
Person Trips	675,688	1,079,568	60%	285,391	478,137	68%
VMT	3,885,952	5,874,810	50%	673,104	922,287	37%
Peak Hour Congested VMT26.80	5.5%	25.8%	374%	9.7%	35.9%	270%
Av. Speed (mph)	33.7	26.80	-20%	15.6	8.54	-45%
Walk mode share	4.18%	3.94%	-6%	5.91%	3.94%	-33%
Transit mode share	0.82%	0.83%	1.23%	0.85%	1.09%	36.91%

Existing transportation facilities in the corridor have limited ability to address these transportation problems. Arterials entering Burlington are congested during peak hours, especially at key major intersections. Numerous studies have been conducted to address traffic and transportation issues in Burlington, and recommendations have been made,

many of which are being implemented. This study focused on the transportation issues associated with the corridor between Burlington and Essex, where issues have received less attention, but still seriously affect regional mobility.

Vermont Highway 15 is the transportation spine of the corridor. This highway has two lanes in each direction for most of its length, with fairly closely spaced at-grade intersections, and frequent driveways serving residences, businesses and institutions. The highway actually has the capacity to carry its current and projected traffic for much of its length. However, operations are impeded at key intersections. These intersections function at undesirable or unacceptable levels of service in peak hours, resulting in back-ups that affect operations for longer stretches of the highway.

It would be extremely difficult to widen VT 15 through the corridor. Development has occurred up to the edge of the highway through much of the corridor; homes, business and institutions would be severely impacted by widening. In addition to developed property, the highway is bordered by protected recreational land, by a cemetery, and a military base. It would also create a severe negative impact on residents and businesses if access were limited through restrictions on driveways.

Corridor intersections have among the greatest concentration of high-accident locations in Chittenden County. Locations include:

- Five Corners in Essex Junction
- The segment of VT 15 in Essex Junction between Five Corners and VT 289
- The segment of VT 2A in Essex Junction between Five Corners and VT 289
- VT 15/Susie Wilson Road
- VT 15/Lime Kiln Rd.
- VT 15/I-89 ramps
- VT 15/U.S. 2/U.S. 7

It is likely that accidents will increase at these locations as congestion increases and level of service declines.

One transportation alternative that has been looked to in recent years to improve conditions on VT 15 is the Circumferential Highway. Segments of the Circumferential Highway are proposed through Colchester that would roughly parallel VT 15, north of currently developed areas.

CCTA's #2 Essex Route in the corridor between Burlington and Essex has the second highest ridership of any CCTA route, after the North Ave/UVM Shuttle. However, ridership has been declining in recent years, from 311,195 riders per year in 1995 to 245,108 riders in 2000. The declining ridership, which has occurred at a time when other CCTA routes are growing, is thought to be due to the declining travel speed of buses on the route, due to congestion on the highway. While CCTA has added buses to the route to try to maintain scheduled departure times, travel speeds on the route are limited by highway operating conditions.

2.6 Regional Connectivity

Chittenden County is the economic hub of Vermont, and much of the economic activity is based in the Burlington-Essex study corridor. Good transportation access for the movement of people and goods is important for the continuing flourishing of the region's economy. To achieve this, there is a need not only for good transportation within the county, but for good connections to the rest of the state, to the rest of New England, and to Canada.

The primary highway connection to Chittenden County is I- 89. This interstate highway connects Chittenden County with Montpelier, White River Junction, and ultimately Boston, to the south and east; and to St. Albans and ultimately Canada, to the north. I-89 traverses the Burlington-Essex corridor, with an interchange at VT 15 in Winooski.

Freight rail connections to areas outside Chittenden County are provided by rail lines that run through Burlington and Essex Junction. The Vermont Railway (VTR) operates service on a rail line running south from Burlington, with its center of operations at a railyard in Burlington. The New England Central Railroad operates on lines running north and southeast from Essex Junction. It also operates limited freight service on a line traversing the study corridor between Burlington and Essex junction. Work is under way to expand the rail freight options into Chittenden County through the Albany-Bennington-Rutland-Burlington project. There has also been a study of relocation of the Burlington railyard.

Passenger rail connections to destinations outside Chittenden County are currently provided by Amtrak service through Essex Junction. There are a number of studies and projects under way which could expand passenger rail connections, including:

- Amtrak service to Burlington, through the Burlington-Essex Junction corridor
- Commuter service between St. Albans and Essex Junction
- Extension of commuter service to Vergennes and Middlebury
- High speed rail between Boston and Montreal, passing through Burlington

Some of these freight and passenger rail expansions under study would require use of the New England Central rail line running through the corridor from Burlington to Essex Junction. Others would need good access to either Union Station in Burlington or a station in Essex Junction. The facilities in the Burlington-Essex Junction corridor are important components of a rail system serving Vermont and New England.