RSG
the science of insight

Chittenden County Park and Ride Plan – 2022 Update

September 2022

Prepared for Chittenden County Regional Planning Commission

Report Title:

Chittenden County Park and Ride Plan – 2022 Update

Report Prepared by:

RSG

Steadman Hill Consulting

Report Prepared for:

Chittenden County Regional Planning Commission

Disclaimer

The preparation of this report has been financed in part through grant[s] from the Federal Highway Administration and Federal Transit Administration, U.S. Department of Transportation, under the State Planning and Research Program, Section 505 [or Metropolitan Planning Program, Section 104(f)] of Title 23, U.S. Code. The contents of this report do not necessarily reflect the official views or policy of the U.S. Department of Transportation.

For additional information regarding this report, or for questions about permissions or use of findings contained therein, please contact:

Chittenden County Regional Planning Commission
110 West Canal Street, Suite 202
Winooski, Vermont 05404
(802) 846-4490
ccrpcvt.org

CONTENTS

1.0 INTRODUCTION 1
1.1 OVERVIEW 1
1.2 PLAN SCOPE 1
PLAN ELEMENTS 1
FACILITY TYPOLOGY 2
GEOGRAPHY 3
1.3 VISION STATEMENT AND GOALS 5
VISION STATEMENT 5
PLAN GOALS 5
2.0 EXISTING CONDITIONS 6
2.1 FACILITY INVENTORY 6
SUMMARY 6
FACILITY PROFILES 8
2.2 FACILITY OCCUPANCY 24
2.3 INVENTORY SUMMARY 25
3.0 DATA TRENDS 26
3.1 EMPLOYMENT AND COMMUTING 26
EMPLOYMENT PATTERNS 26
COMMUTING FLOWS 27
3.2 POPULATION 31
3.3 TRANSIT RIDERSHIP 31
3.4 PARKING DEMAND 33
3.5 REMOTE WORK 35
3.6 TRAVEL MODE 37
4.0 PROPOSED FACILITIES 41

4.1 OVERVIEW....41
4.2 PROPOSED FACILITY TYPE....43
4.3 SOUTH END MULTIMODAL CENTER....44
4.4 US 7 SOUTH OF I-189....45
4.5 SOUTH BURLINGTON: US 2-EXIT 14....46
4.6 COLCHESTER: VT-15 AND BARNES AVENUE....47
4.7 CHARLOTTE....48
4.8 TAFT CORNERS....49
4.9 SHELBURNE....50
4.10 JONESVILLE....50
4.11 COLCHESTER EXIT 17....51
5.0 OPPORTUNITIES & CONSTRAINTS....54
5.1 PURPOSE....54
5.2 REGIONAL SUPPLY AND DEMAND....56
5.3 ACCESSIBILITY....59
5.4 FUTURE DEMAND....63
5.5 TRANSIT....65
5.6 EMERGING MOBILITY....67
5.7 LAND USE DEVELOPMENT....71
6.0 IMPLEMENTATION PLAN....72
6.1 OVERVIEW....72
6.2 RECOMMENDATIONS....72
TRENDS AND MONITORING....72
EXISTING FACILITIES....73
PROPOSED NEW FACILITIES....74
6.3 FACILITY IMPLEMENTATION PLAN....76
7.0 APPENDIX....79
7.1 INVENTORY SHEETS....79

LIST OF FIGURES

FIGURE 1 - PARKING FACILITY TYPOLOGY....2
FIGURE 2 - PARKING FACILITY SERVICE AREAS & CHITTENDEN COUNTY....4
FIGURE 3 - EXISTING PARKING FACILITIES....7
FIGURE 4 - GEOGRAPHY OF EMPLOYER SIZES....27
FIGURE 5 - COMMUTE FLOWS, SERVICE AREAS ONLY. RESIDENTIAL SERVICE AREA TO EMPLOYMENT SERVICE AREA....29
FIGURE 6 - COMMUTE FLOWS, OUTSIDE SERVICE AREA INCLUDED. RESIDENTIAL SERVICE AREA TO EMPLOYMENT SERVICE AREA. (VT, STATEWIDE)....29
FIGURE 7 - 2019 EXISTING COMMUTING FLOWS....30
FIGURE 8: GMT HISTORICAL ANNUAL RIDERSHIP FOR COMMUTER ROUTES....32
FIGURE 9: GMT HISTORICAL ANNUAL RIDERSHIP FOR LOCAL ROUTES....33
FIGURE 10: CITY OF BURLINGTON ON-STREET PARKING REVENUE (MONTHLY)....34
FIGURE 11: CITY OF BURLINGTON GARAGE PARKING REVENUE (MONTHLY)....35
FIGURE 12: WORK FROM HOME SHARE OF ALL COMMUTES IN SERVICE AREAS....37

FIGURE 13: KEY TRAVEL BEHAVIORS 39
FIGURE 14: CATMA SURVEYED MODE SHARES 40
FIGURE 15: PROPOSED PARKING FACILITIES 42
FIGURE 16: PARKING FACILITY SPECTRUM 43
FIGURE 17: MULTIMODAL CENTER LOCATION 45
FIGURE 18: US 7 SOUTH OF I-189 46
FIGURE 19: SOUTH BURLINGTON US-2 / EXIT 14 47
FIGURE 20 - COLCHESTER - BARNES AVE PROPOSED FACILITY 48
FIGURE 21 - TAFT CORNERS PROPOSED LOCATION VICINITY 49
FIGURE 22: SHELBURNE - FACILITY LOCATION OFF OF HARBOR ROAD 50
FIGURE 23: JONESVILLE (RICHMOND) - FACILITY LOCATION OFF OF ROUTE 2 51
FIGURE 24 - COLCHESTER EXIT 17 PROPOSED LOCATION 52
FIGURE 25: PROPOSED PARKING FACILITIES 55
FIGURE 26 - BICYCLE ACCESSIBILITY 62
FIGURE 27 - WALK ACCESSIBILITY 63
FIGURE 28 - FUTURE (2050) POPULATION AND WORKER GROWTH 64
FIGURE 29 - CHARGING INFRASTRUCTURE AND EXISTING FACILITIES 68
FIGURE 30: AUTONOMOUS VEHICLE FLEET PROJECTIONS 69
FIGURE 31 - E-BIKE INCENTIVE PROGRAMS (2022) 70

LIST OF TABLES

TABLE 1: FACILITY INVENTORY TOTALS 6
TABLE 2: FACILITY FEATURES SUMMARY 6
TABLE 3: PARKING OCCUPANCY 24
TABLE 4: COMMUTER FLOWS BY SERVICE AREA 28
TABLE 5: SERVICE AREA POPULATION 31
TABLE 6: WORK FROM HOME SHARE WITHIN SERVICE AREAS 36
TABLE 7: TRAVEL MODE 38
TABLE 8: EXISTING FACILITY DEMAND ATTRIBUTES 58
TABLE 9 - ACCESSIBILITY OF PROPOSED FACILITIES 59
TABLE 10 - TRANSIT SERVICE FOR PROPOSED FACILITIES 60
TABLE 11 - RECOMMENDED MONITORING DATA TRENDS 72
TABLE 12: RECOMMENDED FACILITY ATTRIBUTES 73
TABLE 13 - PROPOSED FACILITIES 75
TABLE 14 - IMPLEMENTATION OVERVIEW 77

1.0 INTRODUCTION

1.1 OVERVIEW

This document contains the Chittenden County Regional Planning Commission's (CCRPC) 2022 Park and Ride Plan Update ("The Plan"). The purpose of this plan is to provide an assessment of existing park and ride facilities in Chittenden County, identify opportunities for improvements to the existing facilities, and to assess the potential for new facilities that will benefit commuters and residents throughout the CCRPC region and adjacent communities. This plan was prepared by Resource Systems Group (RSG) and was funded by the Chittenden County Regional Planning Commission (CCRPC), which serves the 19 municipalities of the Chittenden County region.

Previous park and ride plans were completed in 1993, 1999, 2004 and more recently in 2011. The 1993 plan, which focused on the Circumferential Highway corridor, had a limited geographic area. The 1999, 2004, and 2011 plans covered all of Chittenden County and focused on the development and application of a prioritization system. The most recent 2011 Chittenden County Park and Ride Plan created a vision statement for the purposes and function of park and rides, completed an inventory of existing facilities, prioritized a list of park and ride and intercept facilities, and created an implementation plan. This plan updates many of those elements from the 2011 plan using a revised approach to account for the many changes in the demand for park and rides, remote work, and general changes in travel behavior.

This plan updates the inventory of existing facilities and conditions, assesses recent travel trends, and establishes a methodology and process to determine whether there is demand for new facilities and where new facilities may be warranted. Given the uncertainty of future commute patterns and parking demand, rather than create a detailed prioritization list of specific potential facilities, this plan recommends an ongoing, adaptive framework for using data to assess demand which will inform future decision making on new facility investment.

1.2 PLAN SCOPE

Plan Elements

This plan consists of 5 core elements:

1) An inventory of the conditions at existing facilities.
2) An analysis of recent and historical data trends.
3) Information on a set of potential facility locations.

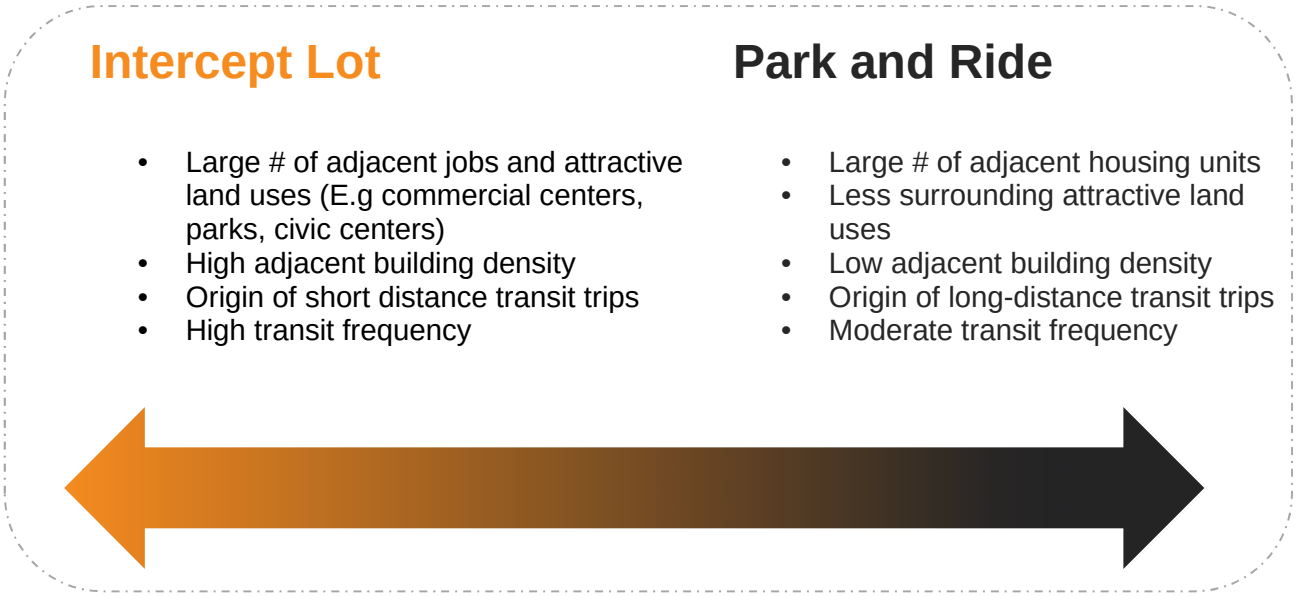
4) An analysis of opportunities and constraints for a set of proposed park and ride/intercept facilities.
5) An implementation plan that will guide future decision making.

Facility Typology

This plan considers facilities that travelers typically use to park vehicles and then either carpool with other travelers or transfer to other travel modes (E.g. transit). These facilities are typically classified as park and rides or intercept facilities; park and rides are typically located closer to the origin of a trip, such as a home, whereas intercept facilities are typically located close to the destination end of a trip, such as an employment center or other area of attraction such as shopping or recreation. Intercept lots are often located just outside an urban core where parking is often scarce, and users can leave their personal vehicle and shift to high frequency transit, bicycle, or perhaps even walking.

At the same time, many facilities likely serve several different functions and users, are often located adjacent to a diversity of land uses and have characteristics of both intercept lots and park and rides. Therefore, although *intercept lot* and *park and ride* are useful to explain facilities conceptually, each individual facility exists on a spectrum that contains elements of each type. Therefore, this plan uses the terms *intercept lot* and *park and ride* depending on where a specific location falls on the continuum show in Figure 1.

FIGURE 1 - PARKING FACILITY TYPOLOGY



Source: RSG

Geography

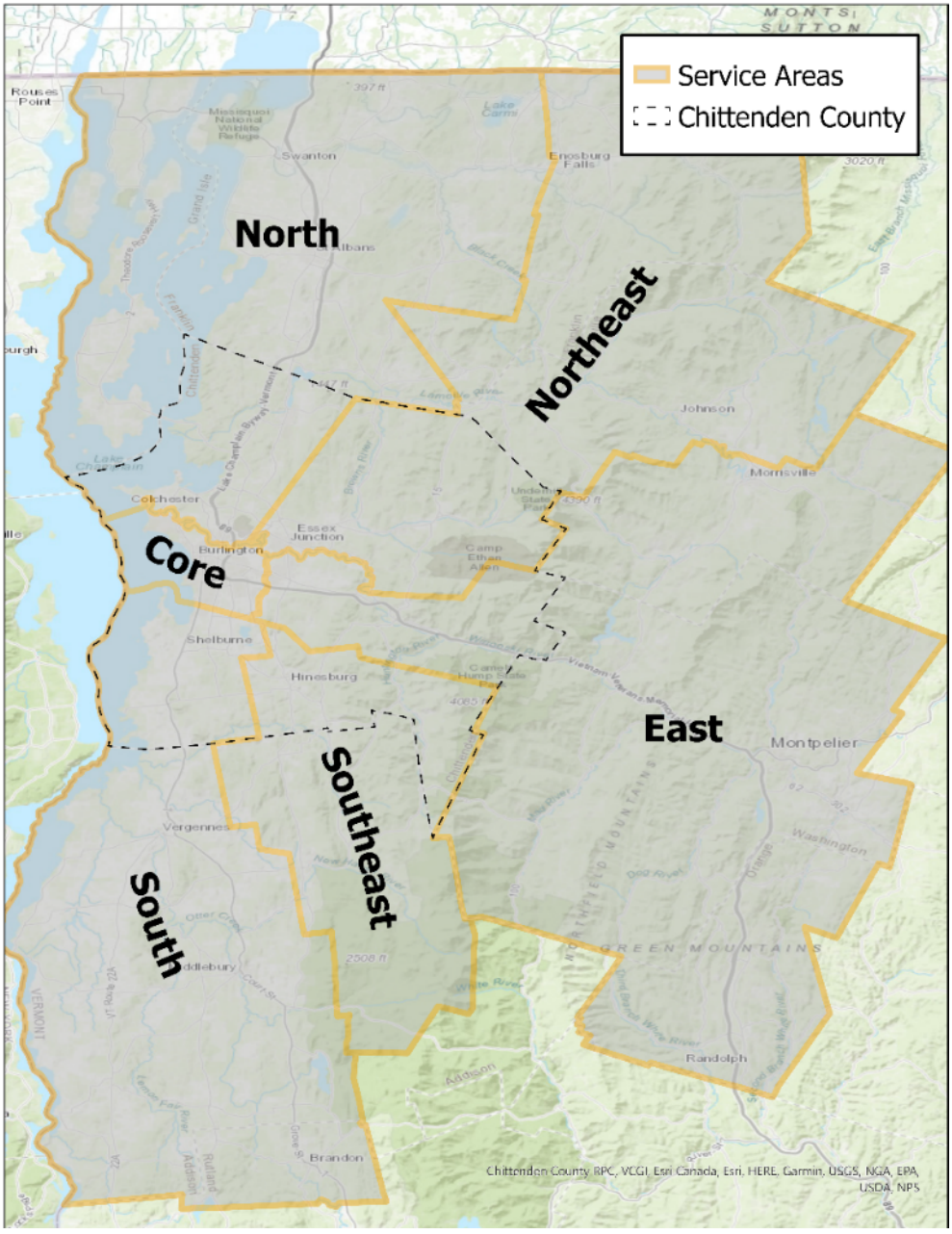
This plan characterizes travel patterns and parking facilities on two geographic levels. First, *service areas* are used to understand travel behavior by all residents that commute within, into and out of Chittenden County. The service areas are large geographies that extend far behind Chittenden County boundaries into adjacent counties such as Addison, Washington, Lamoille, Franklin, and Grand Isle. These geographies are ultimately used to understand travel trends in Chittenden County, which are influenced by travel in neighboring counties. The second geography is centered on Chittenden County, which encompasses the specific facilities analyzed within this plan; facilities outside of Chittenden County are not analyzed as part of this plan.

The service areas shown in Figure 2 are defined by the travel patterns in the greater region beyond Chittenden County. Each service area is defined by census block groups within approximately 1-hour commute of Burlington, northwest Vermont's largest employment center. The service areas are described as:

- Core: Burlington and South Burlington.
- North Corridor: Includes the Chittenden County municipalities of Colchester, Winooski, and Milton; all of Grand Isle; and western portions of Franklin County generally centered on US 7 and I-89.
- Northeast Corridor: Generally centered on VT 15 and includes the Chittenden County municipalities of Essex Town, Essex Junction, Jericho, Underhill and Westford; the western half of Franklin County; and northern sections of Lamoille County.
- East Corridor: Generally centered on I-89 and US 2 to the east and includes the Chittenden County municipalities of Williston, Richmond and Bolton; southern sections of Lamoille County along VT 100, Mad River Valley towns along VT 100 south of I-89.
- Southeast Corridor: Generally centered on VT 116 and includes the Chittenden County municipalities of Huntington, Hinesburg and Saint George; and northeast portions of Addison County.
- South Corridor: Generally centered on US 7 and VT 22A and includes the Chittenden County municipalities of Shelburne and Charlotte, the western half of Addison County and northern portions of Rutland County.

The service areas are shown in Figure 2.

FIGURE 2 - PARKING FACILITY SERVICE AREAS & CHITTENDEN COUNTY



Source: RSG

1.3 VISION STATEMENT AND GOALS

The plan Vision Statement and Goals are a set of high-level concepts, which guide the development of the plan and serve to align stakeholders around a common outlook for what role park and ride/intercept facilities serve within the transportation system in Chittenden County. The vision statement and goals have been developed by the CCRPC staff with direct feedback and approval by the CCRPC Transportation Advisory Committee (TAC).

Vision Statement

In the future, a comprehensive network of safe and accessible Park & Ride and Intercept facilities will allow for seamless, multimodal transportation connections for the benefit of residents, employees, and visitors of Chittenden County. The network will enhance mobility for all users; support economic development; improve access to public transportation; and reduce single occupancy vehicle travel in support of transportation-related energy goals outlined in the 2018 ECOS Plan.[1]

Plan Goals

- **Safety, Accessibility and Efficiency:** Provide safe, efficient, and comfortable access to facilities that are integrated seamlessly into the overall transportation system.
- **Mobility and Equity:** Increase mobility options for all travelers and users of all abilities, with a specific focus on underserved or overburdened populations.
- **Environmental Sustainability:** Reduce vehicle miles traveled (VMT) and greenhouse gas (GHG) to achieve transportation-related climate goals.
- **Economy:** Support economic access by reducing the need for parking within the urban core and providing multimodal options to employees commuting into and out of Chittenden County.
- **System Preservation and Modernization:** Preserve, maintain, and enhance existing facilities to reduce long-term maintenance costs, provide modern amenities, and support a safe and enjoyable travel experience.

[1] Latest Long Range Transportation Plan. Can be found at https://www.ccrpcvt.org/our-work/our-plans/ecos-metropolitan-transportation-plan/

2.0 EXISTING CONDITIONS

2.1 FACILITY INVENTORY

Summary

This chapter summarizes the existing condition and characteristics of the 10 parking facilities within Chittenden County and four others just outside the county. The CCRPC has acquired detailed information on historical utilization as well as the physical characteristics of the 14 existing facilities included in this inventory analysis. All of these facilities are considered park and ride facilities; no formal, publicly available intercept facilities are currently present in the region. There are several informal intercept lots operated by private entities but these are not included as they are not publicly accessible. There are 32 additional state facilities in areas directly adjacent to the region, which CCRPC does not actively monitor but which may serve residents or those employed in Chittenden County.

Tables 1 and 2 below outline a high-level summary of the facilities in the inventory. Of the 14 facilities included in the plan inventory, there are over 700 total parking spots. Of the 14 facilities, 2 are not paved, roughly half have some form of waiting shelter, most have bike racks, most have some bike and transit accessibility, and almost all of them have signage. About half of the facilities have pedestrian accessibility such as sidewalks and nine of the facilities have attractive adjacent land uses that are complementary to the park and ride facility. Attractive land uses may include shopping centers, employment attractions, public parks, or other significant generators of parking supply near the parking facility.

TABLE 1: FACILITY INVENTORY TOTALS

Number of Facilities	14
Total Parking Spaces	719

Source: CCRPC Inventory

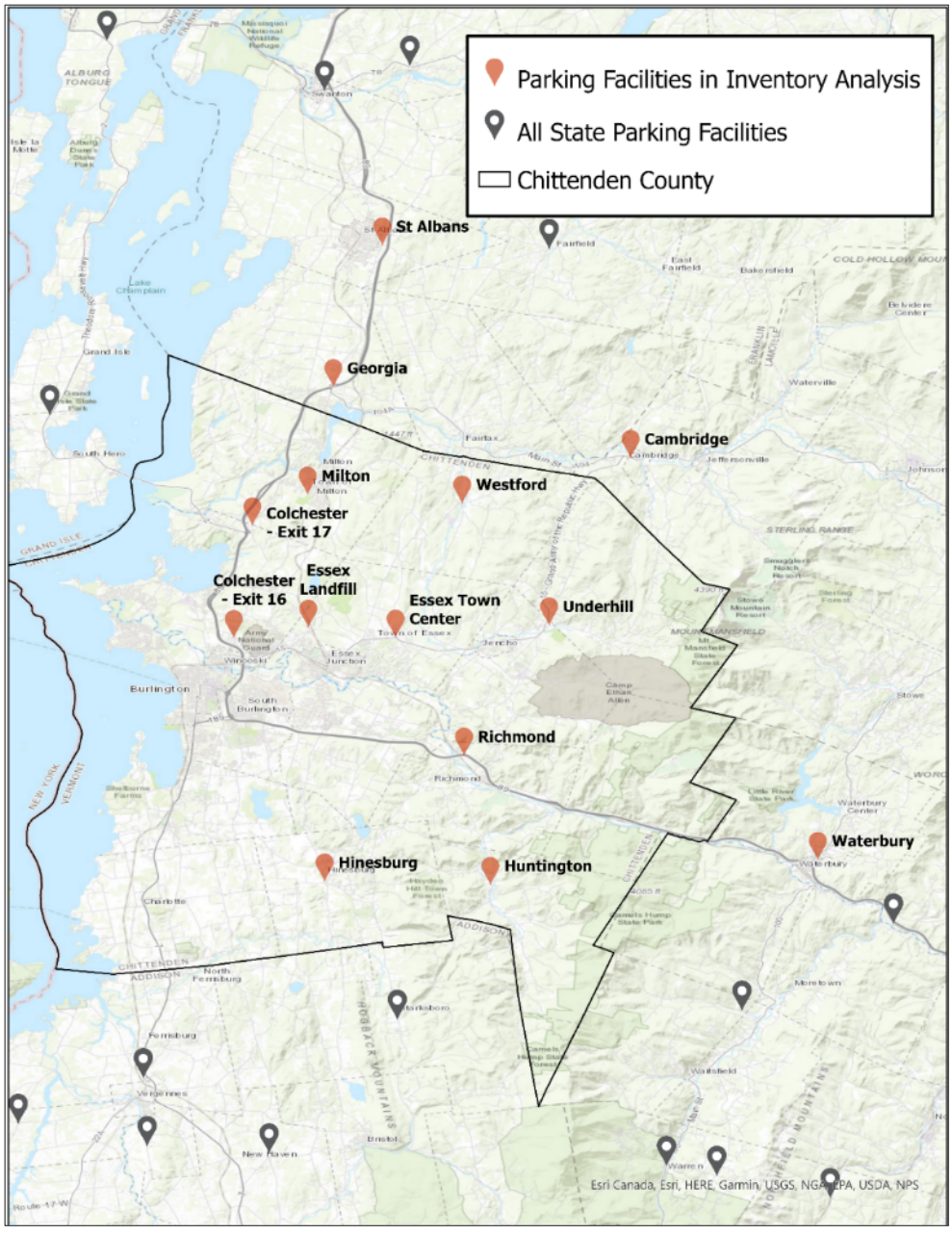
TABLE 2: FACILITY FEATURES SUMMARY

FACILITY FEATURE	YES	NO
Paved Surface	86%	14%
Sheltered	57%	43%
Bike Rack	71%	29%
Bike Accessibility	64%	36%
Handicap Spaces	86%	14%
Lighted	79%	21%
Transit Service	78%	22%

Signage	86%	14%
Pedestrian Accessibility	50%	50%
Adjacent Attractive Land Use	64%	36%

Source: CCRPC Inventory

FIGURE 3 - EXISTING PARKING FACILITIES



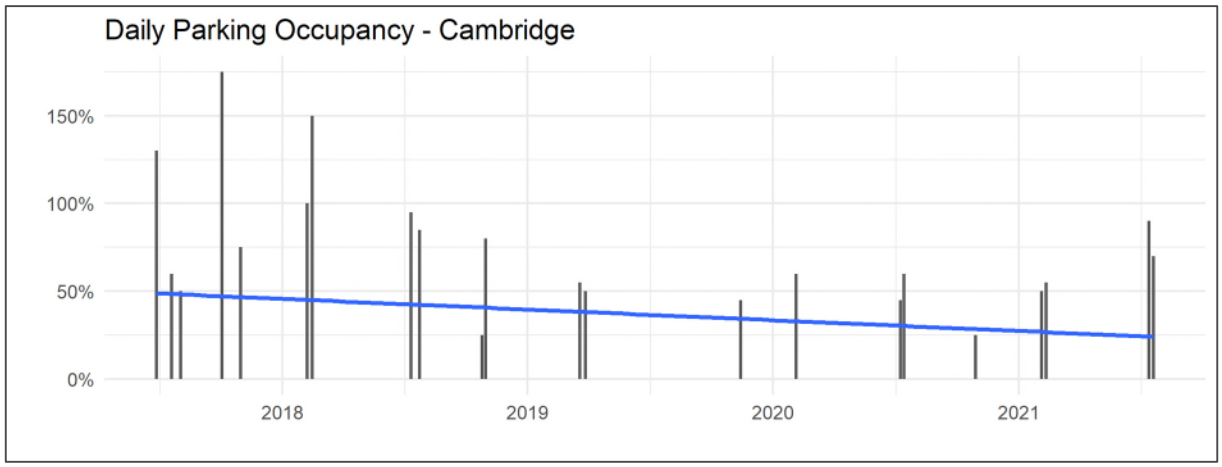
Source: RSG

Facility Profiles

This section highlights the existing conditions for each of the 14 existing facilities included in the parking facility inventory. The information includes qualitative field observations, quantitative data, and photos collected in 2020 and 2021. The profiles include quantitative data on parking occupancy (what percent of parking spaces occupied by vehicles). The occupancy data has been collected at various time periods and locations over the last 15 years. As a result, only a few years of recent data – summarized at the daily level - can be directly compared between all locations.

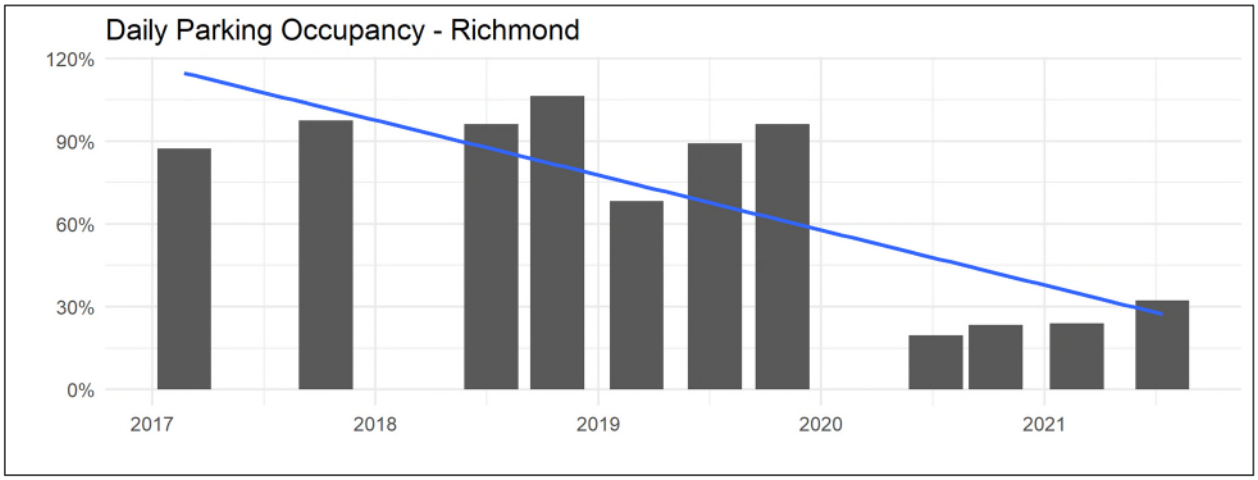
Cambridge – VT 15

- Located on the south side of VT 15, east of VT 104 just west of Cambridge Village.
- Short walk to downtown but no sidewalk, exposed open pedestrian area, narrow shoulder.
- 20 total parking spaces.
- Park and ride was being repaved and lights were being added during 2020 site visit.
- Transit service: one morning and one afternoon trip.
- Signed and visible.
- 35 mph speed limit (recently extended zone), previously 50 mph.
- Data indicates declining parking occupancy, even before the COVID-19 pandemic, though most recent counts indicate a slight rebound



Richmond – US 2

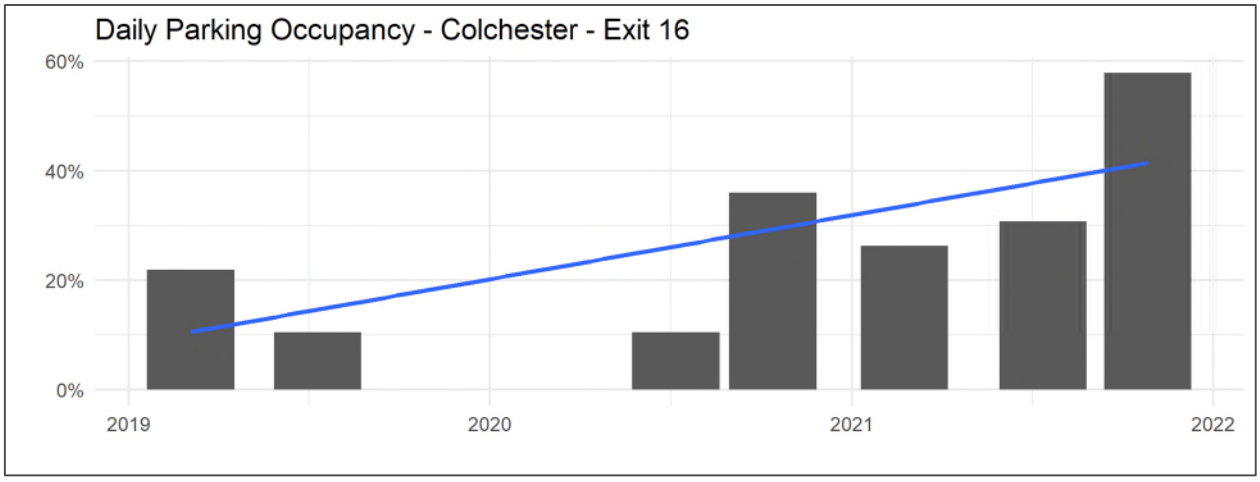
- Located on US 2, south of Exit 11, off of I-89.
- 158 total parking spaces.
- Transit service: 3 morning and 5 afternoon Montpelier-bound trips. 3 morning and 4 afternoon Burlington-bound trips, with an additional 2 requested stops only in the pm.
- Excellent turnaround circle for large vehicles.
- 40 mph speed limit on US 2.
- No pedestrian access and 3-4 foot shoulder through interchange.
- Pronounced decline in occupancy starting in 2020 with slight recent trend upward.



Colchester – Exit 16 – US 2/7

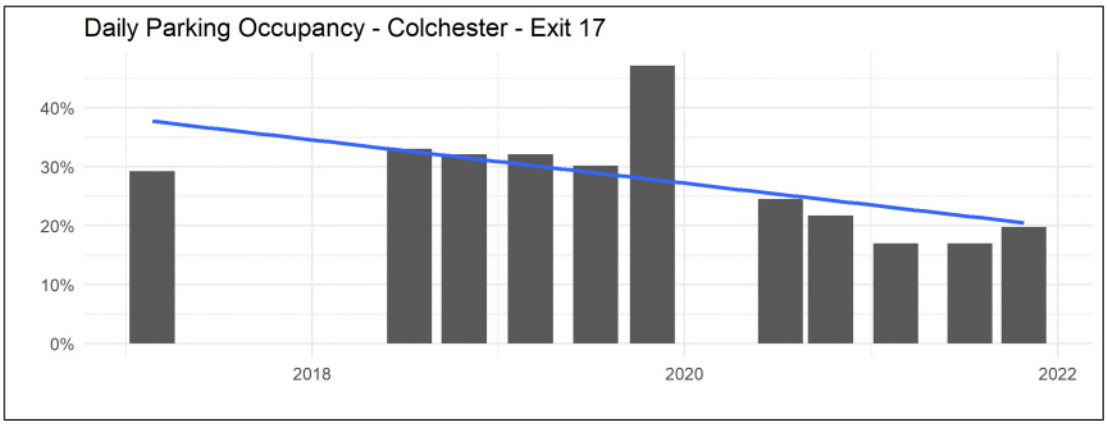
- Located approximately 0.4 miles north of I-89, off of exit 16 on US Route 2, across from Hercules Drive.
- 114 total parking spaces.
- No current transit service.
- 40 mph speed limit on US 2.
- 4 foot shoulder and no sidewalk or crosswalks.
- Park and ride not currently served by St Albans Link Express and the Milton Commuter. Potential opportunity in the future for these additional transit connections

- Parking occupancy shows an increasing trend in 2022.



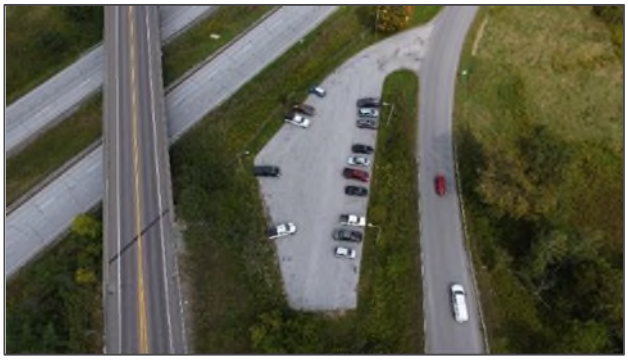
Colchester Exit 17 – US 2

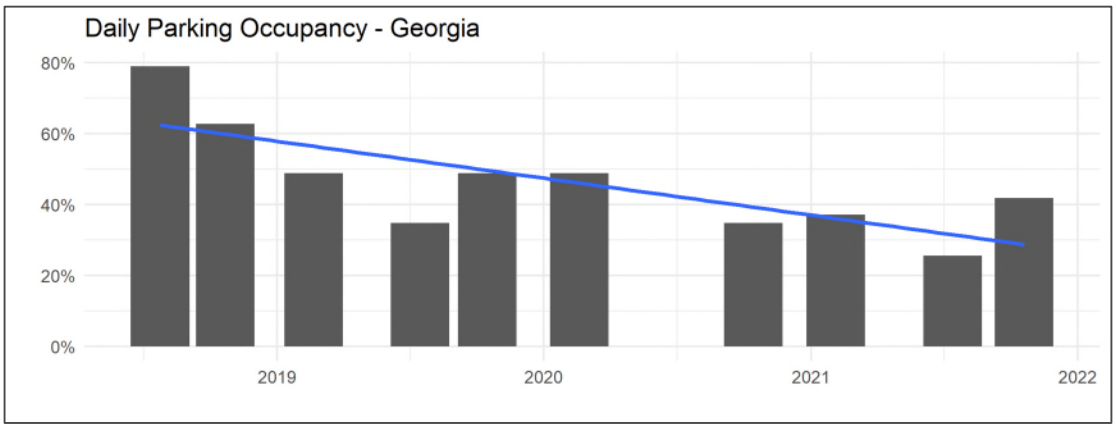
- Located on US 7, 0.3 miles north of the junction with US 2, off I-189 exit 17, at the site of the VTrans maintenance facility.
- 106 total parking spaces.
- Transit service: Milton Commuter: 2 am trips; 1 mid-day trip; 2 pm trips. Facility is not currently served by St Albans Link Express. Potential opportunity in the future for this additional transit connection.
- 50 mph speed limit on US 7
- 4-6 foot shoulder and no sidewalk
- Current study for additional exit 17 park and ride at Jasper Mine Rd.
- Decreased parking occupancy since 2020.



Georgia – US 7

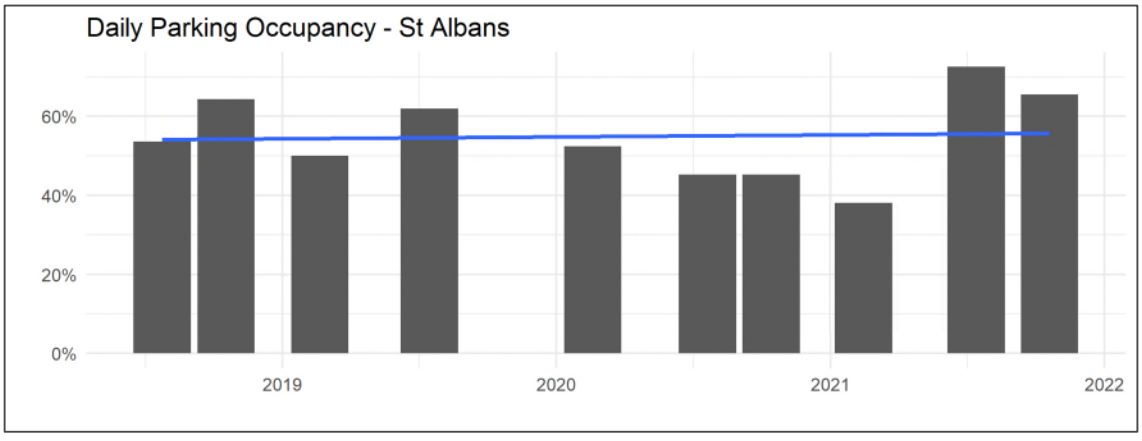
- Located on Skunk Hill Road, off of the intersection of US 7 and I-89 (Exit 18).
- 43 total parking spaces.
- Driveway not well aligned to Skunk Hill Road; driveway meets Skunk Hill Rd at 45 degree angle at a bend in Skunk Hill Road. Too small for transit vehicles to enter.
- Transit service: St. Albans Link Express: 1 morning and 1 afternoon stop. St. Albans bound in the am is a request only. Burlington bound in the pm is a request only.
- 35 mph speed limit on Skunk Hill Rd.
- No sidewalks, shoulder or bike/ped access.
- Decreasing parking occupancy since 2019.





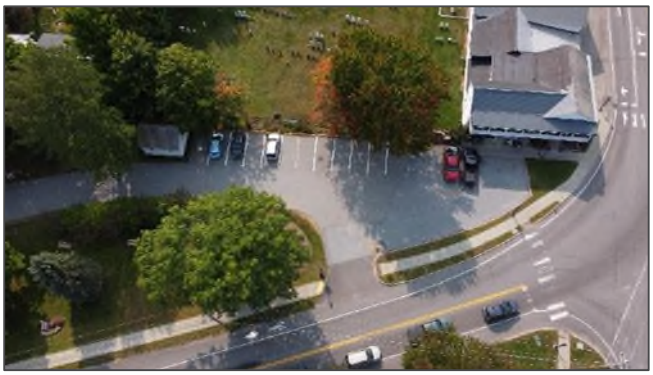
St. Albans – VT 104

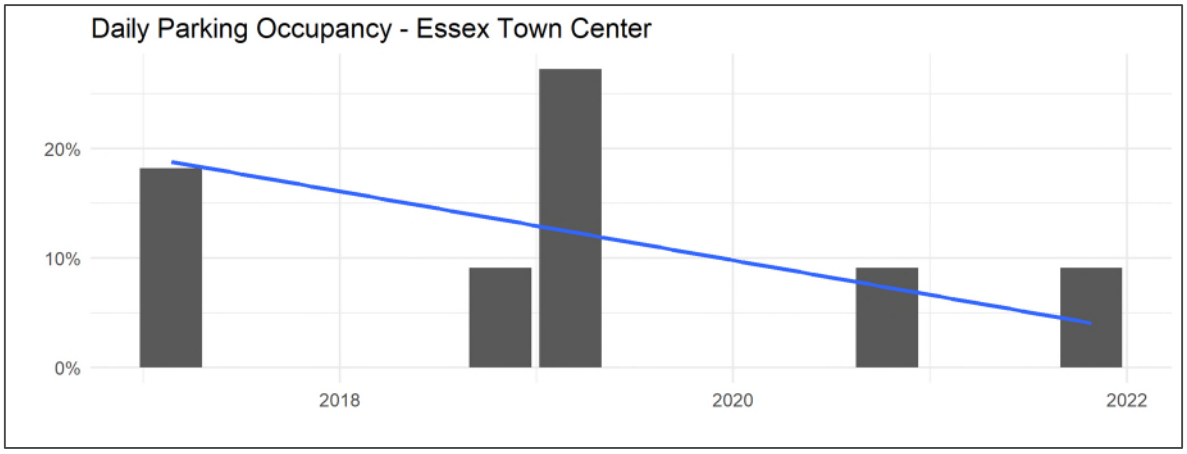
- Located on VT 104 at the junction of VT 36 just north of I-89 exit.
- 84 total parking spaces.
- No current transit service.
- Angled parking spaces, 1-way circulation, could be difficult for a large bus to maneuver.
- 40 mph speed limit on VT 104.
- 3-ft shoulder on VT 104.
- Existing dedicated sidewalk connection.
- Several abandoned vehicles noted.
- Parking occupancy remaining generally constant, with a slight increasing trend in recent years.



Essex Town Center – VT 15

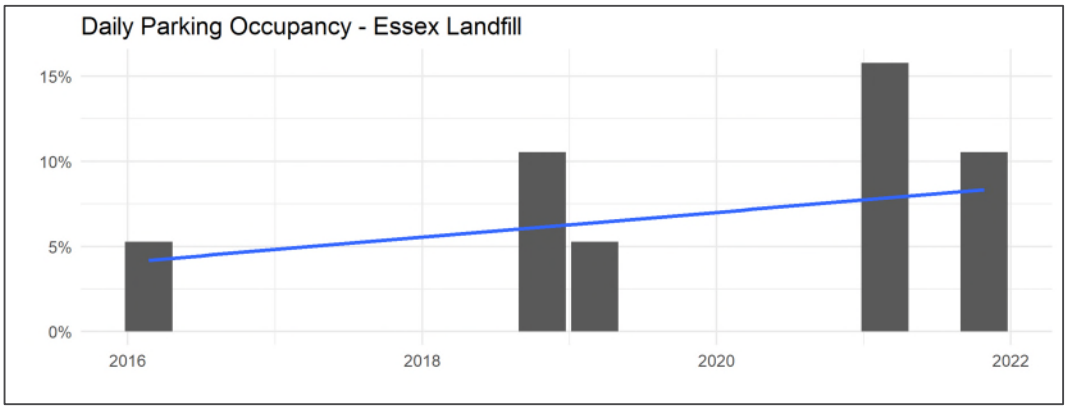
- Located at the intersection of VT 15 and VT 128 at the site of the town green.
- 11 total parking spaces.
- Transit service: Orange/Silver line: 6 morning and 6 afternoon trips.
- Two driveways with one as an enter-only and the other is enter-exit.
- 35 mph speed limit on VT 15.
- Bike lane on VT 15 and sidewalks and crosswalks.
- Park and ride not currently served by the Jeffersonville Commuter. Potential opportunity in the future for this additional transit connection.
- Minimal occupancy data collected but data does show general decreasing trend.





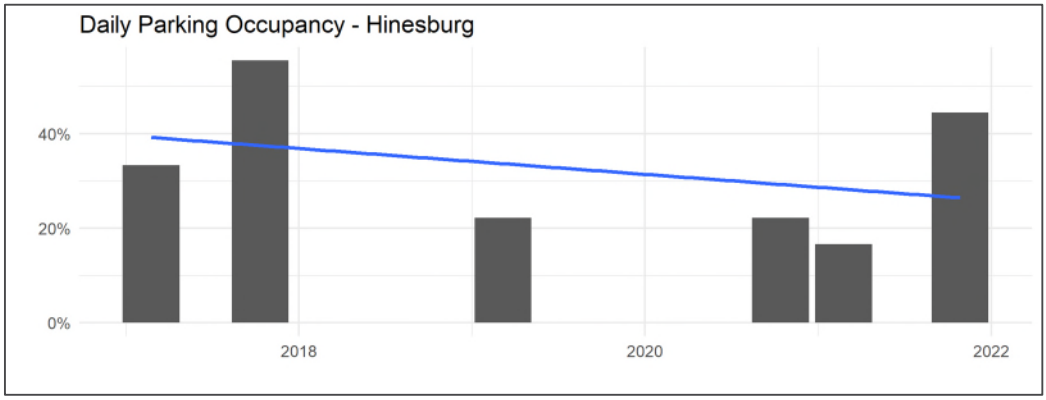
Essex Landfill – VT 2A

- Sufficient turnaround space for a cutaway vehicle; too constrained for a larger bus.
- 19 total parking spaces.
- No current transit service.
- 40 mph speed limit on VT2 A, 25 mph on landfill Lane.
- 3 - 4ft shoulders on VT 2A and no sidewalk access.
- Minimal occupancy data collected but data does show general increasing trend, though the occupancy is still very low (5-15%).



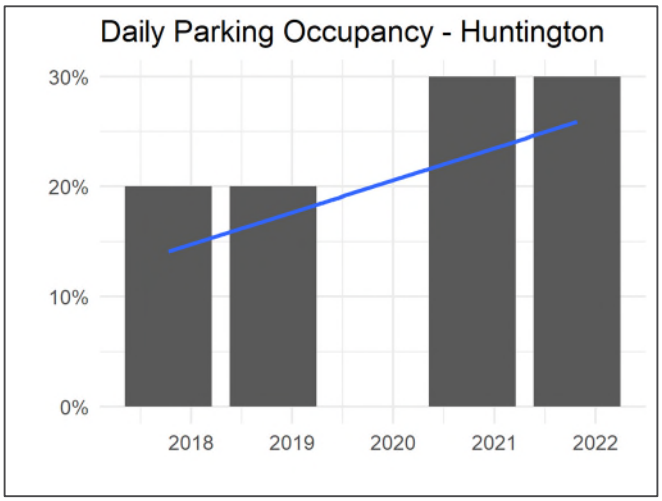
Hinesburg – VT 116

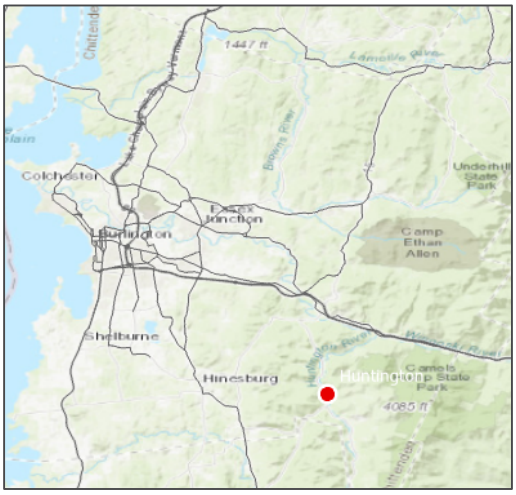
- Located on Charlotte Road just west of VT 116 intersection at the site of the town offices.
- 18 total parking spaces.
- 25 mph speed limit on Main Rd.
- Transit service: Route 116 Commuter: 1 am and 1 pm trip to Burlington and Middlebury.
- No bike infrastructure but a short walking distance to the village.
- Lot could be expanded west into soccer fields if desired.
- Minimal parking occupancy data but available data does show indication of post-COVID rebound in 2022.



Huntington – Huntington Road

- Located on Main Road at the site of the Union Meeting House/Library.
- 25 mph speed limit on Main Rd.
- No current transit service.
- There is a crosswalk but no sidewalks; it is a short walking distance to Village amenities and adding sidewalks would improve access.
- No bike infrastructure.
- Gravel surface; no paved.
- Generally low parking occupancy and not enough data points to discern a trend.



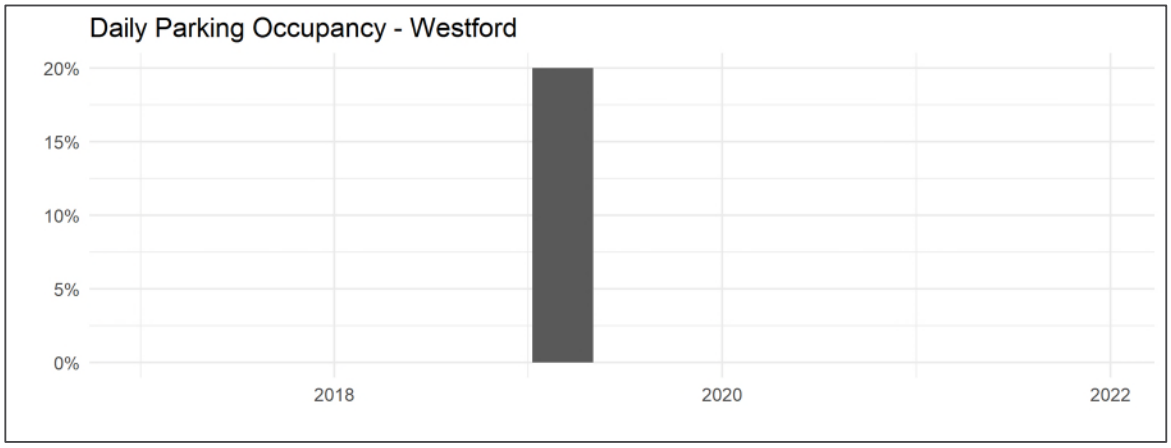


Underhill – VT 15

- Located on River Rd approximately 300 ft east of Dickinson St
- 12 total parking spaces.
- Transit service: 1 am and 1 pm stop for Burlington to Jeffersonville and vice versa.
- 25 mph speed limit on River Rd.
- No sufficient turnaround. Bus must stop in the travel lane.
- Short walking distance to Jericho Market, school, and other Village amenities.
- Existing shared use path connection and crosswalk.
- Property may provide opportunities for park and ride expansion.
- Signage needed.
- Not listed on the VTrans park and ride map.
- No parking occupancy data has been collected.

Westford – VT 128

- Located off of VT 128 on the Westford town green.
- 10 total parking spaces.
- 30 mph speed limit.
- No current transit service.
- 2-3 ft shoulder and no sidewalks or crosswalks.
- Close walking connections to numerous residences, no commercial access.
- Very low parking occupancy; data collected shows 0 spaces occupied for all but one observation, where 2 cars were parked.

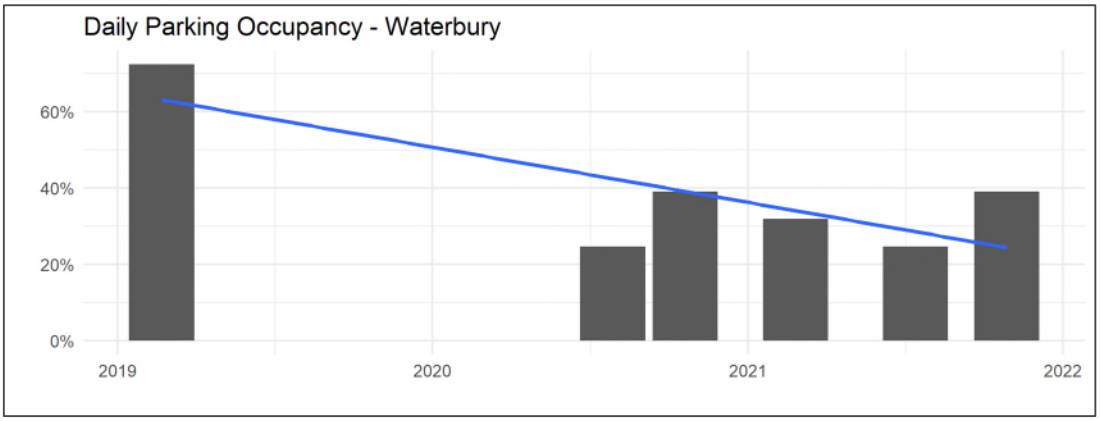


Milton – US 7

- Located 0.25 miles southeast of US 7 just behind the Milton Town Offices, off of Bombardier Rd.
- 29 total parking spaces.
- Transit service: Milton Commuter: Two AM stops bound for Burlington; One mid-day stop bound for Burlington. Two PM stops bound for Milton.
- 30 mph speed limit.
- No signage
- No dedicated bike or pedestrian facilities, but on a low-stress street.
- Sidewalk from US 7 ends at the Town Offices, 175 ft north of the park and ride. Numerous crosswalks connecting to the park.
- No parking occupancy data has been collected.

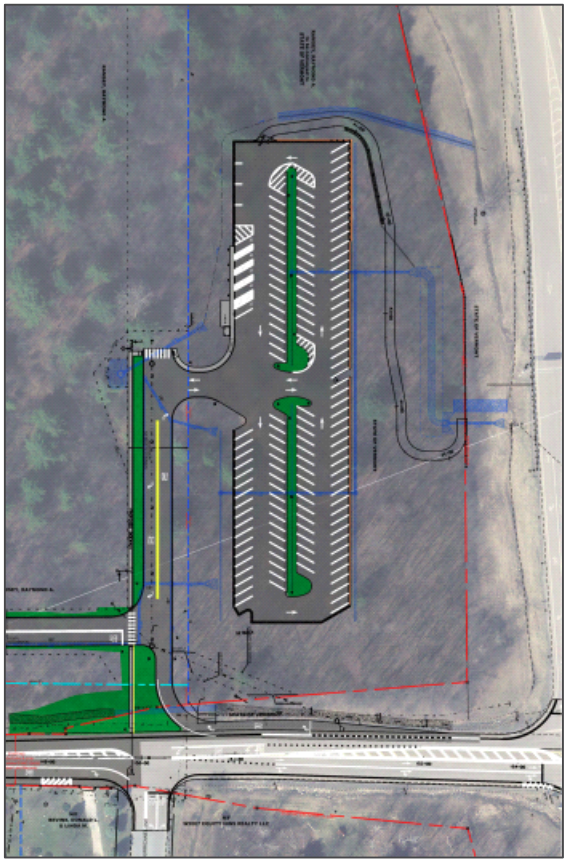
Waterbury – VT 100

- Located off of VT 100, northeast of Exit 10 on I-89 on Lincoln St off Stowe St
- 69 total parking spaces.
- Transit service: Montpelier Link Express: 5 PM Montpelier-bound stops, 3 AM Burlington-bound stops, 1 PM Burlington-bound stop. Route 100 Commuter: 2 southbound am stops, 2 southbound pm request-a-stop opportunities. 1 northbound am stop, 3 northbound pm stops
- Insufficient right turn sight distance.
- 35 mph speed limit on Lincoln St.
- No direct sidewalk access.
- Parking occupancy data shows decreasing trend since 2019.



Williston - Exit 12 & VT 2A

The state park and ride facility at Exit 12 along VT 2A is expected to be operational by 2023. It consists of a 146-space Park and Ride with an access road, bus shelter, bicycle rack, Level 1 EV charging, landscaping, and stormwater management system.[23]



[2]https://resources.vtrans.vermont.gov/FactSheet/FactSheetFiles/05K166/Williston%20CMG%20Park(29)%20Colorized%20Plan.jpg
[3] https://anrweb.vt.gov/ANR/Act250/Details.aspx?Num=4C0699-2

2.2 FACILITY OCCUPANCY

The observed occupancy (percent of parking spaces occupied by vehicles) of the parking facilities provides a perspective and proxy for estimating the demand for each of the facilities. The occupancy has been observed over the past few years by CCRPC staff by periodically visiting each of the parking facilities.

The occupancy rates show a significant degree of variation across the observations. Some of the observations are limited to specific days of the week or specific seasons, which should be taken into account when comparing data across different facilities. Notwithstanding data limitations, facility demand has historically ranged from nearly completely full in Richmond to predominantly unutilized in Westford, though many of the facilities fall in the middle, with occupancy between 30% and 60%. Facilities with occupancy over 75% are considered over capacity. The targeted utilization rate is 50% per the performance standard identified in the Vermont Agency of Transportation Statewide Park-and-Ride Facilities Plan.

TABLE 3: PARKING OCCUPANCY

LOCATION	PARKING SPACES	2017-2019	2020-2021
Richmond	158	91.59%	24.84%
Waterbury	69	72.46%	31.88%
St Albans	84	56.43%	53.33%
Georgia	43	53.88%	34.88%
Colchester - Exit 17	106	52.02%	20.00%
Cambridge	20	42.59%	28.21%
Hinesburg	18	37.04%	27.78%
Colchester - Exit 16	114	16.23%	32.28%
Essex Town Center	11	13.64%	6.06%
Huntington	12	13.33%	30.00%
Essex Landfill	19	5.26%	8.77%
Westford	10	4.00%	0.00%

Source: CCRPC

The COVID-19 pandemic and the subsequent increase in telework clearly impacted facility usage – particularly for those associated with commuter bus services. For most of the facilities, there has been a pronounced decline in parking occupancy, starting in 2020 (see Table 3). For example, Richmond – which has historically been the busiest facility – showed occupancy drop from 90% to 25%. Other facilities showed similar declines; Waterbury went from 72% to 32%, Colchester Exit 17 went from 52% to 20%, and Georgia went from 54% to 35%. The St. Albans demand is one outlier given the stability in demand – which may indicate that those users may have been less affected by a shift to remote work and teleworking, or the user base consists of additional demand beyond commuters. Colchester Exit 16 is another outlier which shows an increasing trend, though this may have been the result of the facility being relatively new and the base level of usage was still developing. It is uncertain whether this trend for increased remote work and teleworking resulting in less facility demand will continue; section 3.4

discusses future conditions, which includes an assessment of the likelihood that recent telework trends continue.

2.3 INVENTORY SUMMARY

- There are 14 total facilities in the analysis; of these facilities all function to some extent as park and rides and a few closer to large employment centers may also function as intercept facilities.
- Most of the facilities saw a drop in occupancy after the onset of the COVID-19 pandemic and only a few indicate a trend to pre-covid levels of demand.
- The current occupancy data collection methodology makes comparison between locations difficult. Moreover, there was not sufficient data at consistent times or seasons to draw meaningful conclusions.
- Large vehicle access (i.e., transit buses) and maneuverability is an issue at several locations.
- Most of the facilities are in satisfactory physical condition, though a few lack important attributes such as shelters, signage, and striping.
- About a third of the facilities (36%) are not currently served by transit.
- Most of the facilities do not have adequate non-motorized (bike & pedestrian) access and infrastructure.
- The ongoing construction of a new park and ride facility at Exit 12 will likely impact travel patterns going in and out of Burlington and other adjacent job centers.
- Three quarters of the facilities are located adjacent to active land use, such as a park or commercial area.
- The existing facilities are generally located uniformly throughout Chittenden County, with the exception of the southwest portion of the region which does not currently have a facility.

3.0 DATA TRENDS

This chapter highlights historical and recent data trends involving travel behavior and parking in Chittenden County. Travel data can inform and identify trends in key indicators of parking demand - such as transit ridership, commute flows, and remote work – which all influence both the likely demand for existing facilities, as well as the potential demand for proposed facilities. The key indicators outlined in each section of this chapter should be monitored on an on-going basis to determine whether immediate or future investments in facilities should be pursued. While this chapter summarizes existing and historical data trends, Chapter 5 discusses the future conditions.

3.1 EMPLOYMENT AND COMMUTING

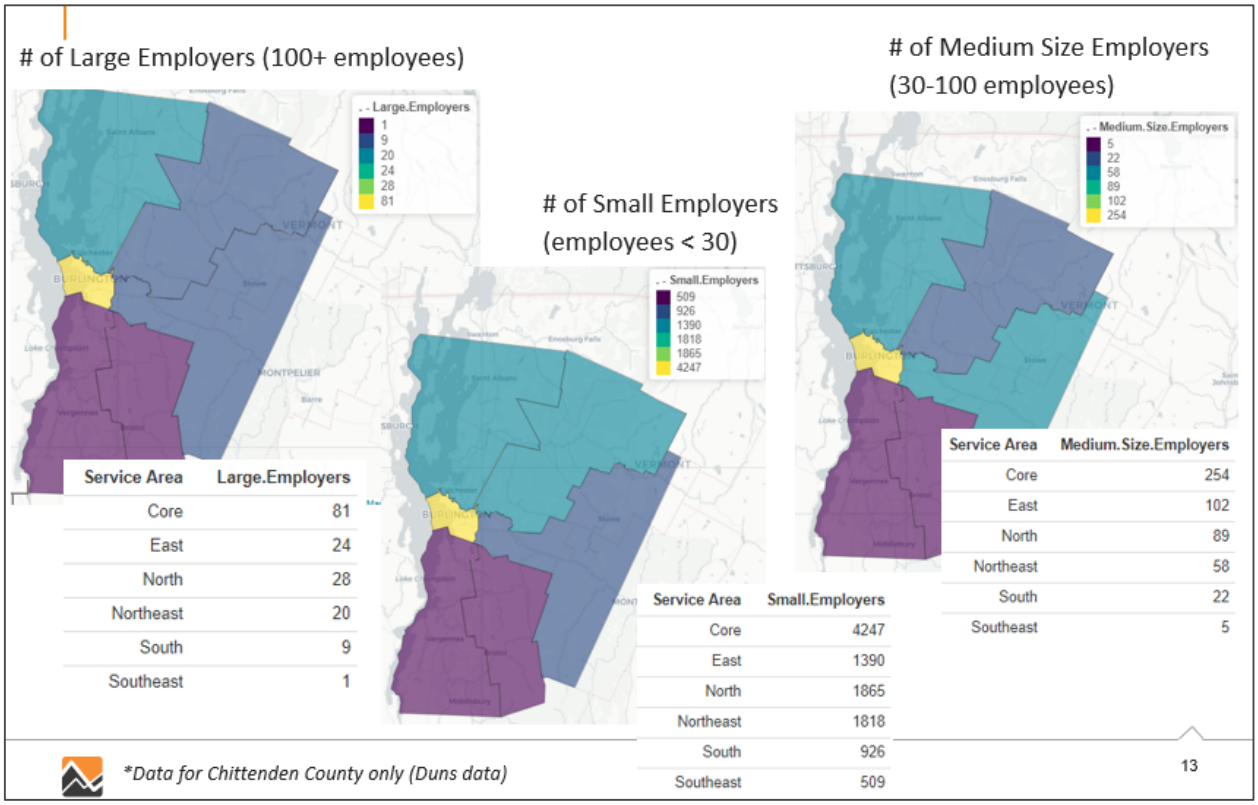
Employment and commuting are two key interrelated concepts, which are crucial in assessing both the need for park and ride/intercept facilities and the appropriate amenities or characteristics of a given facility. While employment and commuting can be analyzed using a variety of different metrics and data sources, there are two that are especially insightful: employers and commute flows.

Employment Patterns

First, it is important to understand the current location and size of employers in the region and how the spatial and quantitative characteristics of regional employment are changing over time. The type of information is best understood using business level data, which can be acquired through a handful of different data sources. This analysis used the Dun's employment data acquired by the CCRPC in 2016 as part of a CCRPC model update and 2018 Metropolitan Transportation Plan. The employment data is aggregated at the service area level (see Figure 4).

The employment data indicate that the region's largest employers (those with 100 or more employees) are located in the core service area (81 employers), followed by the east, north, and northeast, which all have 20-30 large employers. There are similar geographic trends for both medium and small size employers. While these results are largely expected, over time it will be crucial to monitor this information to see if these geographic distributions remain the same. It is possible that the COVID-19 pandemic and other societal trends may alter this employment landscape going forward. Similar business level data should be acquired over time to develop an updated current picture of employment trends and to analyze trends over time.

FIGURE 4 - GEOGRAPHY OF EMPLOYER SIZES



Source: Dun's, 2016

Commuting Flows

Commuting flows represent the relationship between residences, jobs, and commute work trips. Understanding where people live and work (*commute flows*) is fundamental to assessing whether existing facilities are appropriately serving the population and whether new facilities may fulfill unmet demand. The number of people that travel from their home to their workplace location and back, can be summarized for each service area – or for other smaller areas such as census tracts. The commuter flows described here are derived from the US Census Longitudinal Employer-Household Dynamics (LEHD) data from 2019 and summarized for an average weekday. This information is released from the US Census on an annual basis and over time can reveal commuting trends that will impact the success of park and rides throughout the region. For example, this data can shed light on where new residents in the region are choosing to live in relation to their place of work; whether workers are returning to normal commute patterns after the disruption of the pandemic; where new employers are attracting residents from; and how commuting may contribute to congestion in the region.

Using the pre-COVID-19 data as of 2019, the following conclusions can be drawn from the data.

- The majority of Chittenden County residents live in the service area where they work.
- For residents that work outside their service area, the top 5 highest commute flows go from the
    - 1) North to the Core (11.7k)
    - 2) Northeast to the Core (6.8k)
    - 3) East to the Core (5.7k)
    - 4) North to the Northeast (4.1k)
    - 5) South to the Core (3.5k)
- The service areas with the highest number of commuters who commute from another service area (outside of their home service area) is the east, followed by the core and then the southeast.
- The service areas with the highest commuter flows that go beyond all service areas (further than the counties adjacent to Chittenden County) are the east, followed by the south.

TABLE 4: COMMUTER FLOWS BY SERVICE AREA

HOME SERVICE AREA	CORE	NORTH	NORTH-EAST	EAST	SOUTH	OUTSIDE SERVICE AREA	SOUTH-EAST	TOTAL
Core	17,075	3,557	1,938	3,696	1,491	1,554	299	29,610
North	11,781	17,282	4,159	4,563	973	2,066	234	41,058
Northeast	6,808	4,888	7,967	6,191	671	1,974	244	28,743
East	5,774	2,229	2,405	33,239	965	5,956	333	50,901
South	3,588	952	578	1,751	10,708	3,867	635	22,079
Outside Service Area	2,547	1,735	1,773	7,400	2,030	81,881	194	97,560
Southeast	2,230	588	545	1,623	1,836	638	1,572	9,032
Total	49,803	31,231	19,365	58,463	18,674	97,936	3,511	

Source: LEHD, 2019

The commuter flows for the service areas are visualized using the Sankey diagrams below. The residential service area is on the left column with the flows connecting to the employment service area on the right.

FIGURE 5 - COMMUTE FLOWS, SERVICE AREAS ONLY. RESIDENTIAL SERVICE AREA TO EMPLOYMENT SERVICE AREA

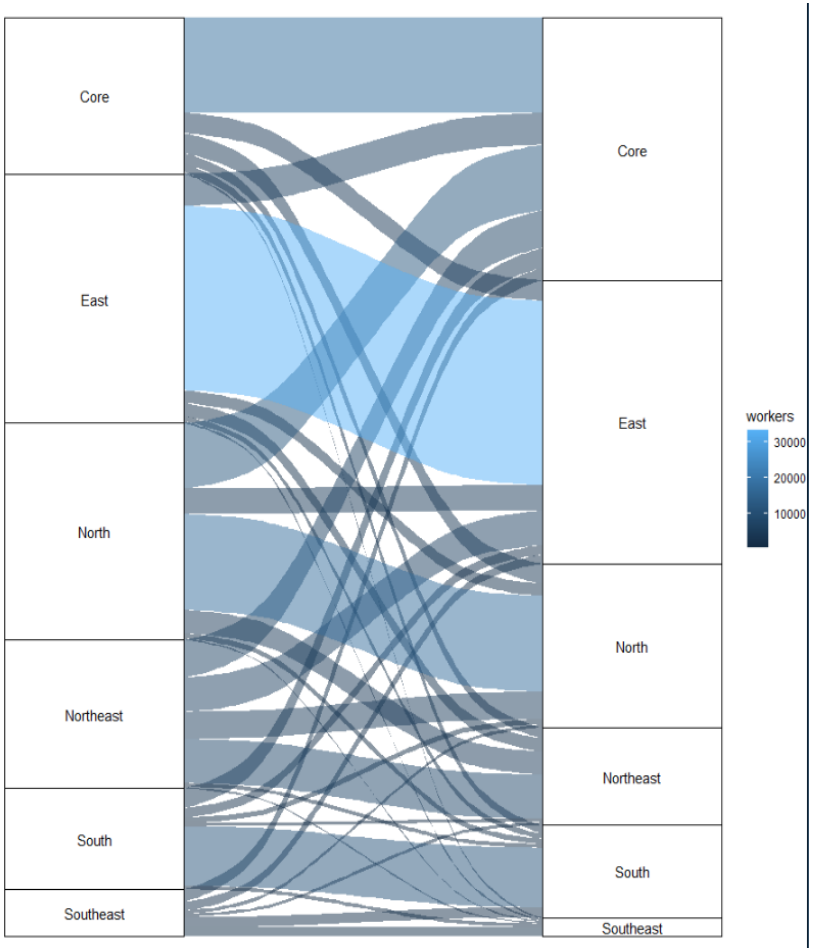
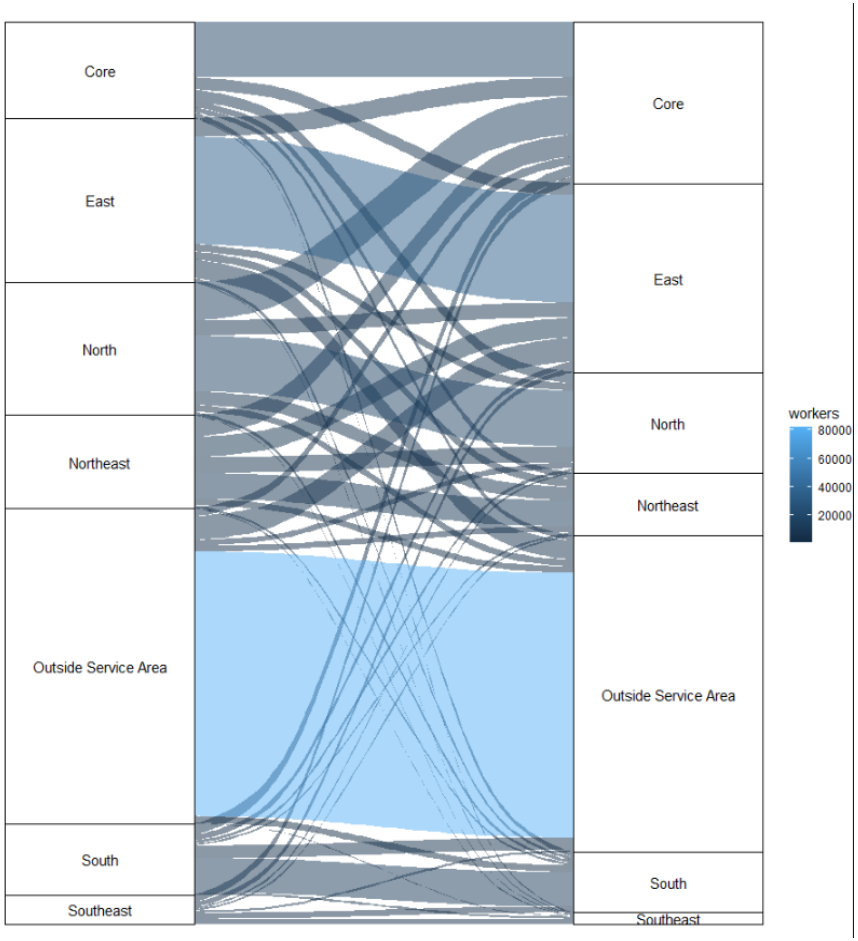


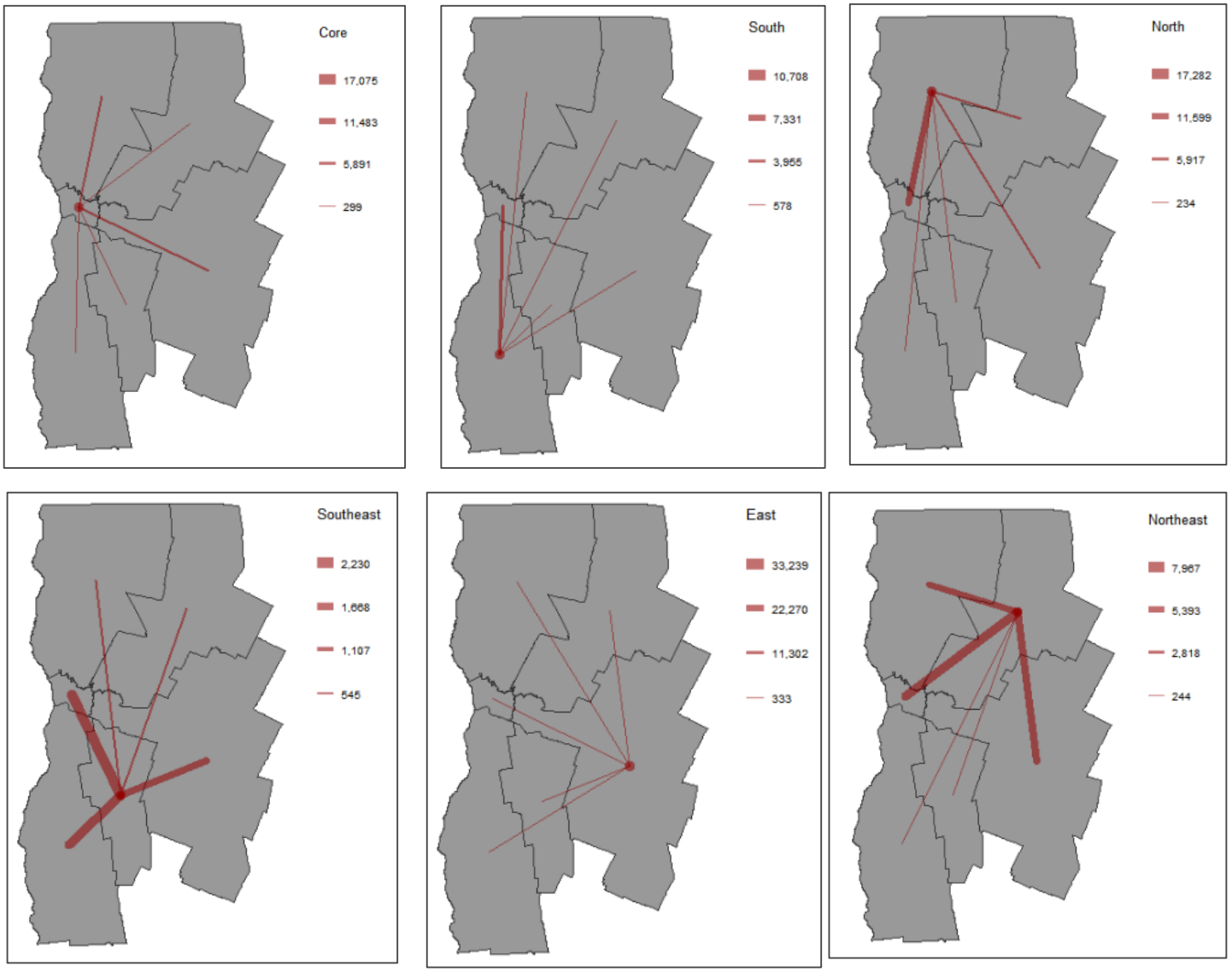
FIGURE 6 - COMMUTE FLOWS, OUTSIDE SERVICE AREA INCLUDED. RESIDENTIAL SERVICE AREA TO EMPLOYMENT SERVICE AREA. (VT, STATEWIDE)



Source: LEHD, 2019

The commuter flows for the service areas are visualized spatially in Figure 7; the thickest lines indicate the highest number of commuting flows, whereas the thinner lines represent fewer commuter flows. For service areas with predominately thin lines, this indicates that most workers live in the service area where they work.

FIGURE 7 - 2019 EXISTING COMMUTING FLOWS



Source: LEHD, 2019

3.2 POPULATION

The resident population is a fundamental driver of parking demand. Understanding trends in population growth can inform a parking facility's potential demand or potential market for users. The size of the market catchment area can be useful to understand the size and configuration of the various parking facilities within each service area. The total population as well as the rate of growth within each service area is valuable to inform investment needs and prioritization.

A growing population could lead to an increase in commute trips throughout a region. Alternatively, a decreasing population is likely correlated with decreasing demand for park and ride facilities. This information is sourced from the American Community Survey and can be updated on an annual basis. Over the past decade, population in Chittenden County and surrounding communities has grown, although the amount of growth varies between service areas. Depending on the location, the population growth over the past decade has varied between 7% and less than 1%. The core and northeast service areas experienced high growth while all other areas have growth at less than 4%. The population for 2010 and 2020 within the six service areas is shown in Table 5.

TABLE 5: SERVICE AREA POPULATION

SERVICE AREA	2010	2020	POPULATION GROWTH (TOTAL)	ANNUAL AVG. GROWTH
Northeast	50,388	53,805	6.78%	0.68%
Core	59,291	62,004	4.58%	0.46%
North	74,304	77,039	3.68%	0.37%
Southeast	17,334	17,711	2.17%	0.22%
South	37,354	37,883	1.42%	0.14%
East	83,865	84,906	1.24%	0.12%

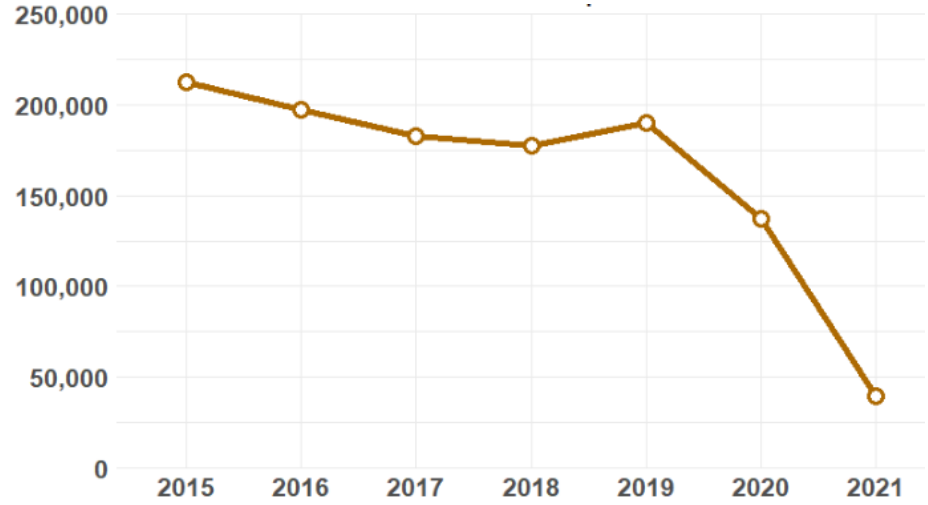
Source: 2020 and 2010 ACS 5-Year Estimates derived by RSG

3.3 TRANSIT RIDERSHIP

The demand for transit service and park and rides is closely connected. Strategically located and designed park and ride facilities supports transit ridership from those locations when paired with efficient, frequent, and desirable transit service. Therefore, transit ridership is key indicator of park and ride demand and success.

Service provided by Green Mountain Transit (GMT), which serves Chittenden County, has seen decreasing trends in transit ridership in recent years, even before the COVID-19 pandemic. Commuter service ridership is down by 82% between 2015 and 2021. But prior to the pandemic (2015-2019) commuter ridership had already decreased by 11%. The commuter routes include the Link Express routes connecting Burlington to St. Albans, Middlebury, and Montpelier as well as the Commuter routes to Jeffersonville (VT Route 15), Hinesburg (VT Route 116), and Milton (US 7). The annual ridership from 2015 to 2021 is shown in Figure 8.

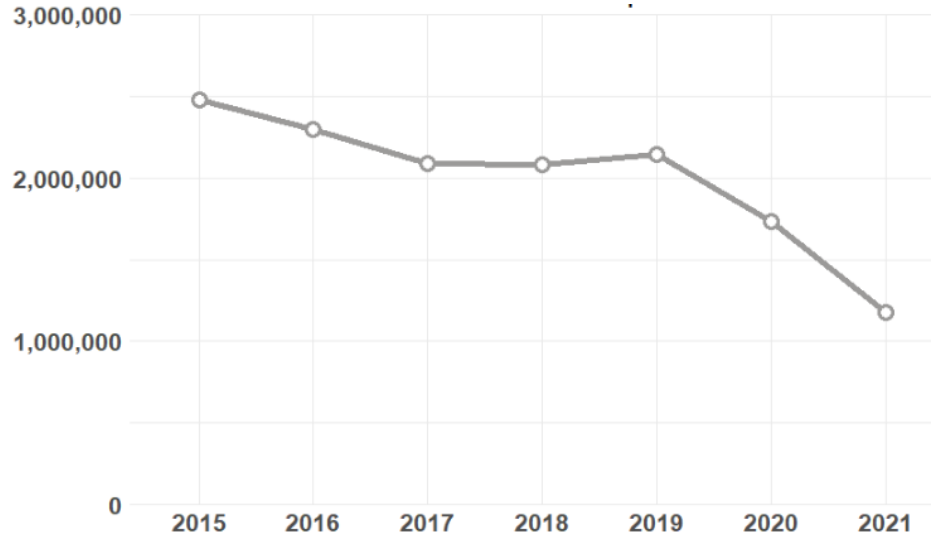
FIGURE 8: GMT HISTORICAL ANNUAL RIDERSHIP FOR COMMUTER ROUTES



Source: Green Mountain Transit, 2022

Local route ridership shows a less pronounced decline with a 52% decrease between 2015 and 2021 although a slighter larger 14% decline before the pandemic (2015-2019) compared to the commuter routes. Figure 9 shows the historical annual ridership for GMT local routes since 2015. The recent trends in GMT annual ridership reinforce the observations in park and ride occupancy. The softening demand for public transportation may create headwinds for successful operation and utilization of the park and rides that focus on connecting users to transit.

FIGURE 9: GMT HISTORICAL ANNUAL RIDERSHIP FOR LOCAL ROUTES



Source: Green Mountain Transit, 2022

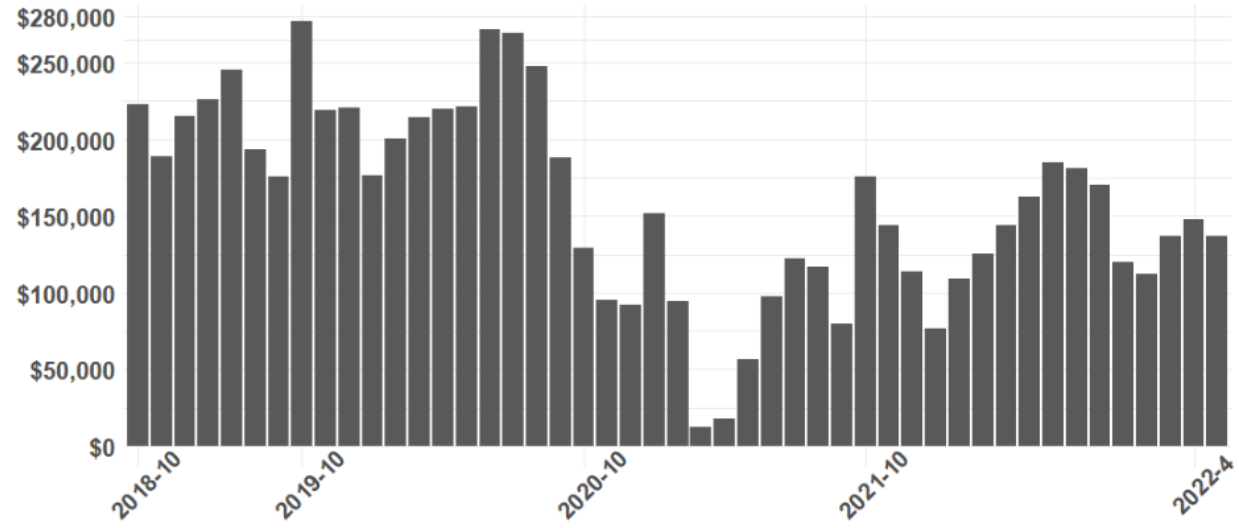
3.4 PARKING DEMAND

Information on parking demand in commercial and employment centers such as downtown Burlington may relate to the demand for remote park and ride facilities throughout the region. When parking demand and occupancy in downtown Burlington is high (such as when street parking is scarce and parking garages are full) frequent travelers (e.g., commuters) will seek out alternatives, such as carpooling and transit to access Burlington. Park and rides are an important asset to meet this demand. Alternatively, when parking demand is low – plentiful street parking and empty garages – the demand for park and rides will also be low.

Parking demand and occupancy in Burlington is not available at the granularity desired to relate downtown parking demand to park and ride demand. However, a suitable proxy is the amount of parking fee revenue collected by the City of Burlington. Parking revenue historically shows seasonal fluctuations with higher revenue in the summer compared to the winter.

On-street parking revenue data collected from the Department of Public Works indicate that revenue dropped significantly starting in the 2nd quarter of 2020 as the COVID-19 pandemic started to affect travel behavior. Since the initial months of the pandemic, parking revenues have rebounded substantially, although not to pre-pandemic levels. For example, parking revenues for April 2022 show a 30% decline compared to April 2019.

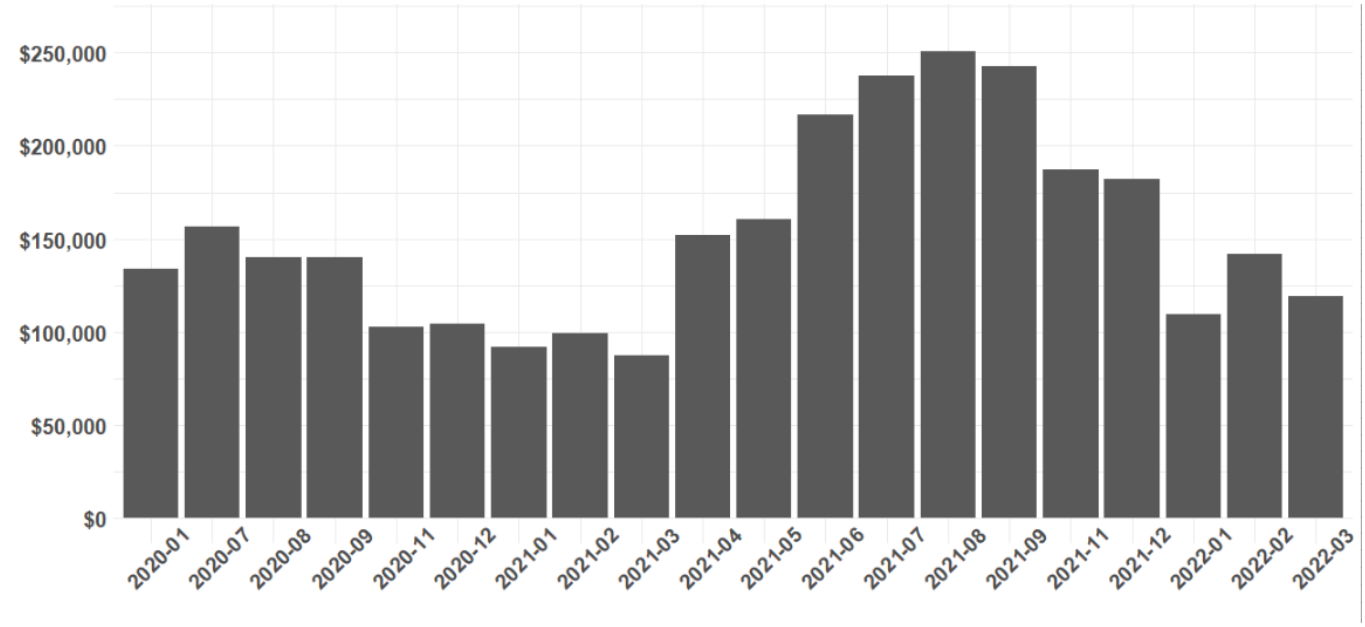
FIGURE 10: CITY OF BURLINGTON ON-STREET PARKING REVENUE (MONTHLY)



Source: Burlington Department of Public Works, 2022

Parking garage revenue was not available prior to January 2020, providing a limited and skewed historical perspective. Nonetheless, the available data, which starts in January 2020, shows a similar trend to on-street parking. Revenues in garages declined during the early months of the pandemic – though not as severely as on-street parking – and have somewhat rebounded in 2022. But like on-street parking, the available garage revenue data shows that demand has still not reached pre-pandemic levels; revenue from January 2022 was down 18% from January 2020.

FIGURE 11: CITY OF BURLINGTON GARAGE PARKING REVENUE (MONTHLY)



Source: Burlington Department of Public Works, 2022

Parking revenue in Burlington is an excellent indicator that may align with demand for remote park and rides and transit ridership. Demand for remote parking options will almost always be low if affordable and plentiful options exist close to the user's desired destination. Over time, revenues or even parking occupancy data (permits or entry gate data) from specific lots that focus on commuters could be explored.

3.5 REMOTE WORK

The COVID-19 pandemic impacted society in myriad ways, including a substantial change in the proportion of people who work from home. This trend is reflected in both commute data and parking utilization at Chittenden County park and ride facilities (see Table 3). Data from the US Census American Community Survey (ACS) shows substantial increases in work from home trends over the past decade (see Table 6). In particular, the most recent data comes from the year 2020, which partially – though not fully – reflects the impact of the COVID-19 pandemic.

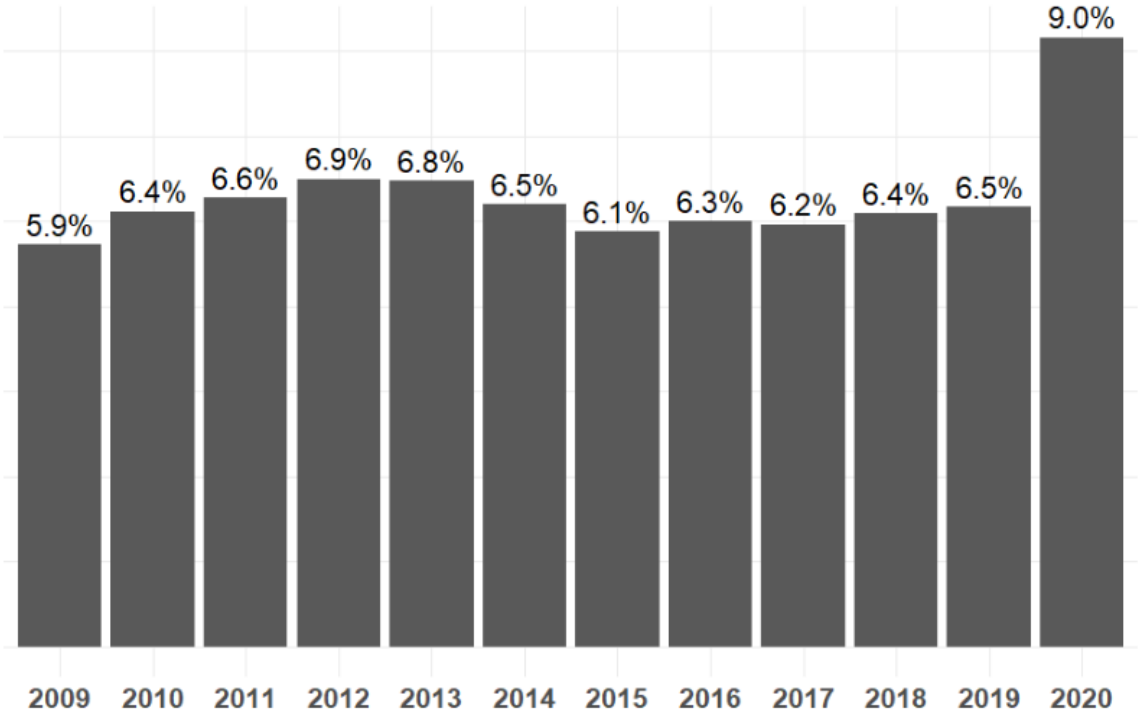
TABLE 6: WORK FROM HOME SHARE WITHIN SERVICE AREAS

SERVICE AREA	2009 WORK FROM HOME	2020 WORK FROM HOME	% CHANGE - WORK FROM HOME
Core	4%	8%	115%
Southeast	6%	13%	100%
North	4%	7%	71%
Northeast	5%	8%	61%
South	8%	12%	57%
East	9%	10%	21%

Source: American Community Survey, 2020

In 2020, for residents commuting to work in all service areas, 9% worked from home compared to 6% in 2009. It is important to note that this data comes from the ACS rolling 5-year average and may underestimate the extent of remote work in 2020. During this same time period, within each service area, the percent increase in working from home ranged from 21% in the east to 115% in the core. While pandemic was a rare event that caused mandatory shifts in behavior, there was already a trend of increase telework; between 2009 and 2019 the percent of telework in all service areas increased by 8%. The trend over time is shown in Figure 12.

FIGURE 12: WORK FROM HOME SHARE OF ALL COMMUTES IN SERVICE AREAS



Source: American Community Survey, 2020

3.6 TRAVEL MODE

Understanding existing travel behavior is important in identifying why facilities may be underutilized and where there may be untapped potential for facility development or extension. PnR and Intercept facilities are design to consolidate trips and increase average vehicle occupancy. For example, areas with high single occupancy vehicle commutes and limited access to high quality facilities today may have opportunities for additional facilities or improving the facilities that are already there. Moreover, areas with high numbers of carpoolers and high transit use may indicate that existing facilities are operating successfully.

American Community Survey (ACS)

The most comprehensive available data on commute modes comes from the Census American Community Survey (ACS). Data was analyzed for 2020 and represents commute to work mode for residents living in each service area. In all service areas, drive alone is the predominant mode at 72%, followed by carpooling (8.5%), walking (6.1%) and working from home (9%) (Table 7). This data represents all service areas, which includes the commute modes of residents outside of Chittenden County, such as those in Montpelier. The ACS work from home share includes those who work from home full time as well as those who may be teleworking or working remotely.

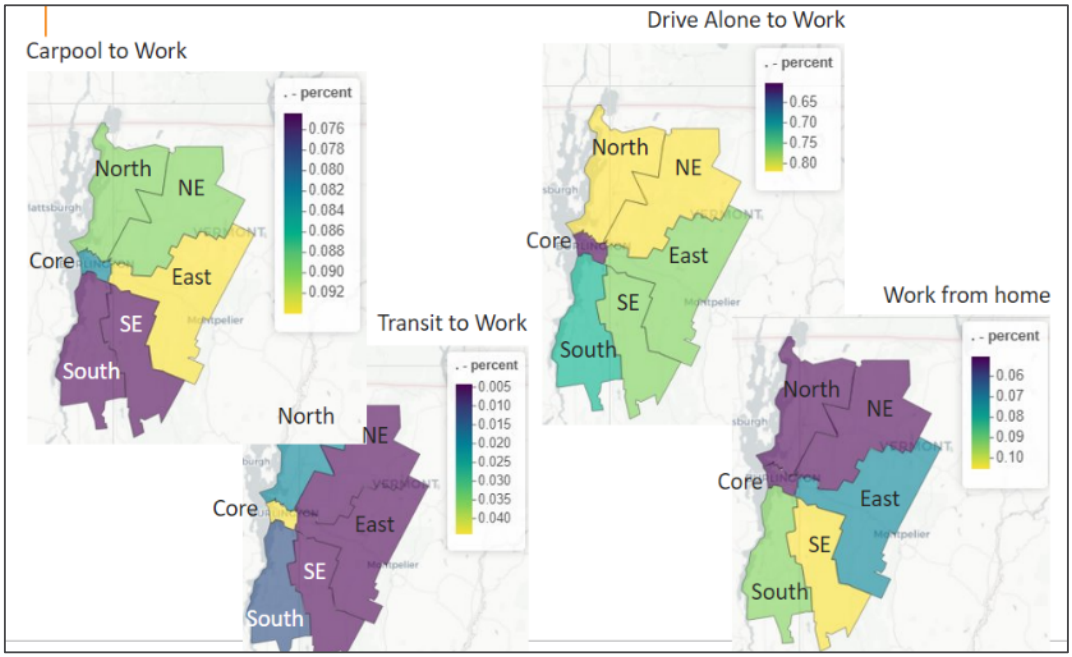
Figure 13 shows the data at a more granular scale, which highlights the differences between average commute travel modes between the different service areas. The highest rates of carpooling are seen in the east followed by the north and northeast while the south and southeast have the lowest carpool rates. For those that work from home, the southern service areas have the highest rates. In terms of transit, the service areas that are closest to the core have the highest rates.

TABLE 7: TRAVEL MODE

MODE	PERCENT
Drove alone	72.7%
Worked from home	9.0%
Carpooled:	8.5%
Walked	6.1%
Public transportation (excluding taxicab):	1.7%
Bicycle	1.2%
Other means	0.7%
Taxicab	0.1%
Motorcycle	0.1%

Source: American Community Survey,2020

FIGURE 13: KEY TRAVEL BEHAVIORS



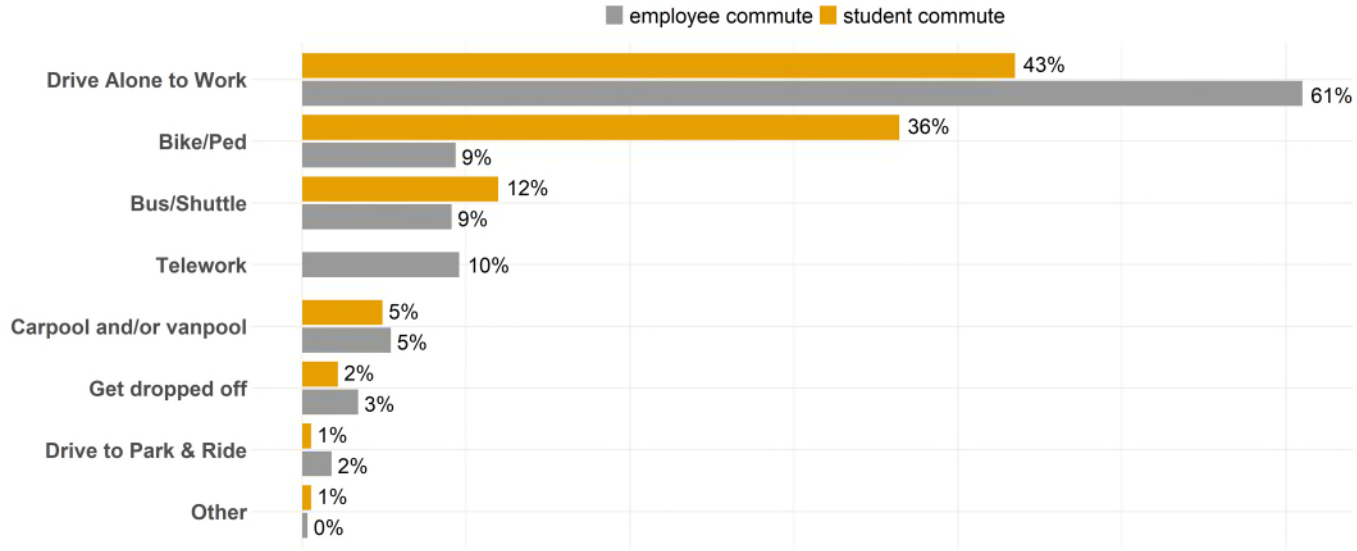
Source: American Community Survey,2020

CATMA

Additional commute data was obtained for a handful of individual employers from the Chittenden Area Transportation Management Association (CATMA). The data represents the travel behavior of a sample of employers in city of Burlington and therefore does not represent the region as a whole. Nearly 3,000 employees were surveyed amongst eight of the largest employers in the region, in addition to nearly 500 students from two prominent universities.

Of the employees surveyed, 60% reported driving alone as their primary mode, followed by carpooling (5%), walking (5%), employer shuttle (5%), public bus (4%), and getting dropped off (3%). The results are visualized in Figure 14.

FIGURE 14: CATMA SURVEYED MODE SHARES



Source: Chittenden Area Transportation Management Association (CATMA), 2022

4.0 PROPOSED FACILITIES

4.1 OVERVIEW

Within Chittenden County there have been many parking facilities considered over the past years, including a long list of potential facilities in the 2011 Plan. Since that plan was completed, some facilities have progressed, such as the Park and Ride at Exit 12 in Williston which will be constructed and operational by 2023, and others have been removed from further investigation.

This chapter reviews the proposed locations that have been identified as potentially suitable for a new facility and subsequent sections provide additional detail about the level of demand for the facility and implementation actions that should be taken.

A total of eight proposed facilities (Figure 15) were identified through a screening process that involved several steps:

1) Review of the previous 2011 plan and analysis of facilities that were prioritized in that plan but which have not yet been built as of 2022.
2) Consultation with local jurisdictions on recent land use trends, feasibility analysis of certain sites, and community priorities. Many of the eight facilities have support from the local jurisdictions for further analysis.
3) Quantitative and spatial analysis of factors that may influence facility success. These include annual average daily vehicle traffic, transit level of service, bicycle and pedestrian connections, accessibility, and proximity to amenities.

The proposed facilities are shown below in Figure 15.

FIGURE 15: PROPOSED PARKING FACILITIES

Source: RSG

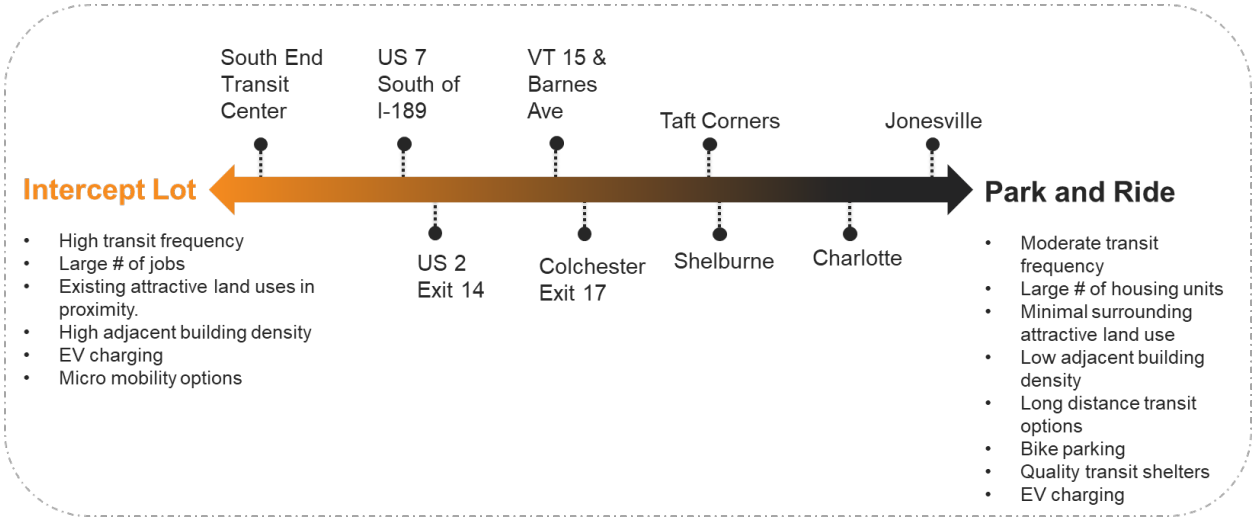
4.2 PROPOSED FACILITY TYPE

The type of parking facilities included in this plan are commonly described as either a *Park and Ride* or an *Intercept Lot.* Typically, park and rides are described as a facility located close to the origin of a trip, such as a home, while intercept lots are described as facilities located close to the destination end of a trip, such as an employment center or other area of attraction such as shopping or recreation. Parking facilities are often ascribed one or the other of these labels based upon the built environment which surrounds each facility. For example, a location that is surrounded by housing units and is far from employment centers would be described as a park and ride. This type of facility would likely serve residents traveling from their nearby home and taking transit or carpooling a long distance to their job. Alternatively, an intercept facility would serve as parking on the far end of the trip and intended to be a point where a user would utilize a high frequency transit service to the final destination or mode other than a private vehicle.

Yet many locations may be surrounded by both housing units, employment, and other amenities that are attractive to travelers and potential users of parking for many different reasons. This is especially true as the previously predominant home-work travel pattern has been disrupted by the COVID-19 pandemic and other long-term trends of increased flexibility at the workplace and density and diversity of urban form.

Therefore, as previously noted, it is more appropriate to think of each facility as existing on a spectrum rather than a strict single category. The facilities proposed in this plan may serve a diverse array of purposes to travelers, which are difficult to limit to single type of parking category. Therefore, although this plan describes facilities into intercept facility or park and ride for convenience, each facility may function as both at times. Figure 16 places each proposed facility on the spectrum between intercept lot and park and ride.

FIGURE 16: PARKING FACILITY SPECTRUM



Source: RSG

4.3 SOUTH END MULTIMODAL CENTER

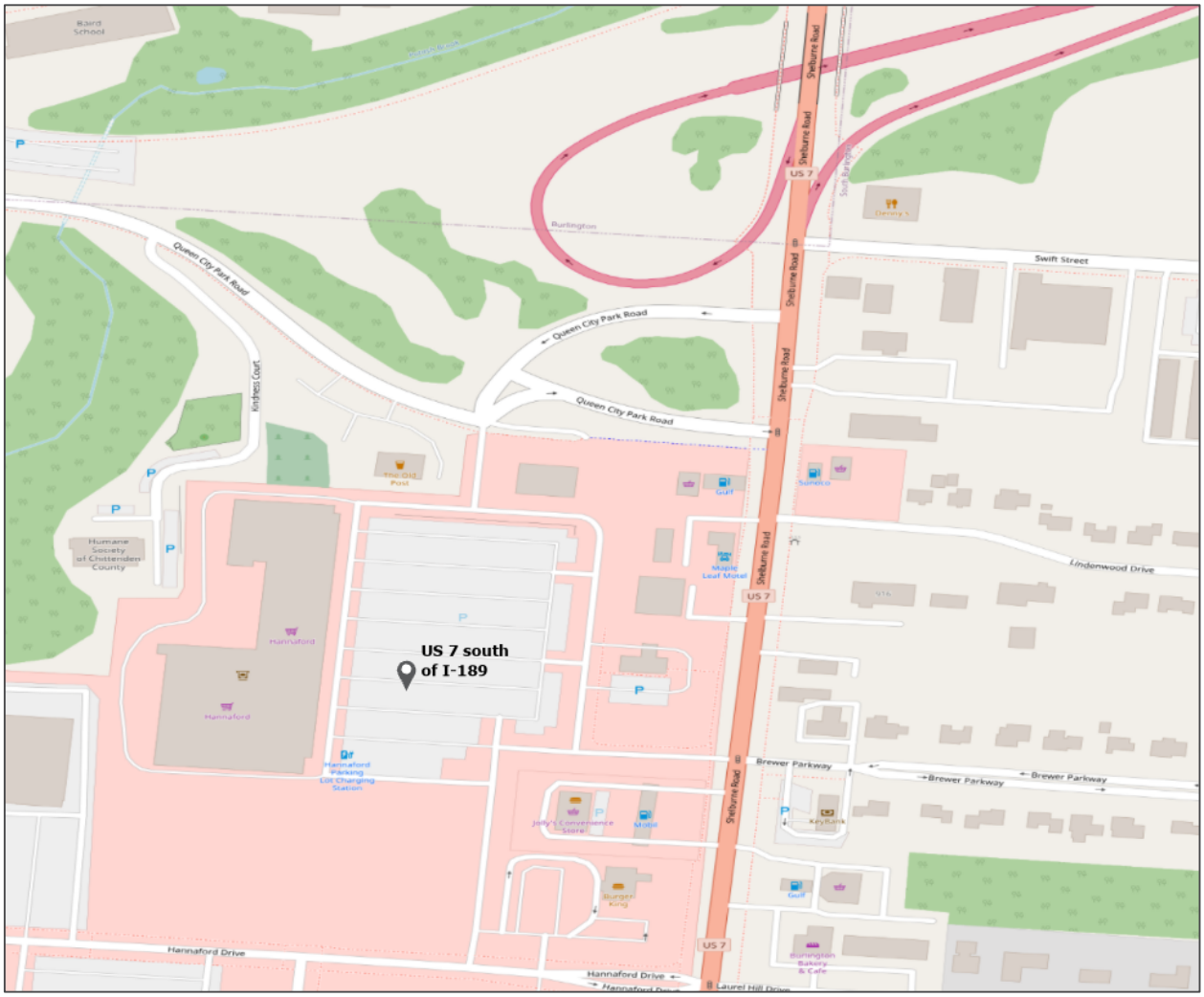
There is a feasibility study being conducted for the South End Multimodal Center, located at the 68 Sears Lane and 125 Lakeside Avenue parcels in Burlington, Vermont. Previously, this location was studied extensively about 15 years ago and was called the South End Neighborhood Transit Center. The Burlington South End Multimodal Center Feasibility Study (ongoing) will examine the feasibility of a transit center and potential housing at 68 Sears Lane in Burlington. The study will also investigate site layout options that tie together the planned uses on both parcels, develop conceptual construction cost estimates, investigate potential funding streams for the project, and support stakeholder outreach. The study includes an existing conditions assessment and plan, cost estimates, transit funding analysis, stakeholder review process, public outreach, conceptual site plans, and final report. Study results are expected in the fall of 2022. See https://www.ccrpcvt.org/our-work/transportation/current-projects/scoping/burlington-south-end-multimodal-center-feasibility-study/ for more information.

FIGURE 17: MULTIMODAL CENTER LOCATION

4.4 US 7 SOUTH OF I-189

This proposed facility is located adjacent to the I-189/US 7 interchange in South Burlington at the new Hannaford's location (on a former 'K-Mart' plaza). It should be noted that there are significant constraints to this site being implemented which include private ownership, in sufficient transit service (only one route that is subject to delays and infrequent service), and other factors.

FIGURE 18: US 7 SOUTH OF I-189



Source: RSG using Open Street Maps base

4.5 SOUTH BURLINGTON: US 2-EXIT 14

This proposed facility is located north of the Double-Tree in South Burlington. The lot has been the subject of a 2013 scoping effort.[4] The lot could be accessed from US2 and from a slip ramp diverging from the I-89 Exit 14 off ramp or via US Route 2 Williston Road.

[4] Exit 14 Slip Lane & Intermodal Intercept Parking Facility: https://studiesandreports.ccrpcvt.org/wp-content/uploads/2017/01/Exit14IntermodalIntercept_FinalReport.pdf

FIGURE 19: SOUTH BURLINGTON US-2 / EXIT 14

Source: RSG using Open Street Maps base

4.6 COLCHESTER: VT-15 AND BARNES AVENUE

This proposed facility is located off of VT-15 near Barnes Avenue in Colchester. There is currently a small lot that should be considered for development. The previous 2011 Park and Ride plan stated that "Its utility depends on whether or not commuter rail is initiated and long-term redevelopment of land within Fort Ethan Allen. A location near the Lime Kiln Road Bridge was also discussed in the past by Saint Michael's College as a multi-level structure. Within

walking and biking distance of residential and service areas, but has limited pedestrian and bicycle facilities. No action recommended at this time."

FIGURE 20 - COLCHESTER - BARNES AVE PROPOSED FACILITY

Source: RSG over Open Street Maps base

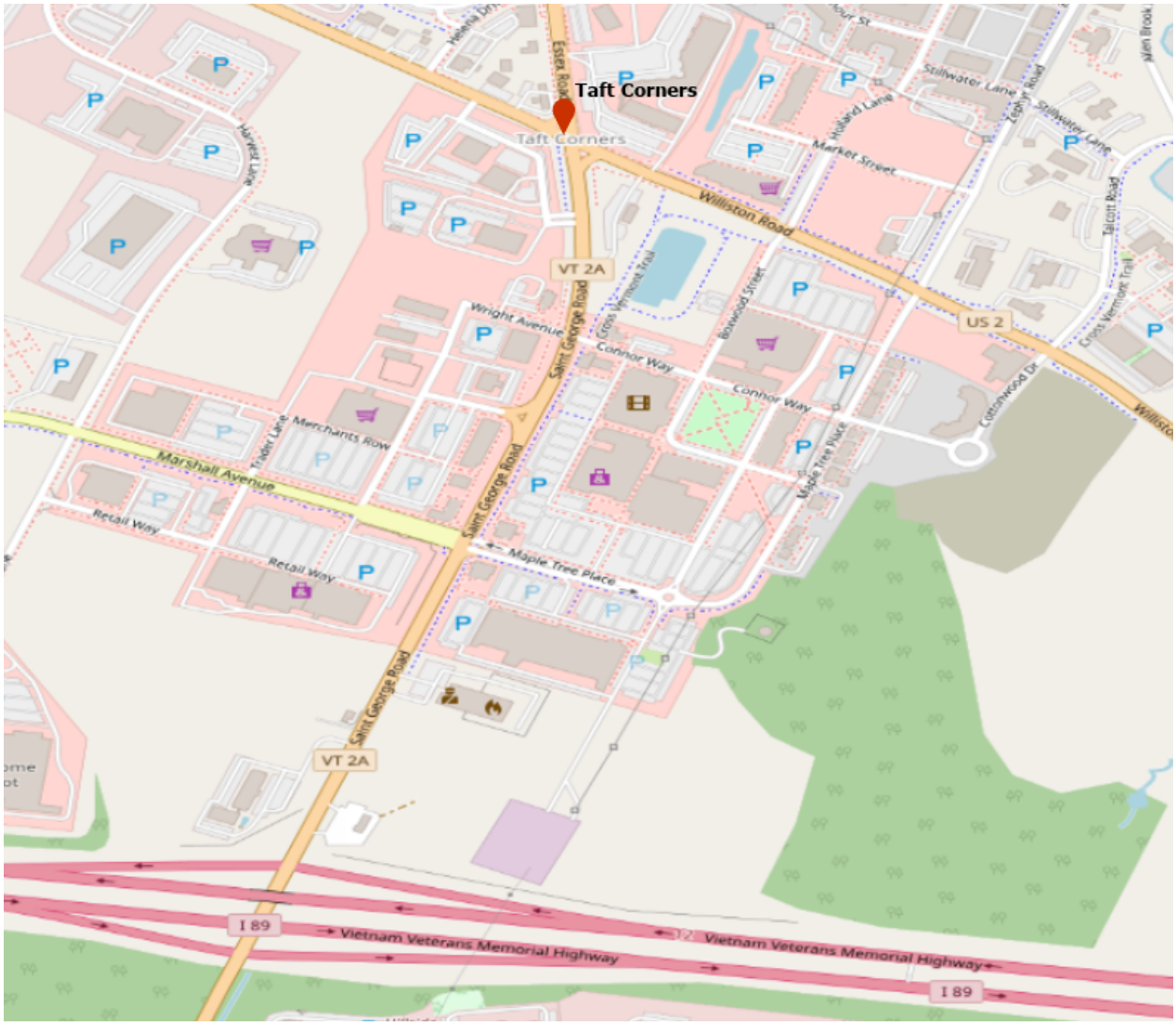
4.7 CHARLOTTE

Although there is not a specific proposed location in Charlotte at this time, future planning efforts should consider a parking facility in Charlotte or other areas in southern Chittenden County. There are currently no existing facilities in this area. A new facility could serve residents in this area that are traveling to jobs and other activities in Burlington and other attractions in the region.

4.8 TAFT CORNERS

This proposed facility is located at the intersection of US 2 with VT 2A in the center of Taft Corners. A specific parcel or site has not yet been identified, though the area around Boxwood Street has been tentatively identified as a potential location. CCRPC is moving forward with a study in 2022 to more closely evaluate the feasibility of a facility on the west side of Boxwood street.

FIGURE 21 - TAFT CORNERS PROPOSED LOCATION VICINITY



4.9 SHELBURNE

This proposed facility is located just west of US-7 of Harbor Road next to the railroad tracks. A specific parcel or site has not yet been identified. This facility was identified in the 2011 park and ride plan.

FIGURE 22: SHELBURNE - FACILITY LOCATION OFF OF HARBOR ROAD

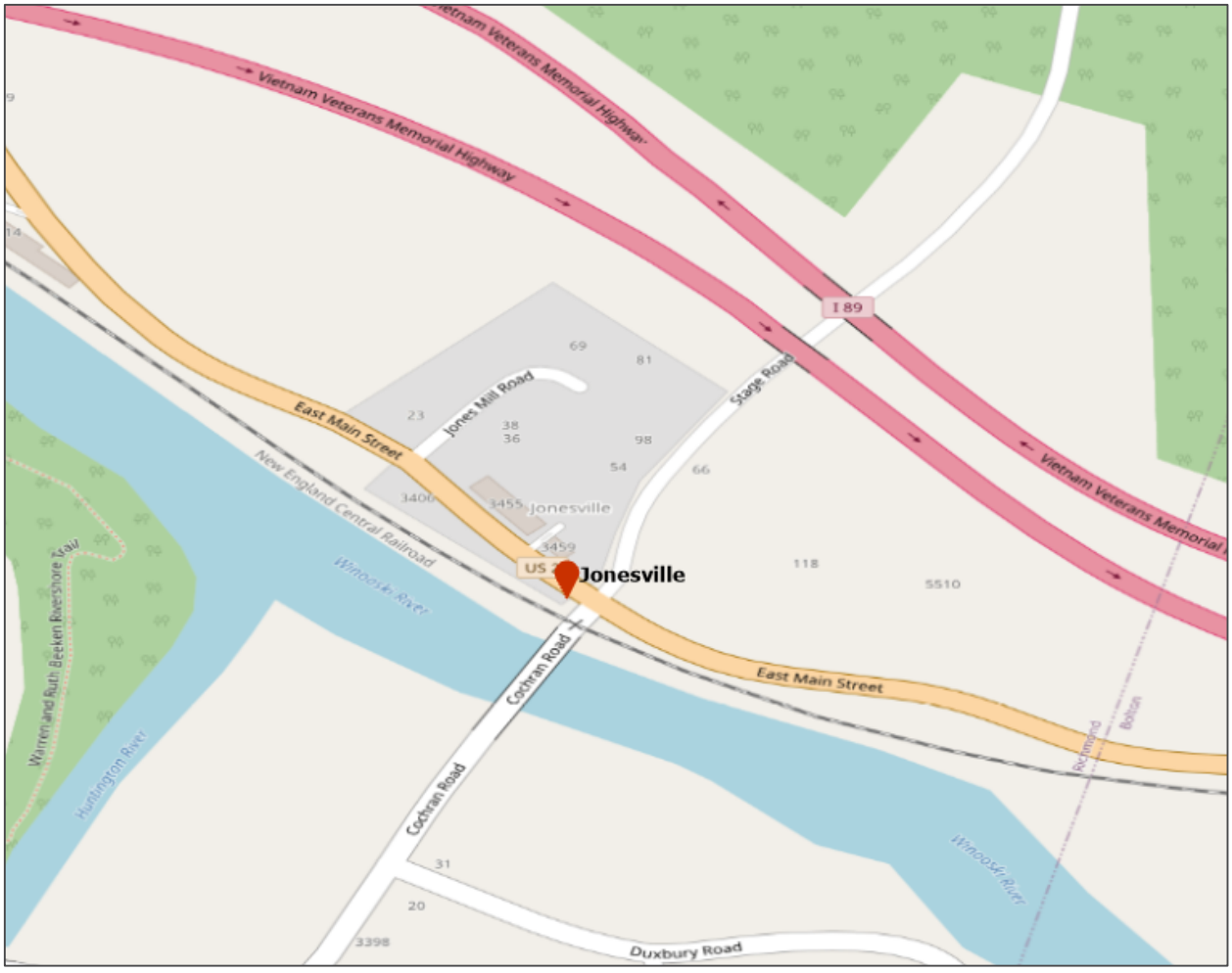
Source: RSG over Open Street Maps base

4.10 JONESVILLE

This proposed facility is located at the US 2 / Cochran road intersection in Jonesville. This facility was identified in the 2011 park and ride plan. During a previous local meeting “Town representatives noted that a park-and-ride facility in Jonesville would be attractive to people travelling from Richmond and Huntington to points east along the US 2 corridor. A potential site was suggested at a pull-off, within the state right-of way, on US 2 just to the east the Cochran

Road-Stage Road intersection". The 2011 plan thus recommended a feasibility analysis of using the existing pull-off as a park and ride facility and also evaluate other potential locations in Jonesville.

FIGURE 23: JONESVILLE (RICHMOND) - FACILITY LOCATION OFF OF ROUTE 2



Source: RSG over Open Street Maps base

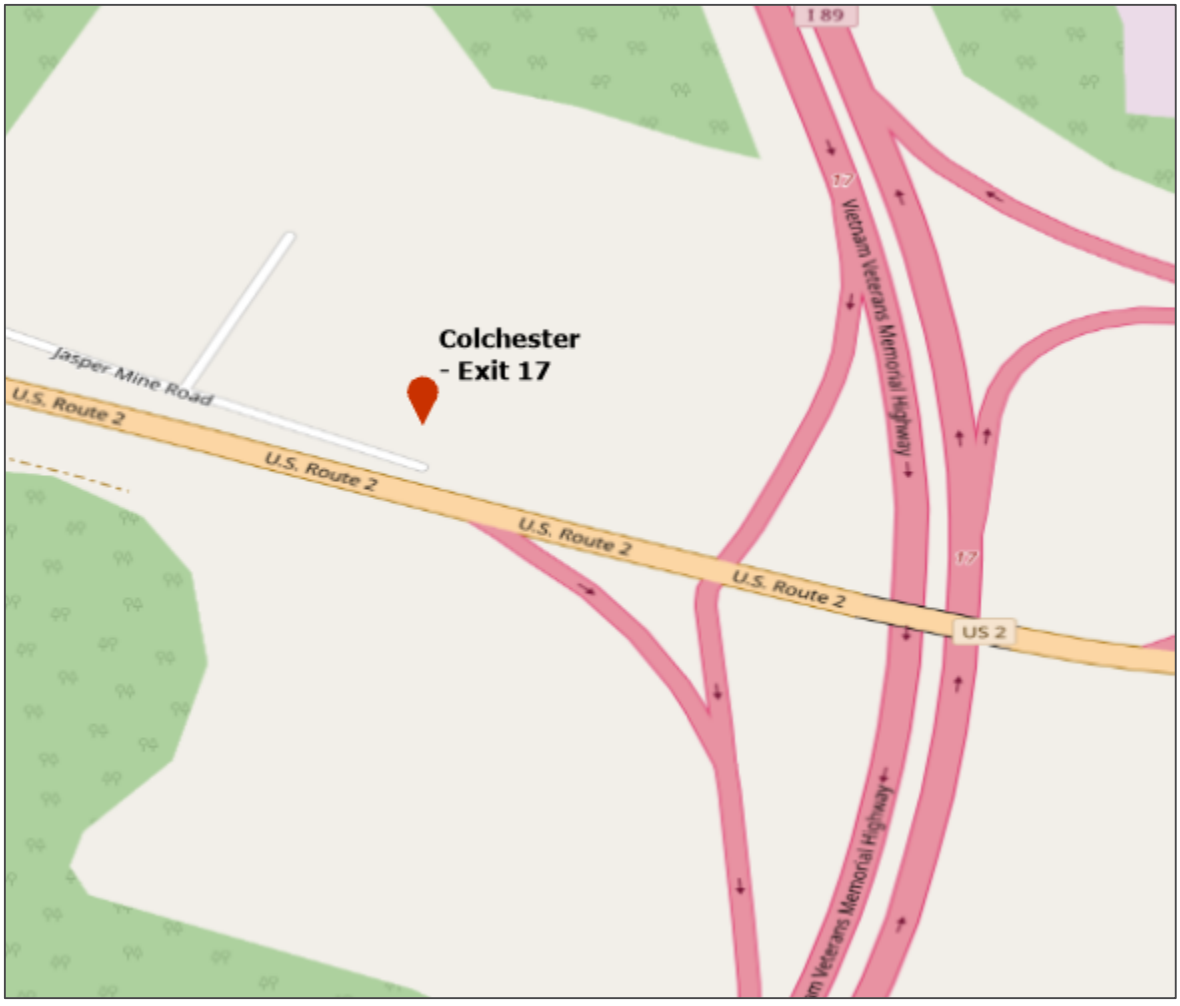
4.11 COLCHESTER EXIT 17

The Northwest Regional Planning Commission conducted the Grand Isle Park-and-Ride Scoping Study in 2017 with revisions through 2020 (Grand Isle Scoping Study) to evaluate potential locations for a Park-and Ride facility to serve the residents of Grand Isle County. A public meeting in November 2016 identified 13 potential locations for the Park-and-Ride facility. The study conducted a high-level evaluation of 10 locations and resulted in a more detailed

evaluation and ranking of the top five locations. The highest-ranking location was a Park-and-Ride location at 2 Jasper Mine Road in Colchester.[5]

The project site accesses the adjacent roadway network via a proposed site driveway onto Jasper Mine Road which intersects US 2 to the west of I-89. The site is currently undeveloped. This location at Exit 17 was the top-ranked priority from the Grand Isle County Park-and-Ride Scoping Study. CCRPC and VTrans then conducted a supplemental scoping study to evaluate the location more closely.

FIGURE 24 - COLCHESTER EXIT 17 PROPOSED LOCATION



[5] https://studiesandreports.ccrpcvt.org/wp-content/uploads/2021/11/Exit-17-Park-and-Ride-Supplemental-Scope-Report-with-Appendix-FINAL.pdf

The scoping study in 2017 was followed by supplemental scoping report in 2021, which included the following observations.

- There would be an opportunity for relocating the St. Albans Link Express route to the proposed facility to create a dedicated transit stop for this route in Colchester.
- Bike routes are present along US 2 and Jasper Mine Road connecting the proposed Park-and-Ride to Grand Isle County, Milton, and Colchester. Bicycles could access the proposed Park-and-Ride from the surrounding areas to utilize Green Mountain Transit which are equipped with front mounted bike racks.
- The Park-and-Ride is not expected to impact the good levels of service expected at the signalized intersections at the I-89 ramps in the future condition.
- While signalization at this intersection is not warranted, other improvements to increase safety and delays may be considered such as implementing geometric modifications to create clarity for movements on Jasper Mine Road or the installation of advanced warning signs along US 2 to increase driver awareness of approaching the intersection.

The 2021 report concluded that “the proposed Park-and-Ride location at Exit 17 would allow for easy access to and from US 2 and I-89 and will be well served by transit services and bicycle facilities; drivers would continue to experience lengthy delays exiting Jasper Mine Road onto US 2 eastbound.” While located within close proximity to the existing Exit 17 Park & Ride, a facility located on Jasper Mine Rd would better serve commuters from the Champlain Islands. The CCRPC and VTrans will continue to coordinate with the Town on this proposed facility.

5.0 OPPORTUNITIES & CONSTRAINTS

5.1 PURPOSE

The purpose of this section is to characterize the opportunities and constraints for the previously highlighted (Section 4.0) proposed facility locations in Chittenden County by analyzing a variety of factors. Unlike the previous 2011 plan, this plan does not include an explicit facility prioritization process. At this point in time, the COVID-19 pandemic has disrupted typical commute patterns and created much uncertainty around the utilization and future of park and ride/intercept facilities.

Therefore, a more modest and incremental approach to monitor and enhance the success of existing facilities is recommended at this time. For some locations, the fundamental demand for a parking facility remains strong, but for others it may be more opportunistic and should be pursued when other supporting initiatives are underway. This section presents a variety of data that help to identify opportunities and constraints and inform the eventual implementation of the proposed facilities.

As the data trends in section 3.0 are monitored over time, the facilities analyzed in this section are those that should be considered first if the trends indicate that there is demand for building new facilities. The information in this section builds upon the data trends in section 3.0 and does so looking at actual locations rather than at the regional level.

Figure 25 shows the proposed parking facilities being considered, in relation to the service area in which they are located.

FIGURE 25: PROPOSED PARKING FACILITIES

Source: RSG using ESRI ArcGIS Pro basemap

5.2 REGIONAL SUPPLY AND DEMAND

Opportunities for improvements to existing facilities and for investment in new facilities can be informed by better understanding the current supply and demand for parking facilities. This section presents an analysis of supply and demand at the service area level, in context of the proposed facilities described in the previous section. Demand for facilities can be represented by the average parking occupancy for each service area while supply is represented by the number of workers and residents.

- South Service Area – Proposed facilities in Shelburne and Charlotte
- East Service Area - Proposed facilities in Jonesville, Exit 12, and Taft corners
- Core Service Area - Three proposed intercepts of the Exit 14, South Transit Center, and US 7/ I-189.
- North Service Area - Proposed facilities in Colchester
- Southeast and Northeast Service Areas – No proposed facilities.

Using supply and demand as a framework for understanding opportunities and constraints for proposed facilities, relevant metrics to assess include the number of workers per parking space, the number of housing units/residents per parking space, the number of workers per facility, the number of large employers per facility, and the employment per space. For example, the east service area has 52k workers residing in that area, 15k employees working in that area, 227 parking spaces, 2 facilities, and 24 large employers. Therefore, there are 230 workers per parking space, 26k workers per facility, 12 large employers per facility, and 69 employees per parking space.

If the two existing facilities are acting solely as park and rides, then the number of resident workers per parking space is a crucial metric. A high number of workers per space indicates high potential demand for those parking spaces, if fully utilized. This metric may also indicate – though not definitely – that additional parking capacity in these service areas is warranted. Comparing all service areas, the northeast has the highest number of workers per parking space at 433, followed by the southeast at 235, and the east at 23.

At the same time, simply because a service area may have high potential demand, that does not mean parking demand is currently high. For example, although the southeast has a high number of workers per space, available occupancy data suggests that the two lots are typically three quarters empty.

Another relevant metric, which may shed light on intercept lot opportunities, is the number of employees per space. Depending on the precise location of a facility in proximity to employment, the number of employees per parking space can indicate potential opportunities for commuters to park at facilities and walk or bike from facilities to their employment.

Comparing all service areas, the northeast has a particularly high ratio of employees per parking space - 224. This may indicate an opportunity for additional facilities in the northeast that serve as intercept lots.

TABLE 8: EXISTING FACILITY DEMAND ATTRIBUTES

SERVICE AREA	EXISTING FACILITIES	EXISTING PARKING SPACES	RESIDENTS (HOME LOCATION OF WORKER)	WORKERS (WORK LOCATION)	RESIDENTS PER SPACE	RESIDENTS PER FACILITY	WORKERS PER SPACE	WORKERS PER FACILITY	PRE-COVID OCCUPANCY	POST-COVID OCCUPANCY
East	2	227	52,299	15,593	230	26,150	69	7,797	82.0%	28.4%
North	5	376	49,368	23,934	131	9,874	64	4,787	44.6%	35.1%
Core	-	-	40,579	64,468	-	-	-	-	0.0%	0.0%
Northeast	5	72	31,203	16,123	433	6,241	224	3,225	16.4%	10.8%
South	-	-	23,731	5,605	-	-	-	-	0.0%	0.0%
Southeast	2	44	10,351	1,890	235	5,176	43	945	25.2%	28.9%

Source: RSG

5.3 ACCESSIBILITY

Accessibility is way to characterize the ability or inability of travelers to access important destinations, such as home and work. A destination that is unable to be reached in a reasonable timeframe using available modes is not considered accessible. Accessibility of park and rides can be assessed by analyzing the ability of residents to access facilities from their home or from their workplace. To understand resident's ability to access park and ride from their home, an analysis was conducted to summarize the number of total housing units located within a five- and 15-minute trip via automobile, walking, and biking.

What is Accessibility?

Access is the ultimate goal of most travel activity, so accessibility-based planning tends to best reflect what users want from a transportation system. It is often measured for particular users, modes, activities, locations, times and scales, such as the numbers and types of jobs or stores accessible to low-income non-drivers living in a particular neighborhood.

Source - vtpi.org/access.pdf

TABLE 9 - ACCESSIBILITY OF PROPOSED FACILITIES

	HOUSING UNITS - 5 MIN BIKE	HOUSING UNITS - 5 MIN WALK	HOUSING UNITS - 5 MIN DRIVE	EMPLOYMENT - 5 MIN DRIVE	EMPLOYMENT - 5 MIN BIKE	EMPLOYMENT - 5 MIN WALK
Charlotte	58	0	378	907	158	0
Colchester Exit 17	92	2	476	454	64	17
Colchester: VT15 and Barnes Ave	1,257	426	4,069	10,423	6,657	1.419
Jonesville	108	16	294	137	43	17
Shelburne	548	111	1,602	3,340	1,103	395
South Burlington: US 2-Exit 14	2,022	0	4,411	16,918	1,179	354
South End Multimodal Center	817	160	2,930	4486	2,150	1.037
Taft Corners	1,222	1	2,511	12,513	5,056	715
US 7 south of I-189	1,095	40	2,793	10l484	4,060	456

Source - RSG analysis of employment data from Dun's and housing data from Chittenden County

Of the 9 proposed facilities, South Burlington: US 2-Exit 14 has the greatest residential accessibility, when considering 5-minute bike, walk, and drive distance combined. But this accessibility is due to bike and driving access, while walking access is minimal. The other locations with high accessibility are Colchester: VT15 and Barnes Avenue and US 7 south of I-189. Of all the proposed locations, US 7 south of I-189 has the highest walking accessibility, followed by South End Multimodal Center. The locations with the lowest overall residential accessibility are Shelburne, Charlotte, and Exit 12.

Accessibility can also be determined by the ability of people to travel from their workplace to a facility. While the existing facilities typically function as park and rides, they also may function as intercept facilities. Of the 9 proposed facilities, South Burlington: US 2-Exit 14 has the greatest employment accessibility, which is driven by the number of jobs accessible by a 5-minute drive. The other locations with high employment accessibility are Williston: Taft Corners, Colchester: VT15 and Barnes Avenue, and US 7 south of I-189. Of all the proposed locations Colchester: VT15 and Barnes Avenue has the highest employment walking accessibility and US 7 south of I-189 has the highest biking accessibility. The locations with the lowest overall employment accessibility are Shelburne, Charlotte, and Richmond (Jonesville).

For a parking facility to be attractive, a transit service or carpool must be able to take commuters from the facility to their destination. The most highly utilized existing lots have a high level of transit service accessibility into the urban core. All of the proposed facilities other than the one in Richmond have existing transit routes in the immediate vicinity. These routes and their peak-period headways (number of minutes between bus trips) are shown in the table below:

TABLE 10 - TRANSIT SERVICE FOR PROPOSED FACILITIES

FACILITY NAME	FACILITY TYPE	EXISTING BUS SERVICE
South End Multimodal Center	Intercept Lot	5 – Pine Street: 30 minutes
US 7 south of I-189	Intercept Lot	6 – Shelburne Road: 30 minutes
South Burlington: US 2-Exit 14	Intercept Lot	1 – Williston: 20 minutes
Colchester: VT15 and Barnes Avenue	Intercept Lot	2 – Essex Junction: 20 minutes
Charlotte	Park & Ride	TVT LINK Express: 2 peak trips
Taft Corners	Park & Ride	1 – Williston: 20 minutes
Shelburne	Park & Ride	6 – Shelburne Road: 30 minutes
Jonesville	Park & Ride	No service
Colchester – Exit 17	Park & Ride	96 – St. Albans LINK: 2 peak trips

Source – Steadman Hill Consulting

Peak service every 30 minutes would not be considered attractive for an intercept lot as a general rule. People parking at an intercept lot do not aim to meet a specific bus, and thus would like to have shuttles run at least every 15 minutes, if not every 10 minutes to guarantee a short wait time. There are no plans to increase service on any of these bus routes in the short run. As described elsewhere in this report, transit ridership is still suffering significant impacts from the pandemic and unless there is a dramatic change in the funding landscape, GMT does not have the ability to increase service within its forecasted budget.

FIGURE 26 - BICYCLE ACCESSIBILITY

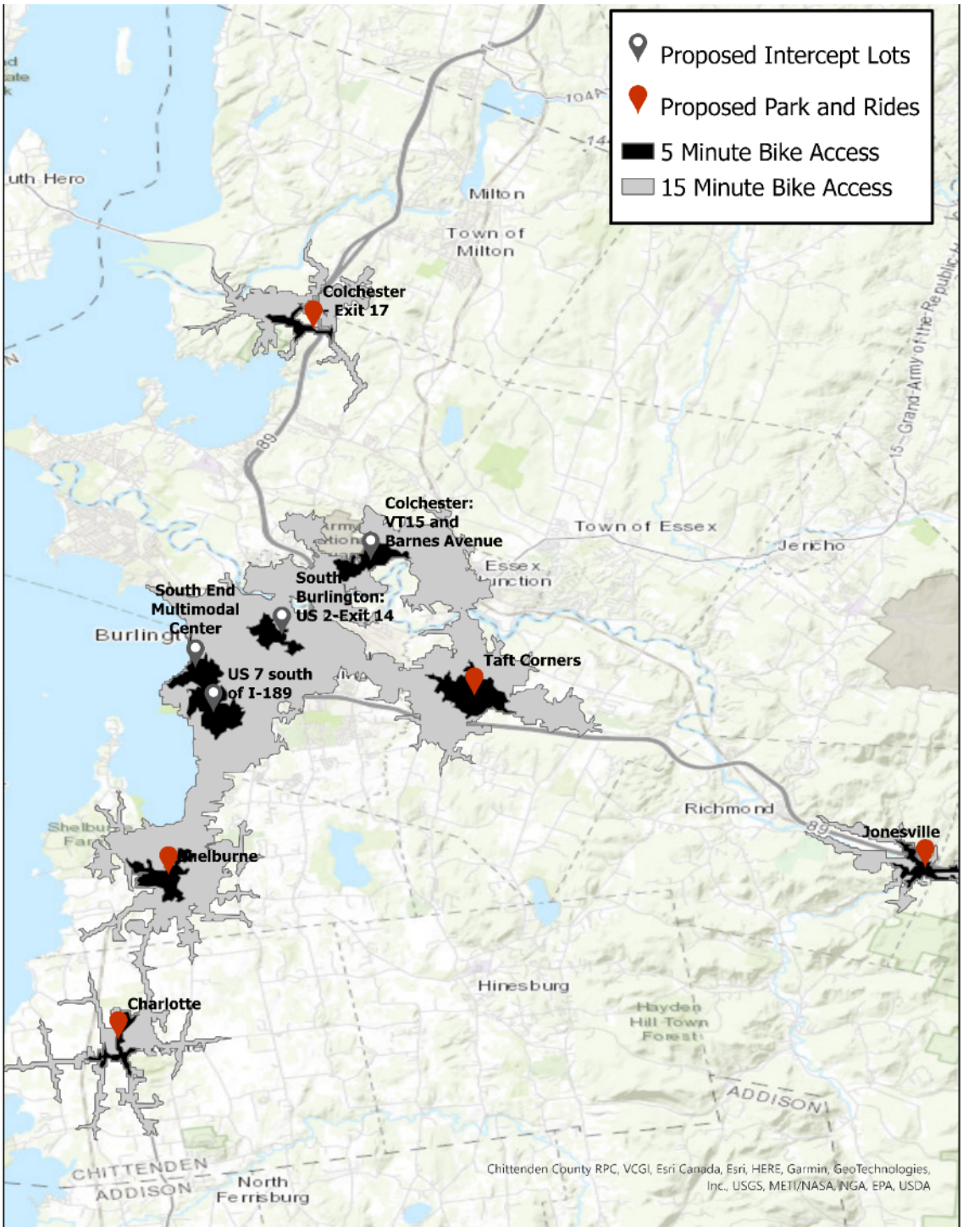
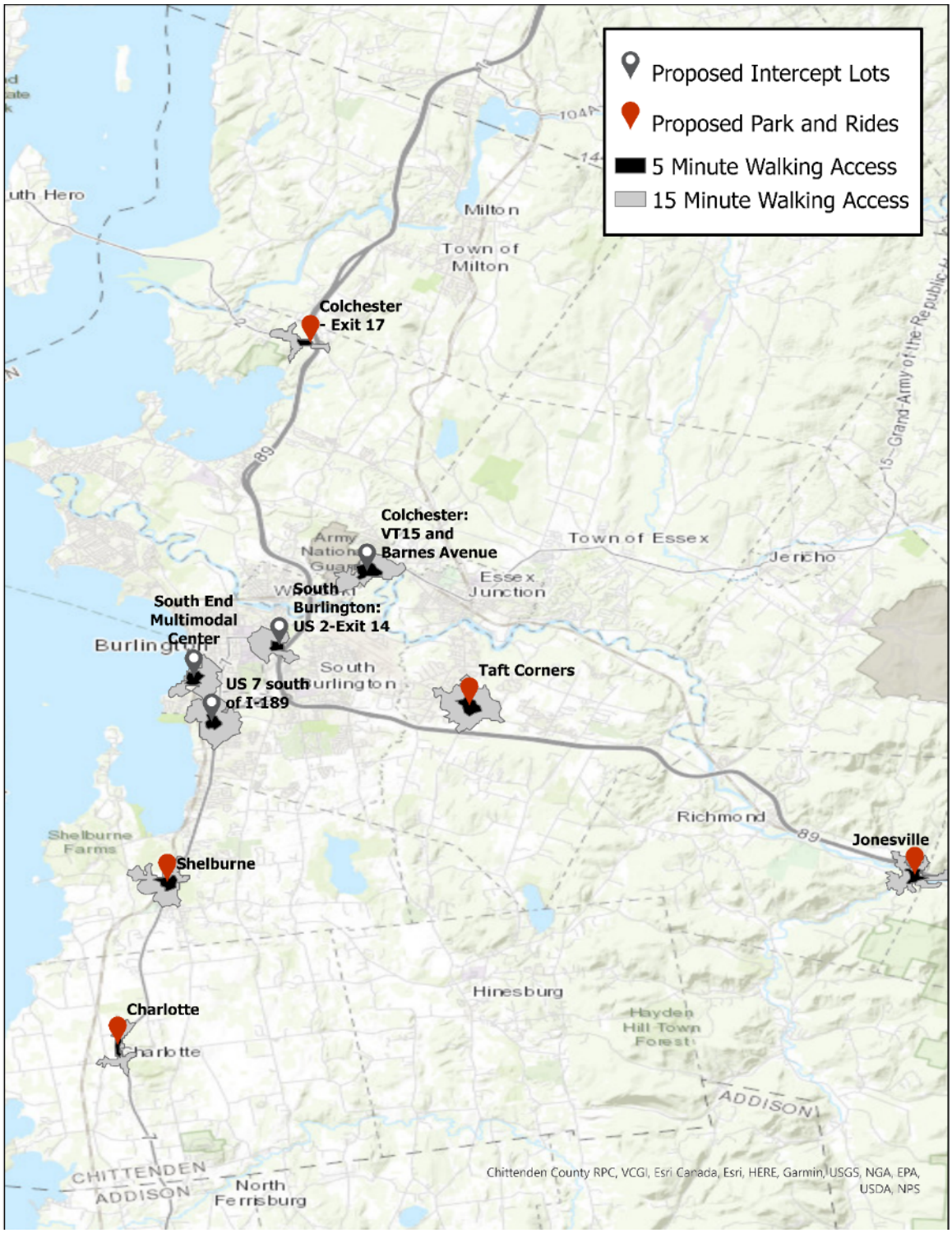


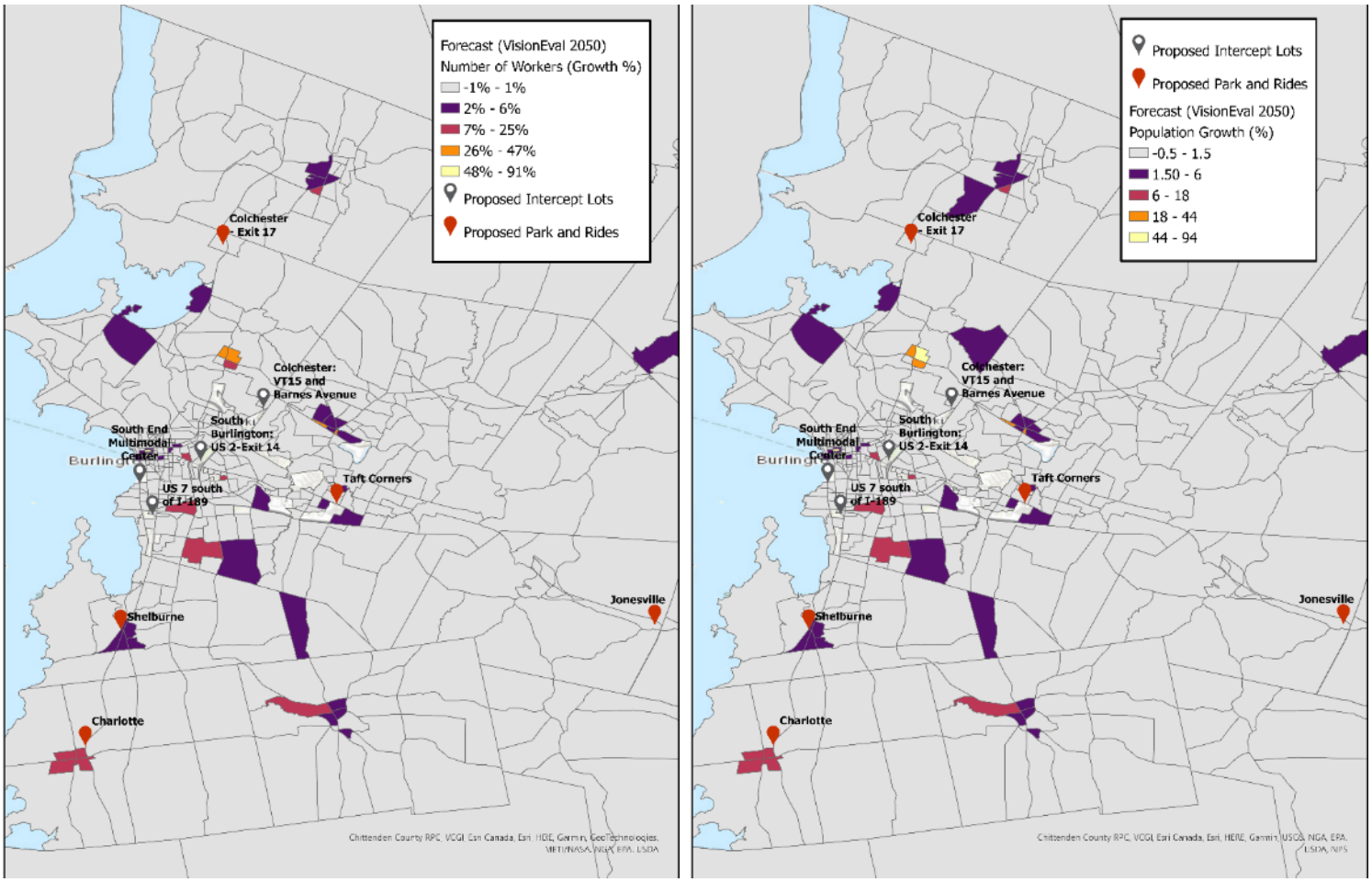
FIGURE 27 - WALK ACCESSIBILITY



5.4 FUTURE DEMAND

Opportunities for facility improvement and investment can be informed by estimates of future demand. Locations with greater future population and workers will have a higher probability of future increases in facility demand, assuming continued commuting travel to the urban core. RSG developed forecasts for the year 2050 for the greater Chittenden County region using the VisionEval modeling framework. The information below shows forecasted changes from 2015 to 2050. In general, forecasted growth for both total population and number of workers are highly correlated. Future demand can be represented by both percent change from current levels and also absolute change from current levels. Of the proposed facility locations, the area around Charlotte is forecasted to have the largest percent change (% growth) from current levels, at 6-10% growth. The areas adjacent to Shelburne, US 7 South of I-89, and Taft Corners also expected to see low/moderate growth between 1% & 6%. The Jonesville and Colchester Exit 17

FIGURE 28 - FUTURE (2050) POPULATION AND WORKER GROWTH



facilities are not expected to experience growth in the direct vicinity but will likely serve as park and rides for those traveling to new jobs closer to central Burlington.

5.5 TRANSIT

As shown earlier in section 3.2, transit ridership in Chittenden County has been declining or flat since 2015. The pandemic, starting toward the end of fiscal year 2020, took a heavy toll on ridership, with most bus routes down more than 50%. Some ridership has returned, but commuter-oriented services, such as GMT's LINK Express and Regional Commuter routes, have not yet recovered. In the most recently completed fiscal year, commuter bus ridership was down nearly 80% from pre-pandemic levels and nearly 83% from its peak in 2015. During the pandemic, GMT curtailed some commuter services due to the lack of demand, but as of fiscal year 2023, they have mostly been restored. Commuter ridership in fiscal year 2022 through February is about 50% higher than it was in FY2021, but that still leaves it about 70% below pre-pandemic levels.

GMT is in the midst of creating a Transit Strategic Plan to guide its investments over the coming decade. One question it is confronting is whether demand for commuter bus service will ever return to the levels that existed before the pandemic. As has been well documented, many employees in white-collar professions worked at home during the pandemic, greatly accelerating a trend that had already been in place for several years. While some employers will encourage or require their employees to return to the office full time, it is likely that many will allow workers some flexibility to continue to work remotely at least part of the time, if not full time. If workers who formerly rode the bus daily now choose to work from home twice a week, however, that means a 40% reduction in their transit rides.

Another trend working against commuter bus ridership is the increased availability of electric and plug-in hybrid cars. People who ride the bus by choice are associated with the environmentally conscious segment of the population. These are the same people who are likely to be at the forefront of the conversion of the fleet to electric power. If these people feel like they have done their "environmental duty" by switching to an electric car, they may abandon the transit system, especially if they have lingering fears of infection from COVID or other diseases.

This section has focused on commuters because commuters are the primary users of park-and-ride and intercept lots. While these two types of facilities are often discussed together, they are distinct in several important ways:

- Intercept lots are intended to relieve parking pressure at key destinations and reduce congestion in the downtown area, while park-and-ride lots are primarily intended to reduce regional vehicle miles traveled, though they have secondary benefits similar to intercept lots.

- Transit service from an intercept lot needs to be frequent during times of peak demand (at least every 15 minutes and preferably every 10 minutes), with less frequent access during the midday and evening. Transit service at park-and-ride lots typically consists of longer-distance commuter express bus routes which may run only a few trips during peak periods and little or no midday and evening service.
- The key factor in a commuter's decision to use an intercept lot is whether there is an affordable parking space available at their destination. While that is also a factor in the decision about using a park-and-ride lot, a more important factor is the price of gasoline and the degree of wear and tear on a private automobile that can be avoided.

In an environment where there are high gasoline prices (as there are at this writing), park-and-ride lots, coordinated with long-distance commuter bus service, should be given priority. When gasoline prices are low, intercept lots may still be viable if there are parking constraints or high parking fees at key destinations. Of course, the ongoing pandemic and the other trends undermining commuter transit ridership affect the viability of both intercept and park-and-ride lots and their associated transit services.

At the present time, the UVM Medical Center is perhaps the single destination in the Burlington metropolitan area with the greatest travel demand and the most stringent parking constraints. Unlike other professional or technical services, most people who work at a hospital cannot do their work remotely. While there is a significant amount of parking at the UVM MC facility on Colchester Avenue, it is not sufficient to satisfy the demand. UVM MC operates at least three shuttle services to intercept lots at the Fanny Allen campus on VT 15, the Lakeside lot on Pine Street and another lot on Community Drive in South Burlington. The Medical Center requires that some employees part at these intercept lots rather than at the main facility.

The viability of other intercept lots and associated shuttle services depends on the existence of parking constraints and the cooperation of employers to at least encourage, if not require, employees to park remotely and use shuttle services to reach their workplaces. Without these conditions in place, intercept lots and shuttles will likely be poorly patronized.

If gasoline prices remain high or climb even further, some demand for commuter bus services may return, at least among those workers who do not have the option to work from home. It is impossible to forecast the price of gasoline for a long enough period that would be needed to justify investments in new lots and new services. It is also the case that sustained high gasoline prices will accelerate the transition to electric vehicles. In the absence of a consensus to reduce parking availability in downtown Burlington, the prospects for park-and-ride lots and commuter express routes appear to be dim.

5.6 EMERGING MOBILITY

Electric Vehicles

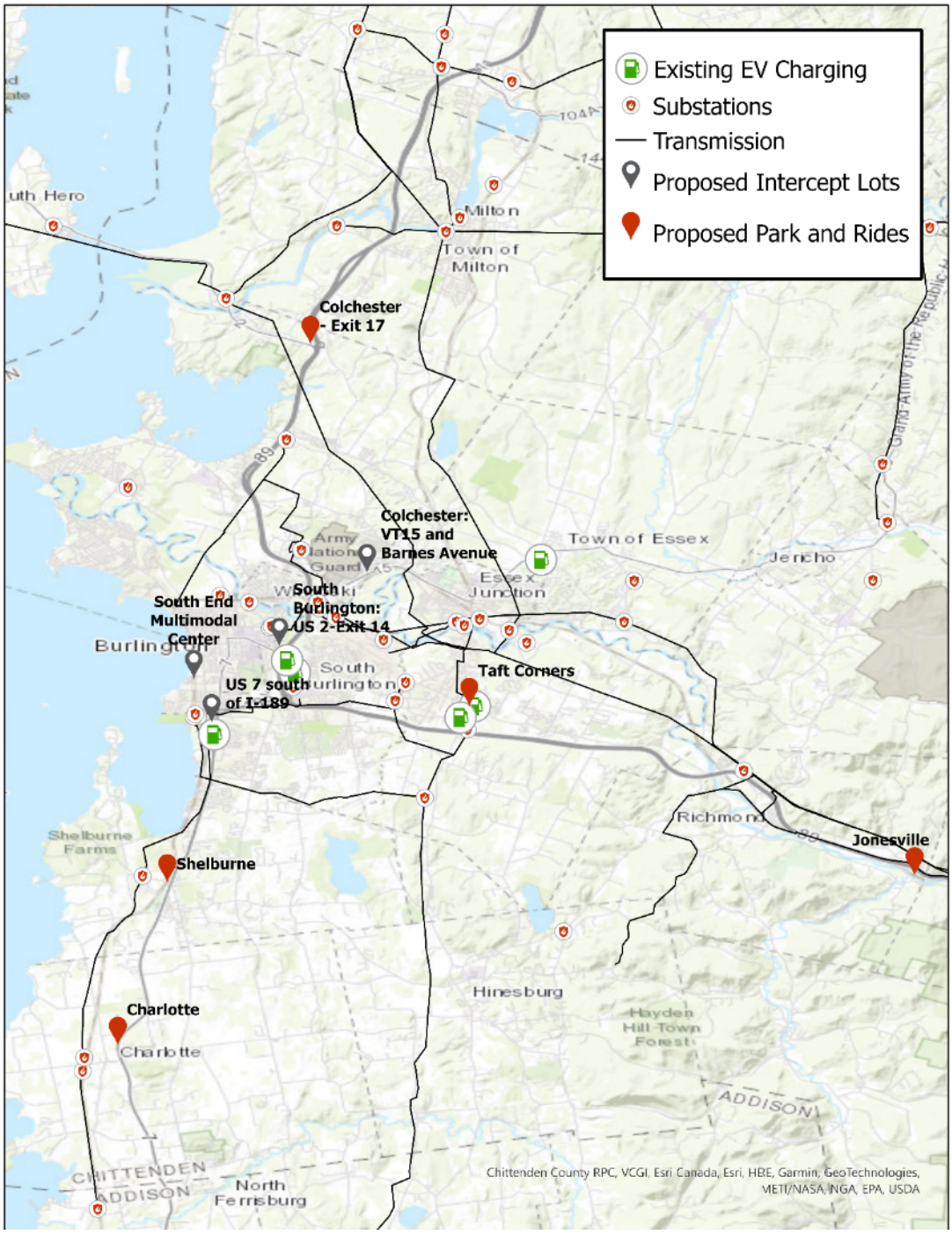
Electric vehicle charging infrastructure present an opportunity to increase demand for park and rides/intercept lots and integration of such infrastructure should be considered for both existing and proposed facilities. By 2050, electric vehicles are expected to comprise over 90 percent of all passenger vehicles in the state of Vermont.[6] At the same time, recent data indicates a decline in parking spot utilization, and it is uncertain if pre-covid demand will return. Therefore, electric vehicle supply infrastructure (EVSE) present an opportunity to incorporate a technology that is expected to experience a significant increase in demand into a land use whose demand is uncertain. This integration could lead to a revitalization of parking facilities as more and more people and decision makers are drawn to EVSE.

Facilities with excess parking spaces could each include electric vehicle charging stations, which would recharge traveler's vehicles, as they are parked for potentially long periods of time. Travelers could park at a park and ride or intercept facility, take alternative modes to their destination, and upon returning to the parking facility, their personal electric vehicle would be fully charged.

In addition to traditional park and ride/intercept lot services, facilities retrofitted with EVSE could serve as charging infrastructure for the driving population in general, not just park and ride/intercept lot users. Drivers throughout the region, in both rural and urban locations, would be attracted to these facilities strictly for the benefit of electric charging access. Electric vehicles that are compatible with fast chargers take roughly 20-40 minutes to charge and during this charging time drivers may desire amenities or other activities to occupy their time. Potentially desirable attributes include those typically associated with public spaces such as benches, greenspace, walking paths, and public art. By siting EVSE in new facilities, synergies can be created which may contribute to the overall revitalization of the facilities and the adjacent areas.

[6] EPG/CADMUS 2022

FIGURE 29 - CHARGING INFRASTRUCTURE AND EXISTING FACILITIES



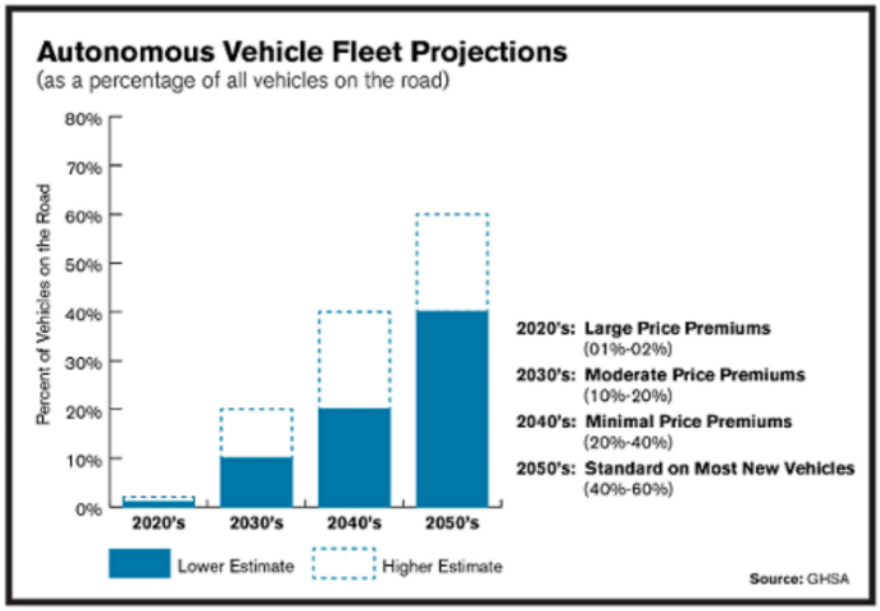
Source: RSG

In Chittenden County, there are only a few fast charging stations. Most of them are located in Burlington. There are fast chargers within a half mile of the *Taft Corners* and *Exit 12* proposed park and rides and adjacent to the *US 7 South of I-189* proposed intercept lot. In general, there is ample opportunity for new charging stations to be developed around existing park and ride facilities. Moreover, there is an opportunity for intercept facilities to be sited near the existing charging stations around central Burlington; travelers could park their EV's and use transit to reach destinations in Burlington.

Autonomous Vehicles

Autonomous vehicles are an emerging technology with an uncertain trajectory, but which have the potential to significantly impact travel patterns, including parking demand in Chittenden County. By some accounts, AVs are expected to comprise 10-20% of all vehicles by 2030 and 40-60% by 2050[7]. AVs have the potential to impact both travel patterns and utilization of park and ride facilities. There are opportunities for autonomous shuttles to carry workers between intercept facilities and destinations such as the UVM Medical Center. New intercept facilities could be designed with this purpose in mind, with drop off and circulation design elements specifically tailored for autonomous shuttles. Yet, the technology is still several years off to allow for quick and reliable service, especially in winter conditions.

FIGURE 30: AUTONOMOUS VEHICLE FLEET PROJECTIONS



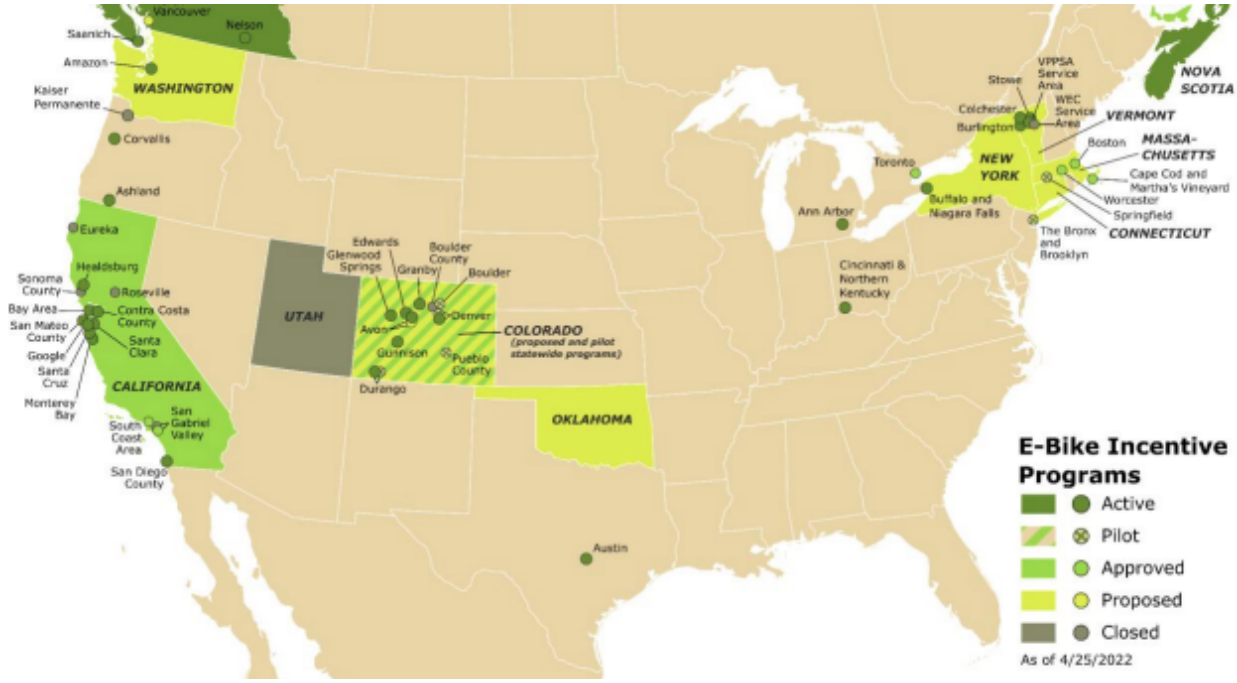
Source – Governors Highway Safety Association

[7] Governors Highway Safety Association, https://shso.vermont.gov/content/autonomous-vehicles-vermont

New mobility

New mobility consists of a range of emerging travel modes and technologies that have the potential to alter how people travel, including to and from work. In particular, electric bicycles are a mode of transportation that has seen increased popularity in recent years, especially in the wake of the COVID-19 pandemic. Between 2018 and 2021, the number of annual e-bikes sold in the U.S. increased by over 200%, from roughly 300,000 to over 1 million.[8] At the same time, there are a growing number of incentive programs to encourage further e-bike use throughout the United States, including in Vermont (see Figure 30). Moreover, initial studies indicate that e-bikes have a strong substitution potential to replace vehicle trips[9]. Electric bicycles (e-bikes) should be considered when retrofitting existing parking facilities or designing new facilities. For example, design elements should be considered including e-bike charging capabilities and potentially larger secured storage to accommodate larger bikes. Additionally, e-bikes enable users to travel longer distances, so the non-motorized accessibility to facilities will likely need to increase in the future.

FIGURE 31 - E-BIKE INCENTIVE PROGRAMS (2022)



Source – Transportation Research and Education Center

[8] Transportation Research and Education Center, Using E-Bike Purchase Incentive Programs to Expand the Market - North American Trends and Recommended Practices, https://ppms.trec.pdx.edu/media/project_files/E-bike_Incentive_White_Paper_5_6_2022.pdf

[9] Bigazzi, A., & Wong, K. (2020). Electric bicycle mode substitution for driving, public transit, conventional cycling, and walking.

5.7 LAND USE DEVELOPMENT

Ongoing and expected developments of the land adjacent to the proposed facilities may either encourage or constrain demand for the facilities. Fundamentally, the level of demand for the facility hinges on the number of residents or employees within a short distance of these lots. CCRPC should monitor new land use developments adjacent to proposed facilities and assess whether such developments may impact demand for the facilities over time. Moreover, in the future, facilities could also serve other functions besides strictly personal transportation. For example, automated drone delivery could be integrated into facility design; facilities could serve as drop off and pick up locations for drone package delivery. As previously noted, each of the parking facilities exist on a spectrum between an Intercept Lot and Park and Ride, and as the land use development evolves around each of the future facilities, the type of attributes as well as desired sizing of facilities may change.

6.0 IMPLEMENTATION PLAN

6.1 OVERVIEW

This section outlines a series of planning actions that should be taken toward implementation of the proposed facilities in Chapter 4.0., which sets out the trends which may influence the timing and demand for the facilities. This implementation plan is intended as high-level guidance on the next planning stages rather than be a specific blueprint for developing any specific facility.

6.2 RECOMMENDATIONS

Trends and Monitoring

Given the uncertainty of future demand for park and ride/intercept facilities, CCRPC should place an emphasis on ongoing monitoring of key metrics, which will inform decision making on future facility investment; CCRPC should implement an on-going monitoring program that will involve analyzing data and reviewing trends referenced in section 3.0. These trends will improve the understanding as to whether there is sufficient demand for further investment in facilities throughout Chittenden County. This trend analysis will help guide the agency and others to make decisions for constructing new facilities, improving/renovating existing facilities, or allocating resources to other priorities. In particular, CCRPC should consider improvements to their parking occupancy data collection methodology, so that more definite inferences can be made about occupancy trends over time. In particular, the collection methodology should focus on collecting data observations for each respective facility for the same time period each year. At a minimum, the data should be collected during the same season and day of the week each year (E.g. weekday in September).

Table 11 below outlines the key data trends to monitor, data sources, and a recommended schedule based upon data availability.

TABLE 11 - RECOMMENDED MONITORING DATA TRENDS

DATA TREND	DATA SOURCES	MONITORING SCHEDULE
Employment & Commute Flows	LEHD, Business Level Data Purchase (e.g., Dunn, InfoGroup)	Annual / periodic
Transit Ridership	Green Mountain Transit	Monthly
Parking Demand	Burlington Public Works Department, Other municipalities	Monthly
Remote Work	American Community Survey and other local surveys (e.g., 2030 Districts, CATMA, other)	Annual

Travel Mode	American Community Survey, Employer Surveys (e.g., CATMA)	Annual
Parking Occupancy	CCRPC	Annual, collected at comparable time periods

Existing Facilities

As described in section 2.0, this plan summarizes the current conditions at 14 park and ride facilities in and adjacent to Chittenden County. Based upon the most recently available data, there are generally acceptable conditions at most facilities. CCRPC should continue to collect data at and monitor each of these facilities to ensure that the quality and amenities at the facilities is not an impediment to user experience and demand. Monitoring should include analysis of quantitative data including occupancy, qualitative observations of facility amenities, and visual documentation through photographs.

In addition, this plan recommends a minimum set of amenities which each existing facility should ideally include. These amenities, such as electric vehicle charging, shelters, and bike lockers, are a fundamental set features that will ensure a positive user experience and are based upon the current facility amenities, recent observations, and expected future trends. These attributes are necessary to serve current demand and to ensure that existing facilities attract new travelers. Table 12 shows the recommended attributes for parking facilities.

TABLE 12: RECOMMENDED FACILITY ATTRIBUTES

MINIMUM ATTRIBUTE	RELEVANT TREND / OBSERVATION	BENEFIT
EV Charger (Level 3)	Proliferation of electric vehicles	Users are encouraged to use facilities to charge vehicles.
Secure Bike Lockers	Increased bicycle usage including longer ranges due to e-bike/scooter adoption.	Users feel comfortable utilizing non-motorized modes to access facilities.
Wayfinding (Multi-Modal Signage)	Insufficient signage at some facilities.	User experience, multi-modal access.
Public Wi-fi	Increasing integration of IoT, MaaS, and new mobility options	Equity, user experience.

Shelters	Small and insufficient shelters at some facilities.	User safety and experience.
Paved & Striped Surface	Few existing facilities are not paved or striped.	Traveler safety, user experience, facility perception.
Lighting	Poor or insufficient light may create unsafe or undesirable perception.	User safety, experience and facility perception.
Bike & Pedestrian Access (Sidewalks & Class I/II/III bike lanes)	Increased bicycle usage including longer ranges due to e-bike/scooter adoption and existing safety concerns.	Traveler safety, increased non-motorized mode share, transportation equity.
Transit Access (15-minute headway)	Decreasing regional transit services and ridership.	Travel time reliability, increased transit mode share, transportation equity.
Parking Availability (between 40% and 70%)	Low occupancy decreases facility perception while full occupancy deters usage.	User experience

Proposed New Facilities

As described in Section 4.0, this plan identifies a set of nine new facilities for future development. As previously stated, given the uncertainty in future commute patterns, remote work, and parking demand, these facilities should only be developed if observed conditions indicate that demand has returned to or exceeds pre-pandemic levels. The purpose of identifying these facilities is to complete the initial planning steps so that the region is ready to respond when the demand returns.

These nine facilities (Table 13) were identified through a screening process which considered a variety of factors that influence demand and success of a parking facility. The criteria included support from local jurisdiction, quantitative factors such as annual average daily traffic, transit level of service, bike/ped connections, accessibility, and proximity to amenities, and inclusion in other planning efforts such as the previous 2011 plan.

TABLE 13 - PROPOSED FACILITIES

FACILITY NAME	LOCATION DESCRIPTION	ADJACENT STREET TRAFFIC VOLUME (2020 AADT)
Burlington: South End Multimodal Center	At the end of Sears Lane and adjacent Lakeside Avenue Lot in the south end of Burlington.	20,600
South Burlington: US 7 south of I-189	Adjacent to the I-189/US 7 interchange in the Hannaford Plaza (former K-Mart)	31,000
South Burlington: US 2-Exit 14	Located behind the Double-Tree in South Burlington and accessed from US2 and from a slip ramp diverging from the I-89 Exit 14 off ramp.	21,600
Colchester: VT15 and Barnes Avenue	Off of VT-15 near Barnes Avenue in Colchester.	21,100
Charlotte	No specific site identified at this time. Anticipated to be near US 7 to facilitate transit service.	10,000
Williston: Taft Corners	The intersection of US 2 with VT 2A in the center of Taft Corners.	13,400
Shelburne	Just west of US-7 of Harbor Road next to the railroad tracks at old train station.	14,000
Richmond: Jonesville	The intersection of US 2 / Cochran Road.	10,100
Colchester: Exit 17	2 Jasper Mine Road. Accesses the adjacent roadway network via a proposed site driveway onto Jasper Mine Road which intersects US 2 to the west of I-89	10,100

Source – Vtrans, https://geodata.vermont.gov/datasets/VTrans::vt-annual-average-daily-traffic-aadt-2020/explore?location=44.384795%2C-72.915532%2C14.00

6.3 FACILITY IMPLEMENTATION PLAN

Table 14 summarizes the nine future facilities and next steps toward implementation. This plan describes basic information about the facility, including the municipality, general type and number of parking spaces, the time frame for further actions, and the recommended action. Several of the future facilities have been identified as opportunistic and would be pursued if adjacent developments occur, if land becomes available, or if funding becomes available. For example, the town of Charlotte is exploring a new public works garage in a location that could also accommodate a remote parking facility. If and when this garage is pursued the town could be encouraged to explore jointing pursuing the parking facility. Additionally, if demand for remote parking facilities increase as evidenced by the data trends being monitored, planning for some of these lots should be further progressed. This includes whether the local land use and development adjacent to the parking facilities changes the expected level of demand for remote parking options.

TABLE 14 - IMPLEMENTATION OVERVIEW

PROPOSED FACILITY	MUNICIPALITY	FACILITY TYPE	NUMBER OF PARKING SPACES	TIME FRAME	FUNDING SOURCE	PROJECT LEAD (MUNICIPAL/STATE OR PPP)	RECOMMENDED ACTION
Jonesville	Richmond	Surface lot	Unknown	Opportunistic / Medium	Municipal	Richmond	Conduct feasibility study.
Taft Corners	Williston	Surface lot possibly shared with other uses	60	Opportunistic / Medium	Municipal	Williston	Implement recommendations from feasibility study.
Shelburne	Shelburne	Existing train station lot	25	Opportunistic / Short	Municipal	Shelburne	Conduct feasibility study.
Charlotte	Charlotte	Surface lot possibly shared with other uses	50	Opportunistic / Medium	Municipal & State	Charlotte	Conduct feasibility study.
Colchester - Exit 17	Colchester	Surface lot	74	Short	State	VTrans	Implement recommendations from scoping study, following discussions with town officials.
South End Multimodal Center	Burlington	Shared multimodal facility	100+	Medium	Municipal	Burlington	Implement recommendations from feasibility study.
US 7 South of I-189	South Burlington	Allocated spaces in private parking lot	~50	n/a	n/a	South Burlington / VTrans	No action. Discuss with City officials as necessary.
Exit 14	South Burlington	Shared multimodal facility	100+	Medium	State	VTrans	Updated Scoping Study
Colchester - VT-15 & Barnes Ave	Colchester	Surface lot	<50	Opportunistic / Long	Municipal	VTrans	Feasibility study contingent on increased VT15 transit service

7.0 APPENDIX

7.1 INVENTORY SHEETS

	Highway Access	Total Spaces	Handicap Spaces	Surface	Lined	Lighted	Shelter	Bike Rack	Other features
Cambridge	VT 15	20	1	Paved	Yes	Yes	Yes	Yes	-
Waterbury	I-89	69	4	Paved	Yes	Yes	Yes	Yes	-
Richmond	US 2	158	6	Paved	Yes	Yes	Yes	Yes	-
Colchester - Exit 16	US 2	114	5	Paved	Yes	Yes	Yes	Yes	Level 1 EV chargers
Colchester - Exit 17	US 7/US 2	106	5	Paved	Yes	Yes	Yes	Yes	-
Georgia	US 7	43	1	Paved	No	Yes	No	No	-
St Albans	VT 104	84	4	Paved	Yes	Yes	Yes	Yes	-
Essex Town Center	VT 15 and VT 128	11	1	Paved	Yes	NA	No	Yes	Amenities/services within walking distance
Essex Landfill	VT 2A	19	1	Paved	Yes	NA	No	Yes	-
Hinesburg	VT 116	18 (32 more spaces in Town lot)	2	Paved	Yes	Yes	Yes	No	-
Huntington	Main Road	10-12 shared with the library	1	Gravel	No	Yes	No	Yes	-
Underhill	VT 15	12	No	Gravel	No	Yes	No	No	-

Westford	VT 128	10	No	Paved	No	No	No	No	Free public WiFi
Milton	US 7	29	1	Paved	Yes	Yes	Yes	Yes	Recreation facilities adjacent

	Transit Access	Geometric Constraints	Sight Distance	Speed Limit	Signage	Signalized
Cambridge	GMT Route 36	None	No issues	35	Signed and visible	No
Waterbury	GMT Route 86	No issues	Insufficient right turn sight distance	35	Well signed	No
Richmond	GMT Route 86	None. Excellent turnaround circle for large vehicles.	No issues	40	Well signed	Yes
Colchester - Exit 16	Not currently served	None	No issues	40	Well signed	Yes
Colchester - Exit 17	GMT Route 96	None. Large circular turn-around	No issues	50	Well signed	No
Georgia	GMT Route 96	Driveway meets Skunk Hill Rd at 45 degree angle at a bend in Skunk Hill. Buses are unable to enter.	Challenging due to driveway alignment	35	Well signed	No
St Albans	GMT Route 96	Angled parking spaces, 1-way circulation, could be difficult for a large bus to maneuver	No issues	40	Well signed	No

Essex Town Center	GMT Route 4/10	None. Two driveways with one as an enter-only and the other is enter-exit.	No issues.	35	Well signed	No
Essex Landfill	None	Sufficient turnaround space for a cutaway vehicle; too constrained for a larger bus	No issues	40	Well-signed on VT 2A	Yes
Hinesburg	GMT Route 46	None	No issues	30	Well signed	No
Huntington	None	None - sufficient turnaround	No issues	25	Well signed	No
Underhill	GMT Route 36	No sufficient turnaround. Bus must stop in the travel lane	No issues	25	No signage	No
Westford	None	None	No issues	30	Well signed	No
Milton	GMT Route 56	None	No issues	30	No signage on US 7	No

	GEOMETRIC CONSTRAINTS	SIGHT DISTANCE	SPEED LIMIT	SIGNAGE	SIGNALIZED	BIKE	PEDESTRIAN	ARTERIAL ACCESS	TYPE	ACCESSIBILITY

Cambridge	None	No issues	35	Signed and visible	No	Minimal shoulder	No sidewalk, close to Cambridge Village	On VT 15; >1mile from VT 104 intersection	Rural/commercial/residential	No sidewalk, narrow shoulder, short walk to downtown
Charlotte	None. Large circular turn-around and one-way circulation pattern in lot	No issues	35	No signage on Ferry Road or US 7. Previous inventory in 2009 noted signage on Ferry Road	No	Shared use path	Shared use path	1 mile west of the intersection of US Route 7	Rural, residential	Shared use path access to Ferry Road .4 miles from Charlotte Village.
Waterbury	No issues	Insufficient right turn sight distance	35	Well signed	No	No shoulders	No sidewalk, sidewalk on Lincoln side, not on Stowe Street or extension	Near VT 100	Residential	None
Richmond	None. Excellent turnaround circle for large vehicles.	No issues	40	Well signed	Yes	3-4ft shoulder through interchange	No pedestrian access	On US 2	Rural highway interchange	None

Colchester - Exit 16	None	No issues	40	Well signed	Yes	4 ” shoulder	No sidewalk or crosswalks	On US 7	Suburban commercial/industrial	None
Colchester - Exit 17	None. Large circular turn-around	No issues	50	Well signed	No	4 – 6” shoulder	No sidewalk	On US 7	Rural, industrial	Adjacent to VTrans District 5 office; no other land use access
Georgia	Driveway not well aligned to Skunk Hill Road; driveway meets Skunk Hill Rd at 45 degree angle at a bend in Skunk Hill Road Too small for transit vehicles. Buses are unable to enter.	Challenging due to driveway alignment	35	Well signed	No	Bike lane on VT 15	Sidewalks and crosswalks	On VT 15	Rural highway interchange	None
St Albans	Angled parking spaces, 1-way	No issues	40	Well signed	No	3-ft shoulder on VT 104	Sidewalk connection	On VT 104	Suburban commercial	Access via sidewalk

	circulation, could be difficult for a large bus to maneuver									
Essex Town Center	None. Two driveways with one as an enter-only and the other is enter-exit.	No issues. lot entrance located <50’ from intersection	35	Well signed	No	bike lane on VT 15	Sidewalks and crosswalks	On VT 15	Commercial / Residential	Easy access on foot or bike
Essex Landfill	Sufficient turnaround space for a cutaway vehicle; too constrained for a larger bus	No issues	40	Well-signed on VT 2A	Yes	3 - 4ft shoulders on VT 2A	No access	Just off VT 2A	Rural industrial/commercial	None
Hinesburg	None	No issues	30	Well signed	No	No infrastructure	Stairs to VT 116, sidewalks on VT 116, and pedestrian area (walkway & benches)	From VT 116/Charlotte Rd intersection, turn right onto Seputo Road and then right again into P&R lot.	Village residential/commercial	Short walking distance to Village amenities.

							adjacent to town hall			
Huntington	None - sufficient turnaround	No issues	25	Well signed	No	No infrastructure	Crosswalk but no sidewalks	Main Rd is a major collector	Village residential/commercial	Short walking distance to Village amenities. Sidewalks would improve access
Underhill	No sufficient turnaround. Bus must stop in the travel lane	No issues	25	No signage	No	Shared use path connection	Path and crosswalks, RRFB	1,000 ft west of VT 15	Rural residential/commercial	Short walking distance to Jericho Market, school, and other Village amenities.
Westford	None	No issues	30	Well signed	No	2-3 ft shoulder on VT 128	No sidewalks or crosswalks	Located on VT 128	Rural residential	Close walking connections to numerous residences, no commercial access
Milton	None	No issues	30	No signage on US 7	No	No dedicated facilities, but on low-stress street	Sidewalk from US 7 ends at the Town Offices, 175 ft north of the park and	.25 miles from US 7	Rural commercial/recreation	Short walking distance from Town offices and direct park connection

		ride. Numerous crosswalks connecting to the park