CHAMPLAIN COLLEGE

The University of Vermont

THE University of Vermont MEDICAL CENTER

Joint Institutional Parking Management Plan

2023-2028

Prepared For: Development Review Board
Date: July 18th, 2023

vhb

CATMA
We'll help you get there

Acknowledgements

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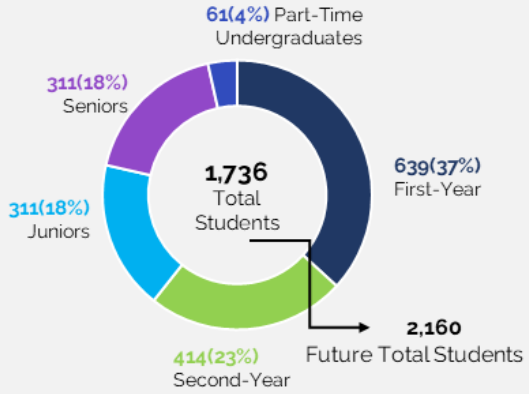
Each institution's current and anticipated infrastructure, user populations, parking demand, fleet, and strategies to keep parking supply and demand in balance are summarized below as outlined in Article 8. These facts and figures are further detailed within the report and supplemental documentation.

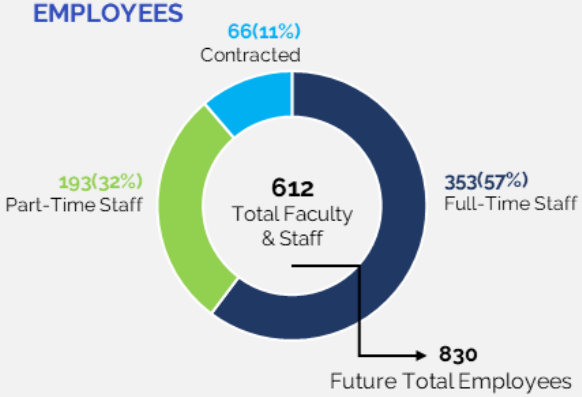
CHAMPLAIN FACT SHEET

CHAMPLAIN COLLEGE

STUDENTS



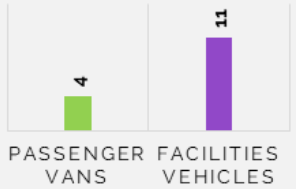
EMPLOYEES



CURRENT PEAK PARKING DEMAND

642	741	427	833
Total Parking Supply	Estimated Demand (based on Survey[1])	Utilization (based on Counts)	ITE Estimate[2]

FLEET VEHICLES



15 **Fleet Vehicles**

- All Fleet Vehicles parked in designated spaces

FUTURE DEVELOPMENT

39,000 gsf (approx.) will be added with future development projects and 30 residential beds

Future Projects

- Foster Hall Addition
- New ITS Building
- Conversion of Building to Residential Hall

NOTEWORTHY POLICIES

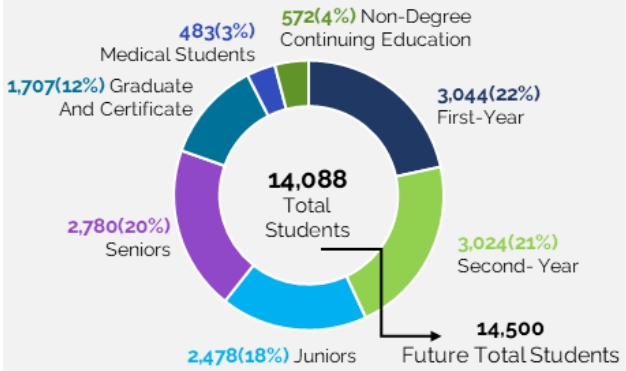
- New Interim Workplace Flexibility People Center effective in 2022
- Sustainability Action Plan completed in 2013
- Active Transportation Plans effective in 2015
- Parking Policies effective in 2017
- Sustain Champlain Campaign

1. Estimated parking demand based on survey of employees and students reporting predominantly driving alone or carpooling to serve their transportation to campus and typically on campus at peak time, thus likely overestimating actual peak parking demand.
2. Estimated parking generation based on the total campus population fitted to the curve for a sample of institutions from the Institute of Transportation Engineers *Parking Generation Manual 5th Edition*.

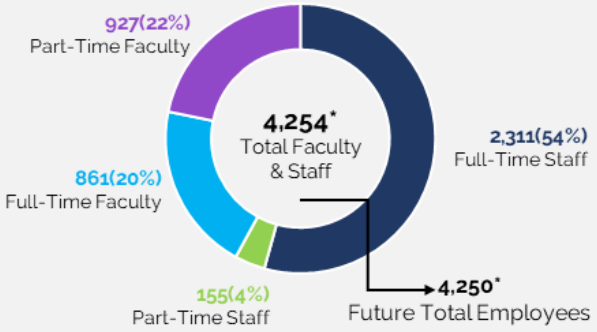
UVM FACT SHEET

The University of Vermont

STUDENTS



EMPLOYEES

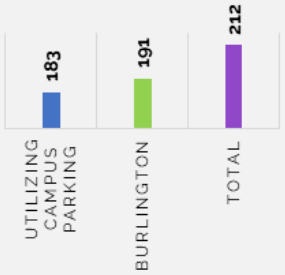


* This includes 230 Non-Burlington Employees

CURRENT PEAK PARKING DEMAND

4,865	4,943	3,508	4,852
Total Parking Supply	Estimated Demand (based on Survey[1])	Utilization (based on Counts)	ITE Estimate[2]

FLEET VEHICLES



- Eco Friendly Fleet Procedures adopted in 2019
- Majority of Fleet Vehicles parked in Designated Spaces

FUTURE DEVELOPMENT

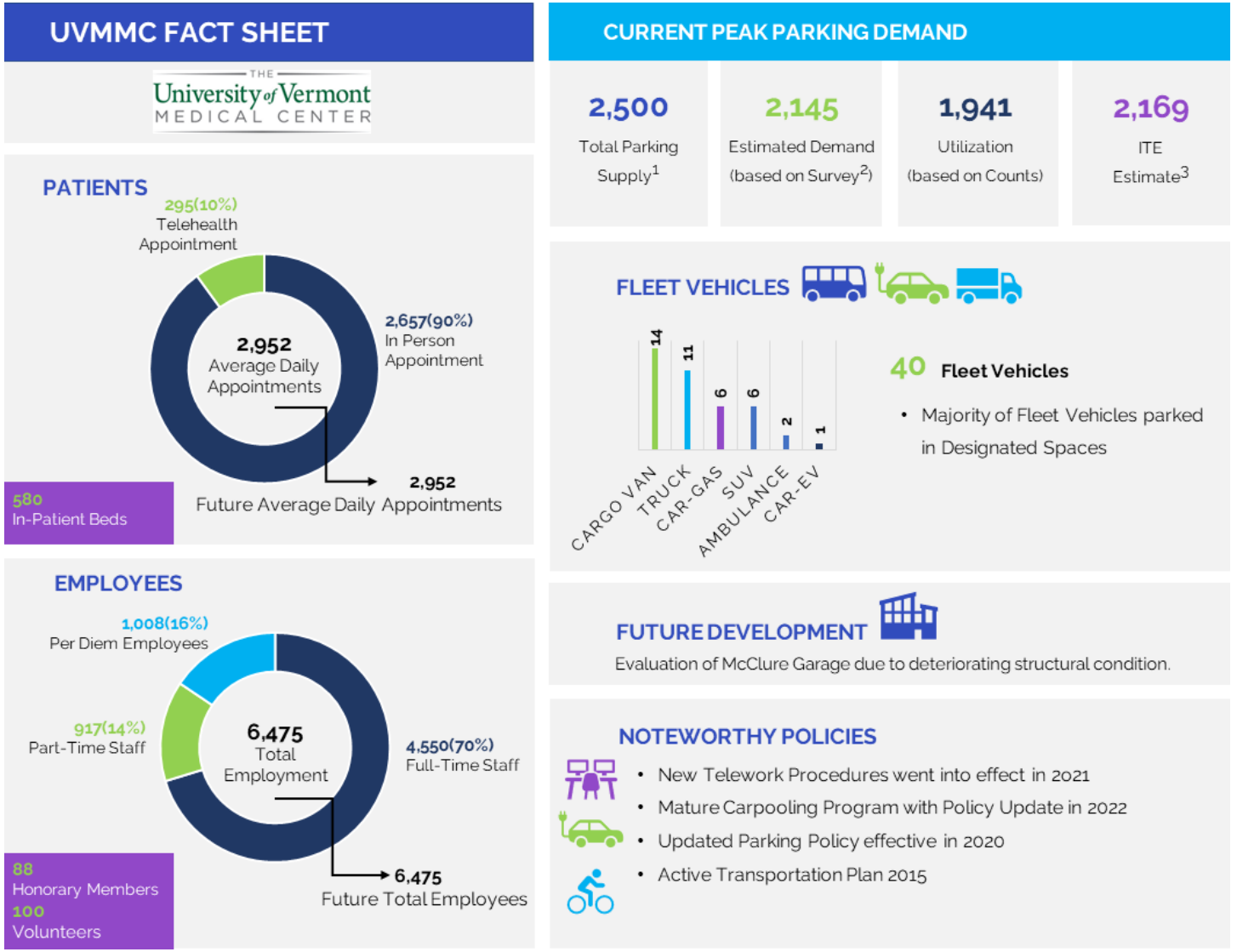
638 Parking spaces will be added with future development projects

Largest Parking Contributors
- Colchester Research Facility
- Bioresearch Complex Parking
- Centennial Compound

NOTEWORTHY POLICIES

- Comprehensive Sustainability Plan released April 2023
- New Telework Procedures went into effect in 2021
- UVMoves Active Transportation Plan 2017
- Facilities Sustainability Plan 2021
- Green Fleet Vehicle Procurement Procedures 2019

1. Estimated parking demand based on survey of employees and students reporting predominantly driving alone or carpooling to serve their transportation to campus and typically on campus at peak time, thus likely overestimating actual peak parking demand.
2. Estimated parking generation based on the total campus population fitted to the curve for a sample of institutions from the Institute of Transportation Engineers *Parking Generation Manual 5th Edition*.



1. Total parking supply based on on-site parking spaces.
2. Estimated parking demand representing on-site parking based on survey of employees reporting predominantly driving alone or carpooling to serve their transportation to campus, typically on campus at peak time, and parking in on-site lots during peak times.
3. Estimated parking generation based on the number of in-patient beds sampled from the average trip rate for similar institutions from the Institute of Transportation Engineers *Parking Generation Manual 5th Edition*.

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Introduction

The Joint Institutional Parking Management Plan (JIPMP) is submitted to the Planning Commission and Development Review Board to demonstrate current and anticipated parking demand for Burlington's "Hill" Institutions to meet the requirements set forth in Article 8 of the Comprehensive Development Ordinance. Burlington's "Hill" Institutions, comprised of Champlain College, University of Vermont (UVM), and University of Vermont Medical Center (UVMMC), are the founding members of the Chittenden Area Transportation Management Association (CATMA). CATMA has submitted Joint Institutional Parking Management Plan and annual updates to the City of Burlington on behalf of the "Hill" Institutions since 2009. This JIPMP may be approved by Burlington's Planning Commission and Development Review Board (DRB) for a period of up to five years with annual updates reported to the City's Office of City Planning and Department of Permitting & Inspections.

This introductory chapter summarizes the purpose and content of the JIPMP and provides a high-level overview of CATMA and their role in jointly supporting institutional transportation management.

Purpose & Content

The Joint Institutional Parking Management Plan advances the intent of PlanBTV by demonstrating the commitment of the Institutions to grow sustainably in support of the vision of Burlington as a *distinctive city*[1]. Recognized for their contributions to the *unique economic identity* of the City as a center for education and healthcare, the Institutions serve a key role in advancing

[1] Plan for Action | planBTV: Burlington's Comprehensive Plan (arcgis.com)

the core principles of PlanBTV by planning for well-connected, human-scale environments that integrate new development with the existing campus character. More specifically, the 5-Year JIPMP and its annual updates are intended to:

- Recognize the need to manage parking demand and resources holistically and creatively, employing transportation demand management (TDM) practices as well as supplying adequate parking facilities;
- Recognize the efficiencies gained when several neighboring institutions share resources and collaboratively participate in parking and TDM programs; and,
- Ensure that city streets in nearby neighborhoods are not unfairly burdened by parking demands from post-secondary education or medical institutions.

Based on the City of Burlington's Comprehensive Development Ordinance Article 8 Section 8.3.3[2], *an Institutional Parking Management Plan shall include the following:*

(a) A narrative that outlines how the proposed parking management plan addresses the specific needs of existing and anticipated development and effectively satisfies the intent of this Article and the goals of the Municipal Development Plan.

(b) Information specifying the current and anticipated numbers over the ensuing 5 year period for: number of students of all academic programs (full-time, part-time, commuter, on-campus, off-campus, and continuing education), faculty and staff (full-time and part-time), patients and visitors being served by the institution.

(c) An analysis of the anticipated parking demand by user group, time of day and/or demand by use and parking provided to meet that demand currently and anticipated over the ensuing five-year period;

(d) Information specifying the number and composition of the institution's vehicle fleet, where these vehicles are regularly kept, and designated "service vehicle-only" parking;

(e) Strategies used to reduce or manage the demand for parking which may include but are not limited to:

1. *Policies which restrict and/or prohibit the bringing of vehicles to the institution for various users or groups of users;*
2. *A telecommuting program;*
3. *Programs and employee and student subsidies to encourage the use of public transit, car-share, walking, and bicycling;*

[2] Zoning Ordinance | City of Burlington, Vermont (burlingtonvt.gov)

4. *Implementation of a shuttle service system serving off-site parking;*
5. *Implementation of a parking permit system to allocate parking throughout the system; and,*

(f) Implementation of a monitoring, compliance and enforcement system to measure and ensure compliance with the plan.

In order to convey the documented purpose, meet the requirements of the ordinance, and satisfy the intent of Article 8, the JIPMP is organized into chapters summarizing the parking management environment collectively for the institutions and individually for each institution. In an effort to streamline the content of this document, each institutional chapter contains the elements outlined in the ordinance above. The chapters are organized into existing and anticipated infrastructure and development (Section 8.3.3 (a)), existing and anticipated community population (Section 8.3.3 (b)), existing and anticipated parking demand (Section 8.3.3 (c)), fleet characteristics (Section 8.3.3 (d)), highlighted strategies (Section 8.3.3 (e)), and monitoring, compliance, and enforcement (Section 8.3.3 (f)). In addition, a *JIPMP Institutional Supplement* includes further detail but is not essential to the document.

CATMA

Originally established in 1992 by the "Hill" Institutions and expanded in 2015 to serve as a regional transportation management association, CATMA has served Chittenden County with transportation demand management services, incentives, and programs for over 30 years. CATMA's mission is to work with members and community partners to plan and manage safe, convenient, and economical transportation and parking options with the aim of reducing environmental impacts and improving coordination of land use. More information on CATMA can be found at catmavt.org.

Transportation Management Associations (TMA)

TMAs are associations, organizations, or cooperatives that provide transportation services and education to businesses, property owners, residents, and employees in a defined geographic area, combining their efforts to expand transportation options and reduce program costs. They are not-for-profit collaborations of private and public sector entities working together towards common goals, such as congestion mitigation, transportation services and pollution reduction.

Transportation Demand Management (TDM)

The term *transportation demand management* means the use of strategies to inform and encourage travelers to maximize the efficiency of a transportation system, leading to improved mobility, reduced congestion, and lower vehicle emissions, including strategies that use planning, programs, policies, marketing, communications, incentives, pricing, data and technology."[3]

[3] Association for Commuter Transportation. 2023, "What is TDM?" What is TDM - Association for Commuter Transportation (actweb.org)

2

Collective Institutional Summary

Each of the institutions' parking supply and demand are summarized within based on data gathered during the Fall of 2022. This assembled data informs the analysis that demonstrates that the existing parking supply meets current demand for each institution. In addition, information regarding the anticipated development and growth on each campus informs the anticipated parking supply and demand out to 2028, a time horizon of approximately 5 years. The 5-year projections coincide with the anticipated approval interval of this document.

The intent of the JIPMP, and parking management planning more generally, is to demonstrate the policies and programs that enable utilization of parking resources more efficiently. For the institutions, this has and continues to entail many strategies employed collectively, through CATMA and agreements among the institutions, as well as individually, to best utilize resources given the transportation mobility and parking needs of each institution's population.

Peak Parking Demand

Two primary methods were used to estimate the current peak parking demand for each institution: count and survey data. The methods employed have been utilized previously and are referenced in the *2020-2022 JIPMP*[4]. As has been noted in previous

[4] CATMA, *2020-2022 Joint Institutional Parking Management Plan*, Appendix A. https://catmavt.org/sites/default/files/uploads/2020-2022_jipmp.pdf

JIPMP documents, there are limitations to both methods of estimating parking demand, however, it is reasonable to assume that these two methodologies provide low and high estimates to represent the book ends of actual peak parking demand on each campus. It is noted that previous JIPMP documents had fewer counts to rely on, however, the representation of peak utilization via count data is considered reliable given the count programming that has been instituted.

Table 1 Current Institutional Parking Demand Summary

	Champlain College	UVM	UVM Medical Center
Current Conditions			
Potential Users[1]	2,348	17,540	9,427
Peak Parking Demand Survey	741	4,943	2,145
Peak Parking Utilization Counts	427	3,508	1,941
Total Parking Supply	642	4,865	2,500
Net Spaces Peak Demand	-99	-78	355
Net Spaces Peak Utilization	215	1,357	559

1. Potential users include students and employees for Champlain College and UVM and employees and patients at UVMMC.

Consistent, quarterly lot counts provided a ground truth during limited time windows (i.e. three days during peak periods at four times throughout the year) to demonstrate the utilization of the institutionally controlled lots. Although these time windows are targeted to capture peak times, it is recognized that these count data may slightly underestimate the typical peak parking demand as they only represent a limited time frame and may not capture peak parking demand due to variability. The peak of the utilization counts was used to represent peak parking based on lot counts.

Survey data provide samples from which estimates of peak parking demand can be derived based on user groups, mode trends, and other reported travel behaviors. These data summarize reported, typical patterns for different user groups but may not capture the daily variability that lot counts

Table 2 Future Institutional Parking Demand Summary

	Champlain College	UVM	UVM Medical Center
Future Conditions			
Potential Users	2,990	17,820	9,427
Total Peak Parking Demand	992	4,988	2,145
Total Parking Supply	642	5,503	2,500
Net Spaces Peak Demand	-350	515	355

are able to, thus providing an overestimate of typical peak demand. In addition, these trends by user group can be applied to future cases providing a reasonable means for forecasting peak parking demand.

Collectively, the institution's parking supply meets parking demand based on the peak parking utilization according to count data and are within the margin of error for the peak parking demand estimates based on survey data. Future parking supply similarly meet the anticipated parking demand out to forecasted 2028 conditions. These results are summarized in Tables 1 and 2, and further detailed in each institution's chapter below. It is noted that both current and future peak demand are likely inflated estimates based on the survey data. This is discussed in further detail below.

Trends & Patterns

This section outlines the context that influences the parking environment for the institutions collectively, including policy changes, pandemic disruptions, and surveyed and observed transportation behaviors. These trends and patterns, and their implications, are discussed within.

Policy Shift

Updates to the Article 8 Ordinance were approved by City Council on January 9th, 2023. These updates codify the shift away from parking minimums while adopting parking maximums, expanded transportation demand management, and updated institutional parking management plan requirements. It is important to note that with the amended ordinance moving away from parking minimums, the need for waiver requests when supply does not meet the minimum have been eliminated. Historically, the institutions have maintained a parking supply that was below previously mandated minimums and utilized the parking management plan to request a waiver for this discrepancy by demonstrating the supplied parking meets current and anticipated demand and enumerating the many mechanisms by which the institutions actively seek to reduce demand for parking on each respective campus. Although the waiver is no longer necessary in this shift towards a new parking paradigm, the 5-year JIPMP and annual updates will continue to demonstrate the current and anticipated parking supply and demand for each institution as well the strategies employed to continue towards more efficient utilization of parking resources. This policy step towards the City's climate action goals is expected to be bolstered in the near term by an upcoming transportation options study, which will recommend the policy framework for a comprehensive, citywide transportation demand management plan.

The updated ordinance and recommitment to broader transportation demand management at the city scale represent a shift towards efficiency-based standards. In parking management, efficiency-based standards refer to provision of optimal parking supply in a managed system, where supply meets demand and contingency plans account for potential variability in that

demand[5]. These managed systems consider the geography, proximity, cost, and convenience of parking supply and leverage mechanisms like pricing and regulation to optimize utilization. This allows a more holistic system to avoid the tendency to supply parking in excess while balancing appropriate pricing structures and recognizing the costs associated with oversupply. With efficiency-based standards, assessing "optimal" parking utilization based on 85th percentile occupancy has fallen out of favor. Instead, optimal parking utilization allows for spaces to fill to lot capacity on the condition that sufficient parking to serve demand is available elsewhere in close proximity and any potential spillover issues are addressed or managed. For example, an institution may provide parking in desirable proximity to key destinations, priced appropriately, and allow that parking to fill to capacity or 100% utilization. Say this parking fills twice a week for peak periods and, within the managed system, a shared satellite lot provides additional capacity to fulfill parking demand that exceeds the more proximal lot capacity. Monitoring of the system allows for management of the parking, so that adjustments to pricing or other strategies can be leveraged to induce changes in the system. Recent parking policy reforms and their strategies are well documented in resources like the searchable case study database assembled by the Urban Land Institute containing parking policy innovations across a multitude of jurisdictions[6].

COVID-19 Pandemic

A global pandemic significantly disrupted the typical operations of all three of these institutions when it arrived locally in March of 2020. There were many lessons learned in how each of these institutions continued to meet their mission while adapting to the situation as waves of increasing infections and different variants demanded a dynamic approach. During the height of the pandemic, this meant social distancing, masking, limiting in person gathering, and using technology to enable remote work, learning, and health appointments where feasible. The prevalence of hybrid virtual and in person environments to conduct work, enable learning, and deliver healthcare consultation during the pandemic have carried into the current landscape.

Telecommuting, telework, telelearning, and telehealth have all proven to be mainstays for the institutions at a baseline level. Each institution has its own policies around how this is enacted for employees, students, providers, and patients. Each institution also anticipates that with the ubiquity of these tools and protocols in place, this approach will continue to serve some portion of what might otherwise be demand for in person activities on each respective campus and thus demand for parking.

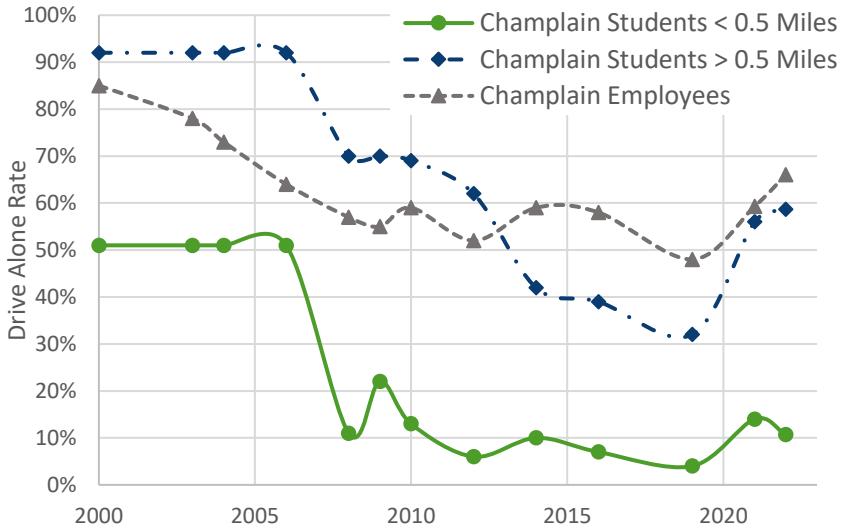
[5] Littman, T. (2022). *Parking Management: Strategies, Evaluation and Planning*. Victoria Transport Policy Institute (www.vtpi.org).
[6] ULI. (2021). Parking Policy Innovations in the United States

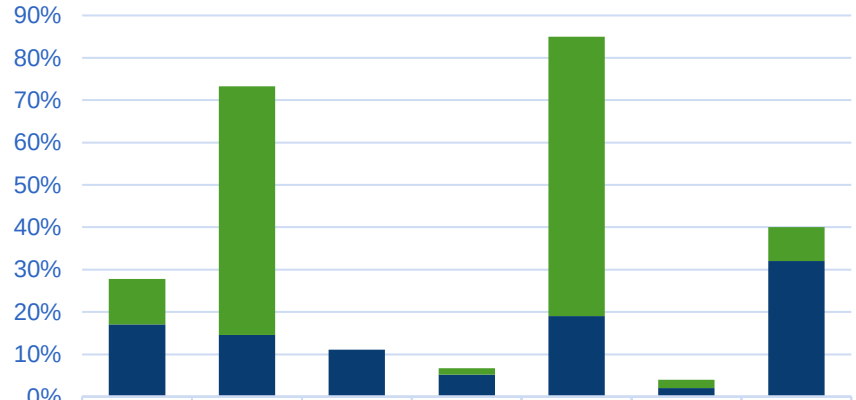
Survey Trends on Travel Behavior

CATMA administers a survey annually to track the longitudinal travel behavior trends of the membership that it serves. In Fall of 2022, the survey was administered to CATMA membership including the institutional partners. The survey revealed the drive alone rates for the institutional user groups, including employees, students within a half mile, and students greater than a half mile from campus. Year over year trends of the drive alone behavior of these groups are depicted in Figures 1, 2, and 3. Overall, drive alone rates have declined over the period of monitoring starting in 2000. It is noted that students within a short distance of their respective campus (i.e. less than a half mile) have the lowest drive alone rates. Within these distances, walking, biking, and campus transit modes meet the transportation demand effectively. Students with home locations outside of a half-mile radius of campus drive alone to campus at higher rates than their close to campus counterparts, but below the rates of employees. Employees of each institution have similar drive alone rates, between 61% and 66%.

Similarly, the survey revealed the mode split for each institution. Accompanying the drive alone trends over time in Figures 1, 2, and 3 are the mode splits for the different user groups. Drive alone, carpool, and telework rates as the primary mode and alternative mode are depicted for each user group. At Champlain College, over 30% of employees telework as an alternative mode and 8% as a primary mode. At UVM, students carpool at a rate of about 30% as an alternative mode while employees carpool as an alternative mode at a rate 11% and telework as an alternative mode at a rate of 34%. At UVMMC, employees at the Medical Center Campus and 1 South Prospect Street carpool as an alternative mode at rates of about 10% and telework at rates of 8% and 18%, respectively. That does not account for the 12% of 1 South Prospect employees that telework as a primary mode.

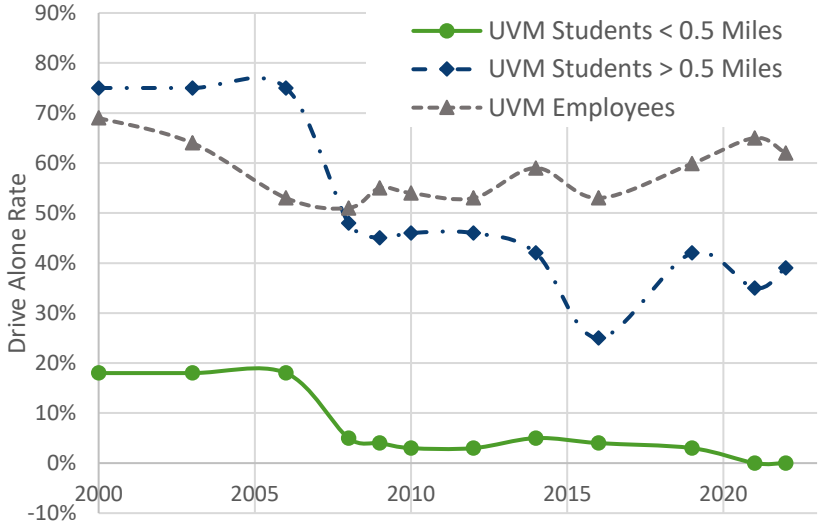
Figure 1 Champlain College Drive Alone Trends & Mode Split

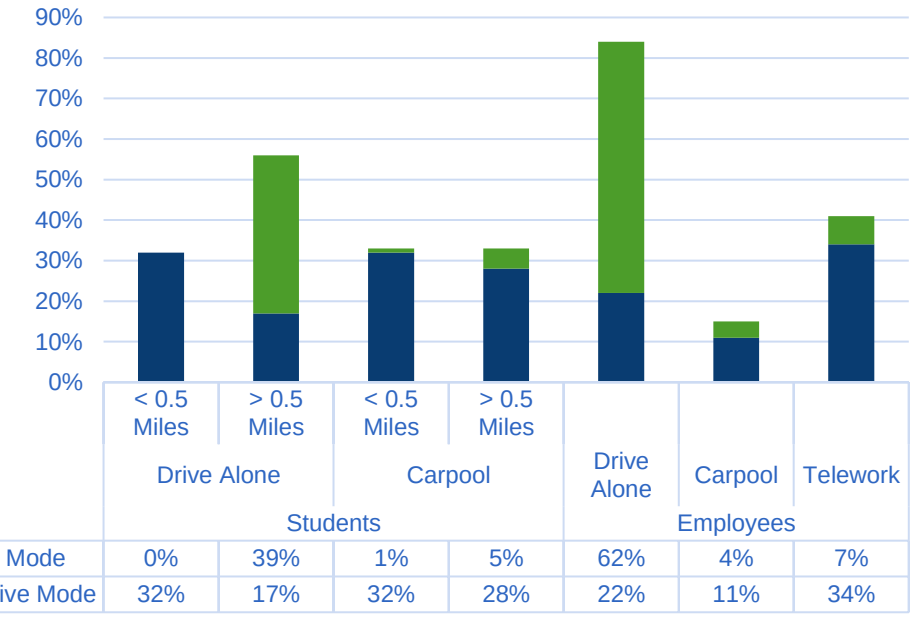




	< 0.5 Miles	> 0.5 Miles	< 0.5 Miles	> 0.5 Miles	Drive Alone	Carpool	Telework
	Drive Alone		Carpool		Drive Alone	Carpool	Telework
	Students				Employees		
Primary Mode	11%	59%	0%	2%	66%	2%	8%
Alternative Mode	17%	15%	11%	5%	19%	2%	32%

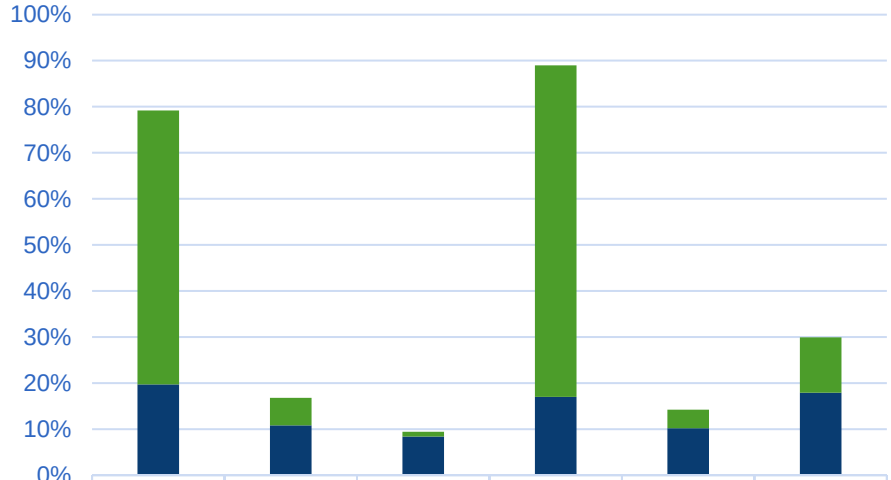
Figure 2 University of Vermont Drive Alone Trends & Mode Split





	Students				Employees		
	< 0.5 Miles	> 0.5 Miles	< 0.5 Miles	> 0.5 Miles	Drive Alone	Carpool	Telework
	Drive Alone		Carpool				
Primary Mode	0%	39%	1%	5%	62%	4%	7%
Alternative Mode	32%	17%	32%	28%	22%	11%	34%

Figure 3 University of Vermont Medical Center Drive Alone Trends & Mode Split



	Medical Center Campus			1 South Prospect		
	Drive Alone	Carpool	Telework	Drive Alone	Carpool	Telework
Primary Mode	60%	6%	1%	72%	4%	12%
Alternative Mode	20%	11%	8%	17%	10%	18%

On-Street Parking Adjacent to Institutions

There are some institutional affiliates who park on-street during peak time according to the survey administered to users in the Fall of 2022. Table 3 demonstrates the percent of students and/or employees that drive and are parking on-street during peak parking demand times. Additionally, the survey asks participants what streets they typically park on when they park on-street. Champlain College employee and student survey participants both indicated that they primarily park on South Willard Street, Maple Street, and Summit Street. UVM employee survey participants indicated that they park on Prospect Street and Williams Street. UVM student survey participants did not have a popular street that is utilized. UVMMC survey participants indicated that they park on Colchester Avenue, and the other two popular streets were North Prospect and South Prospect. These streets in proximity to the campus areas are generally unregulated, making them free and open to public parking.

To prevent institutional affiliates from parking on the city streets in residential areas, Champlain College made an agreement with the City of Burlington to allow a small number of locations where on-street parking was permitted for Champlain affiliates. It was agreed that all other streets on the "Hill" in Burlington are prohibited to affiliate parking. Champlain College has been increasing their parking enforcement to discourage the misuse of parking around campus. It should be noted that the three streets that are being frequently utilized by Champlain College employees and students are streets that fall within the campus. Parking on these segments is open to the public Monday through Friday 8:00 am to 4:00 pm and institution affiliates with a Zone 1 or MC parking permit are allowed to park in those spaces.

Table 3 On-Street Parking at Peak Time

	Champlain College	UVM	UVMMC
Students	5.6%	2.9%	N/A
Employees	11.6%	3.8%	1.1%

Collective Highlights & Strategies

This section outlines the collective institutional strategies that influence parking demand and transportation behavior more generally. Although the specific efficacy of a given strategy to offset demand for parking may not be known, these strategies collectively provide more viable transportation options to the populations accessing each campus. As demonstrated in the mode trends above, even if these options may not be used as primary means of accessing the campuses, they present feasible alternatives to driving and parking on site that can infrequently or frequently be used to offset parking demand, among other co-benefits. The individual institutional chapters delve further into the strategies on each campus regarding parking and demand management.

Transportation Demand Management

CATMA offers the member institutions a full menu of transportation demand management (TDM) programs to serve each community's mobility needs and provide sustainable transportation options. These services and incentives are intended to expand use of alternative modes and have demonstrated participation by the membership in pursuit of reducing single occupancy vehicle use to access the institutional campuses. These programs, incentives, and services include:

- Bike Share Discounts
- Bike / Walk Rewards Program
- Carpool and Vanpool Services
- CarShare Vermont Campus Program

- Commuter Champion Prize Drawings
- Education, Awareness, and Outreach
- Guaranteed Ride Home
- Off-site Parking
- Transit Discount Programs (i.e. Unlimited Access)

The TMA programming above represents just a portion of the collective opportunities for efficiently managed parking for the institutions. Other opportunities include shared parking, off-site parking, and shuttle services. For instance, UVM Medical Center leases parking from UVM to afford additional parking in close proximity to their campus. Off-site parking at 125 Lakeside Avenue affords just over 350 spaces of off-site parking for the institutions through CATMA contracting. UVMMC and Champlain College lease spaces to serve their users parking needs in the arrangement and provide shuttles to the off-site lot for their users. Each institution runs or contracts shuttle services to best meet the needs of their respective populations, however, employees across institutions can utilize other institutions shuttles as needed, provided there is capacity for the institution's employees to utilize the service. This sharing arrangement effectively increases shuttle service for all institutional partners.

Campus Shuttles and Transit

Green Mountain Transit (GMT) offers a multitude of options for local and regional transit service for Champlain, UVM, and UVMMC affiliates. Local and some regional routes are available with stops on or in close proximity to each campus, with additional connections to the Downtown Transit Center for transfers to a broader range of destinations. Local and regional GMT routes remain fare free through 2023 as part of the response to the COVID pandemic. Funding contributions from the institutions have continued as part of the Unlimited Access Program, in part enabling GMT to remain fare free for the general public. Should fares be implemented again in 2023, it is anticipated that Champlain and UVM will continue contributions to support their affiliates eligibility for free transit rides on any local or regional route with valid campus affiliation identification (i.e. the Unlimited Access Program) and UVMMC employees will be eligible for transit discounts. In general, ridership on GMT local routes have rebounded to near pre-pandemic levels and systemwide are down 18% compared to pre-pandemic averages.

Beyond the public transit system, each campus provides shuttle services to serve the campus and satellite facilities. These are detailed in each institution's section below.

Bike Share

In 2018 Greenride Bikeshare became Vermont's first public bike sharing system serving the greater Burlington area. There were over one hundred electric bikes in circulation across 30 hubs in Burlington, South Burlington, and Winooski through an expansion of the original system in 2021. These bikes could be accessed by a mobile app. Bolt, the e-bike vendor, ceased operations in July 2022 and the bikes were pulled from public use. Prior to their removal, there were many Greenride hub locations that helped to serve the micro-mobility needs of institutional affiliates including six located on UVM's campus, two on Champlain's campus, and one on the UVMMC campus. CATMA has issued a request for proposal (RFP) for a new bike share program which is anticipated to begin in Summer 2023. This bikeshare system will similarly provide another means of mobility for Champlain, UVM, and UVMMC affiliates with subsidized membership offerings.

CarShare

CarShare Vermont is a mission driven, local non-profit that aims to "provide an affordable, convenient, and reliable alternative to private car ownership." The network of 22 vehicles shared by members are located at pods throughout Burlington and in neighboring South Burlington with future plans to add vehicles in Winooski. Affiliates of UVM and Champlain College are eligible to subscribe to CarShare through a subsidized Campus Plan. Of CarShare's current 1,155 members, approximately 20% are subscribed to the subsidized Campus Plan and do not have a permit to park on their respective campus[7]. This plan provides a generous discount on annual membership. There are additionally campus affiliates that have membership through alternate rate plans (e.g. free membership for income-eligible households). It is noted that campus affiliates use all 22 CarShare vehicles in service.

For campus affiliates, CarShare Vermont has contributed to limited vehicle ownership. According to CarShare Vermont's 2022 Member Survey, 78% of student members reported that they avoided bringing a vehicle to campus and were using CarShare Vermont instead. Of those faculty and staff members, 30% reported not owning a vehicle and joining CarShare Vermont instead of acquiring one and an additional 30% reported avoiding the addition of a second household vehicle. Twenty-five percent of faculty and staff reported shedding a vehicle because of CarShare Vermont and an additional 15% reported not replacing a vehicle that stopped working.

CarShare has also contributed to the reduction of driving and increase in alternate modes among campus affiliate membership. According to the survey, 56% of students reported driving less since joining CarShare Vermont and 48% reported walking and biking more. Student members, at a rate of 76%, reported combining errands into a single trip. It is estimated that for every

[7] The membership numbers reflect data up to March 2023.

vehicle CarShare Vermont puts in service, 15 privately owned vehicles are removed[8]. This provides many communal benefits, including reduced demand for parking.

Climate Initiatives

Each institution has set out to tackle their environmental footprint and climate implications, particularly in regard to transportation and parking.

Sustain Champlain is the overarching campaign for Champlain College to integrate sustainability into the entire campus[9]. Sustain Champlain focuses on institution, operations, academics, and culture. Under their operations section they provide resources for transportation initiatives such as CATMA memberships, access to free rides on GMT buses, shower facilities for bicyclists, additionally locations to access bike parking, shuttle stops, and CarShare vehicles. In 2015, Champlain College revisited their Active Transportation Plan which sets out to reduce motorized vehicle use for Champlain affiliates, create an active transportation culture, decrease CO_2 emissions, and create safe, functional, and environmentally friendly transportation options for employees and students.

The University of Vermont has recently published their Facilities Sustainability Plan (FSP)[10]. This plan entails reducing the environmental footprint of all aspects of facilities management across the campus including transportation. The plan recognizes and builds upon the planning and programming foundation for limiting or reducing the climate implications of transportation including the Active Transportation Plan, Green Fleet Vehicle Procurement Procedures, Sustainable Transportation Module for parking pass acquisition, free on-campus and local bus transit, carpool matching, and electric vehicle charging infrastructure. Building on this foundation, the Facilities Sustainability Plan aims to enhance convenient, accessible, affordable, low-carbon transportation options, reduce single occupancy vehicles; increase use of alternatives and shared modes, and ensure that fleet vehicles are rightsized, shared, and alternatively fueled. The strategies that accompany these goals are further detailed in the UVM Chapter below. UVM has released a Comprehensive Sustainability Plan, integrating the goals identified in the FSP and including academics, research, and planning for the University[11].

UVMMC is committed to reducing its carbon footprint and mitigating health issues caused by climate change[12]. UVMMC has received recognition from local and national organizations for limiting onsite parking, encouraging carpooling, and providing

[8] See Appendix B: CarShare Vermont Parking Demand Impacts of the 2021 Joint Institutional Parking Management Plan Annual Update, jipmp_2021_annual_update.pdf (catmavt.org).
[9] https://www.champlain.edu/student-life/campus-and-community-programs/sustain-champlain
[10] University of Vermont, *Facilities Sustainability Plan 2021-2030*, https://www.uvm.edu/sites/default/files/Facilities-Management/pdf-docs/exec/Facilities_Sustainability_Plan_October_2021.pdf
[11] The Comprehensive Sustainability Plan was released on Earth Day 2023, Comprehensive Sustainability Plan | The University of Vermont (uvm.edu).
[12] Climate Change Initiatives (uvmhealth.org)

incentives for use of public transit. Additionally, UVMMC has partnerships with CATMA, Burlington 2030, and Vermont Climate Pledge Coalition. In 2017, their alternative transportation programs helped employees avoid 1,171,082 pounds of carbon. The Burlington 2030 initiative aims to reduce transportation emissions, energy use, and water consumption by 2030. Additionally, the Climate Pledge Coalition aims to uphold greenhouse gas emission reductions established by the Paris Climate Agreement.

Multimodal Connections

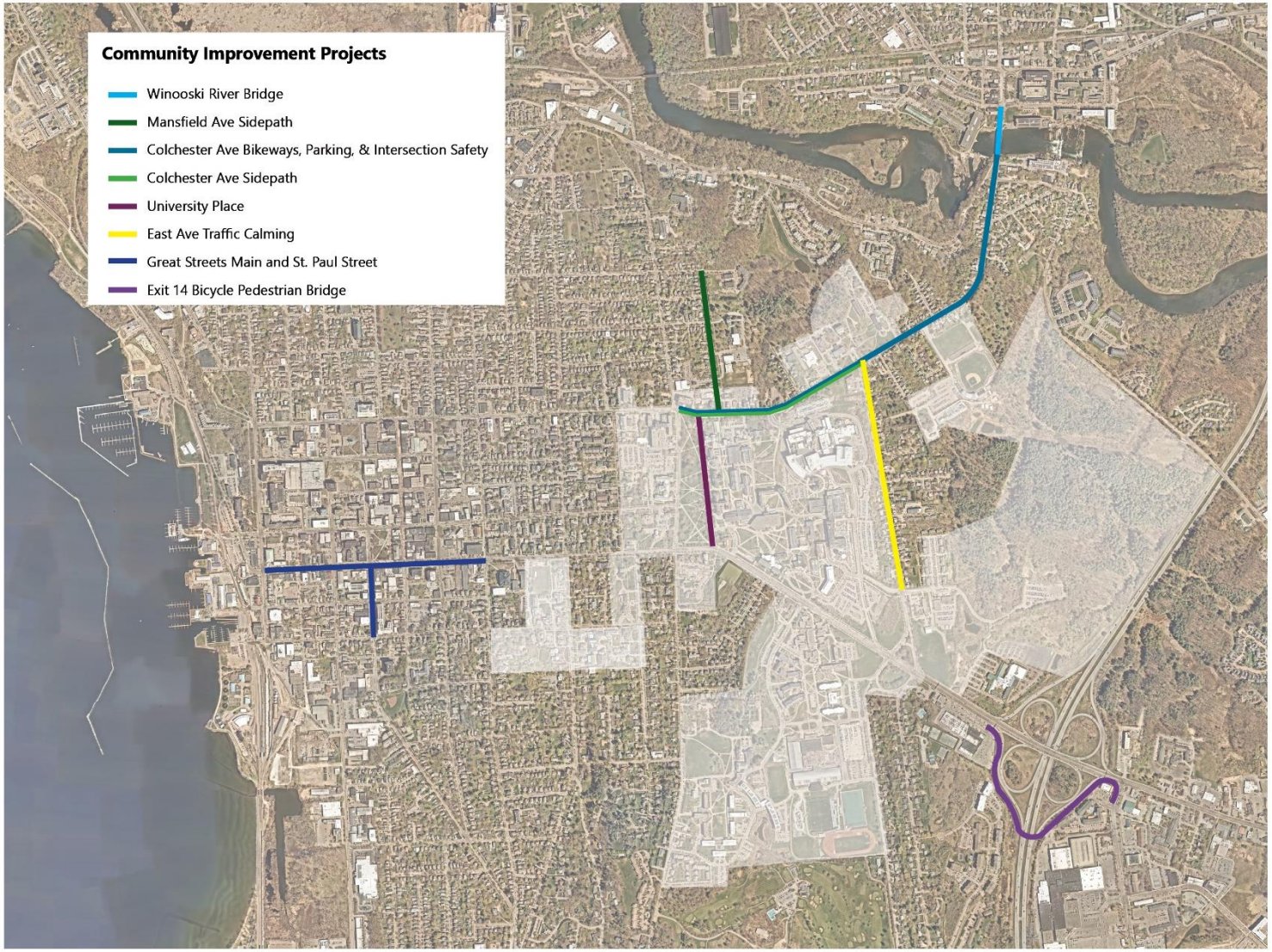
A critical focus on multimodal connections has emerged as Burlington and the surrounding communities tackle the climate emergency, demand management, and equitable transportation outcomes. In particular, places that have historically been barriers to or hostile to active modes of transportation have been under scrutiny as these areas hinder shifts towards more active transportation modes. This is evidenced in many high profile walking and biking infrastructure projects that have recently been constructed or are imminent in the planning, design, or construction phases. These projects in Burlington, South Burlington, and Winooski will improve the connectivity for residents and visitors, as well as serve the employees, students, patients, and visitors of each of the institutions. The improvement in connectivity and accommodations will provide safe and accessible routes to and from the institutions utilizing alternative modes of transportation. Some of the key projects are:

- **Winooski River Bridge:** The purpose of the project is to improve safety while maintaining structural integrity and continuity of this integral link between Winooski and Burlington across the Winooski River. The project will address deficiencies in the bridge while improving multi-modal (bike, pedestrian, vehicular) travel for people and goods. Scoping has been completed and the project is expected to move into design.
- **Mansfield Avenue Sidepath:** The sidepath replaced the existing sidewalk on the eastern side of Mansfield Avenue from Colchester Avenue to North Street with a wider asphalt path and markings. The project also included crossing improvements at the intersection of Colchester Avenue and Mansfield Avenue. This project is complete.
- **Colchester Avenue Bikeways, Parking, & Intersection Safety:** The purpose of the Colchester Avenue: Bikeways, Parking, & Intersection Safety Study was to identify and prioritize improvements that align with the City's vision for sustainable transportation infrastructure and enable a continuous, connected, and livable multimodal transportation corridor. This includes proposed improvements to the intersection of Colchester Avenue and East Avenue as well as creation of separated bike infrastructure along the length of Colchester Avenue. Scoping was completed.
- **Colchester Avenue Sidepath:** The existing Colchester Avenue southern Sidepath was removed and replaced to meet accessibility design criteria and widened to meet current design guidelines for shared bicycle & pedestrian paths. The project included a new 10' wide concrete sidepath to replace the sections of 8' wide sidepath east of Mansfield Avenue and the 5' wide sidepath west of Mansfield Avenue. The project is complete.

- **University Place:** The purpose of improvements to University Place were to enhance safety on the street for pedestrians, bicyclists, and other active transportation users. University Place is at the heart of UVM's central campus. As part of the project, buffered bike lanes in each direction and prioritized and comfortable pedestrian crossings were constructed. UVM and the City of Burlington shared the costs of this project on the city-owned street. The project is complete.
- **East Avenue Traffic Calming:** The purpose of the East Ave Traffic Calming project is to improve the safety along the corridor. There are currently issues of speeding and unsafe crossings for pedestrians. The project will implement traffic calming measures and create more conspicuity for crossings to improve connections along and across this critical corridor adjacent to UVM and UVMMC. Planning is complete and the project is in the design phase.
- **Great Streets Main and St. Paul Street:** Main Street is an important gateway into downtown Burlington and a vital connection from the waterfront to the "Hill" institute campuses. The goal of Great Streets Main Street project is to balance the use of the public right of way to provide wide sidewalks, protected bike accommodations, activation space, and parking. St. Paul Street similarly aimed to enhance the use of the public right-of-way for multimodal use. St. Paul Street construction is complete and Main Street is in the design phase.
- **Exit 14 Bicycle Pedestrian Bridge:** The goal of the project is to create a bicycle and pedestrian bridge across I-89 in the vicinity of the Exit 14 Interchange in South Burlington. While existing sidewalks, bicycle lanes, and transit service provide alternative transportation accommodations along US Route 2, these modes are likely underutilized due to the speed, numerous conflict points, and volume of traffic at this key regional junction. A scoping study was completed and the project is in the design phase.
- **South End Multimodal Center:** A collaborative study with the Chittenden County Regional Planning Commission, City of Burlington, and VHB evaluated the feasibility of constructing a multimodal transportation center and supporting uses on a City-owned parcel in the City's South End. Following the completion of the multimodal center feasibility study, VHB is currently assisting the City of Burlington, Champlain College, and Ride Your Bike, LLC to envision and evaluate various design concepts for three parcels in the City's south end, inclusive of the parcel evaluated for the multimodal transportation center.

Although it is anticipated that the infrastructure projects above will improve transportation options to and from the campuses, contributing to a shift towards active and transit modes of transportation, these potential mode shifts were not accounted for in future parking demand projections. As parking demand continues to be monitored through survey and count methods, the influence of these infrastructure projects on the Institutional populations' resulting travel behavior may be estimated.

Figure 4 Highlighted Project Corridors Addressing Multimodal Connectivity (institutional areas highlighted in white)



Monitoring Transportation Demand Management

CATMA and the "Hill" institutions work together to deliver a comprehensive suite of Transportation Demand Management strategies. These strategies aim to reduce traffic congestion and parking demand for the institutions on the "Hill" by encouraging and educating employees and students about alternative modes of transportation as opposed to driving alone. CATMA measures the effectiveness of these strategies by looking at the trends of surveyed mode splits, parking demand estimations, and lot utilization counts over time.

A matrix of monitoring metrics was created to provide a tool to visualize the collective TDM strategies and demonstrate how the various programs perform, interact, and depend on each other. The metrics are meant to inform the progress of institutions in their aim to improve employee and student use of alternatives modes. See Tables 4, 5, and 6 for TDM metrics for each institution.

It is important to note that the mode split data in these tables represent survey respondents self-reported primary mode, or mode they use with the most frequency, even though many utilize multiple strategies to meet their transportation needs getting to and from each institution. For instance, someone that drives alone 3 days a week and teleworks 2 days a week would be overrepresented in the drive alone category and underrepresented in the telework category. Refer to Figures 1, 2, and 3 for more detail on both primary and alternative modes reported for user groups at each institution.

Table 4 Champlain College Previous and Current TDM Metrics

	2019		2022	
	Employees	Off Campus Students	Employees	Off Campus Students
Primary Mode Split[1]				
Drive Alone	48%	14%	66%	45%
Carpool	2%	7%	2%	1%
Walk/Wheelchair	22%	42%	7%	23%
Bike	5%	2%	8%	5%
Public Bus	15%	17%	5%	7%
Telework[2]	N/A	N/A	8%	N/A
Other	8%	18%	4%	19%
Peak Parking Estimation and Counts[3]				
Current Net Peak Parking Demand Estimation (Survey)		+73		-99
Future Net Peak Parking Demand Estimation (Survey)		+69		-350
Net Peak Parking Lot Utilization (Lot Counts)		+111		+215
TDM Program Metrics				
Carshare Vermont Campus Plan Membership (# of members)	18	63	17	28
Bikeshare Discount Ridership[4]		N/A		N/A
GMT Unlimited Access Ridership (# of rides)[5]		42,776		N/A
Bike Walk Reward Users		87		38

[1] Mode Split data represents CATMA 2019 & 2022 survey respondents self-reported primary mode without accounting for other modes they may use.

[2]CATMA did not collect Telework data in the 2019 survey.

[3]For peak parking, a "+" denotes a surplus and "-" denotes a deficiency based on the method of estimation listed.

[4]There is no 2020 or 2022 bikeshare data as there was no program data available and there is no current bikeshare provider in Burlington.

[5]There is no institution specific GMT data as the bus has been fare free as of March 2020.

Table 5 University of Vermont Previous and Current TDM Metrics

	2019		2022	
	Employees	Off Campus Students	Employees	Off Campus Students
Primary Mode Split[1]				
Drive Alone	60%	24%	62%	30%
Carpool	7%	5%	4%	5%
Walk/Wheelchair	10%	37%	7%	34%
Bike	8%	10%	5%	6%
Public Bus	9%	15%	6%	23%
Telework[2]	N/A	N/A	7%	N/A
Other	6%	9%	9%	2%
Peak Parking Estimation and Counts[3]				
Current Net Peak Parking Demand Estimation (Survey)		+185		-78
Future Net Peak Parking Demand Estimation (Survey)		+277		+515
Net Peak Parking Lot Utilization (Lot Counts)		+803		+1357
TDM Program Metrics				
Carshare Vermont Campus Plan Membership (# of members)	58	274	57	194
Bikeshare Discount Ridership[4]		N/A		N/A
GMT Unlimited Access Ridership (# of rides)[5]		292,017		N/A
Bike Walk Reward Users		664		262
Carpool Permits Issued	34	N/A	100	N/A

[1] Mode Split data represents CATMA 2019 & 2022 survey respondents self-reported primary mode without accounting for other modes they may use.

[2]CATMA did not collect Telework data in the 2019 survey.

[3] For peak parking, a "+" denotes a surplus and "-" denotes a deficiency based on the method of estimation listed.

[4]There is no 2020 or 2022 bikeshare data as there was no program data available and there is no current bikeshare provider in Burlington.

[5]There is no institution specific GMT data as the bus has been fare free as of March 2020.

Table 6 University of Vermont Medical Center Previous and Current TDM Metrics

	2019		2022	
	Main Campus	1 South Prospect	Main Campus	1 South Prospect
Primary Mode Split[1]				
Drive Alone	64%	79%	60%	72%
Carpool	7%	5%	6%	4%
Walk/Wheelchair	5%	4%	6%	3%
Bike	3%	2%	3%	1%
Public Bus	5%	4%	5%	3%
Telework[2]	N/A	N/A	1%	12%
Other	16%	6%	19%	5%
Peak Parking Estimation and Counts[3]				
Current Net Peak Parking Demand Estimation (Survey)		+179		+355
Future Net Peak Parking Demand Estimation (Survey)		+179		+355
Net Peak Parking Lot Utilization (Lot Counts)		+101		+559
TDM Program Metrics				
Bikeshare Discount Ridership[4]		N/A		N/A
GMT Discount Use (# of discounted passes)[5]		241		N/A
Bike Walk Reward Users		440		251
Carpool Permits Issued	478	N/A	427	N/A

[1] Mode Split data represents CATMA 2019 & 2022 survey respondents self-reported primary mode without accounting for other modes they may use.

[2]CATMA did not collect Telework data in the 2019 survey.

[3] For peak parking, a "+" denotes a surplus and "-" denotes a deficiency based on the method of estimation listed.

[4]There is no 2020 or 2022 bikeshare data as there was no program data available and there is no current bikeshare provider in Burlington.

[5]There is no institution specific GMT data as the bus has been fare free as of March 2020.

In future JIPMP annual updates, CATMA will reinstate data on bikeshare and bus ridership for the "Hill" institutions as data becomes available. Since March 2020, when Green Mountain Transit implemented fare free service, there has been no transit data for CATMA's Unlimited Access Program (UVM & Champlain College) and Employee Transit Pass Program (UVMMC).

Future annual updates of the JIPMP may also include other multimodal strategies such as vanpooling, park & rides and/or microtransit. In addition, CATMA will have access to new data on its incentive reward program, as it transitions this summer to a new commuter solutions platform.

One key TDM strategy that will be included in future annual updates of the JIPMP is Marketing, Education, & Outreach. CATMA works collaboratively with the three "Hill" institutions to encourage, deliver, and promote transportation options and programs to employees and students that can influence their choice of travel to work/school via trip planning support, social media, communications, targeted campaigns and events.

CATMA will update this matrix in future JIPMP annual updates and in the next 5-year plan. The institutions continue to explore innovative strategies to decrease traffic congestion and parking demand to better coordinate land use and reduce environmental impacts. For more details on each institution's TDM programming, parking demand, parking utilization, and mode split, see individual institution sections in this 2023-2028 JIPMP.

3

Champlain College

Champlain College is a small, private, not-for-profit college in Burlington with sister campuses in Montreal, Canada and Dublin, Ireland. Champlain College prides itself on preparing students for top fields through career-oriented programming, earning accolades such as Princeton Review's "Top Schools for Game Design," the Broadcast Education Association's "Top Documentary Programs," and one of Niche.com's top 30 "Best Schools for Information Technology." Champlain College has been named "Most Innovative School" in the North seven years in a row by U.S. News & World Report's "America's Best Colleges."

Champlain College's main campus sits atop the hill overlooking downtown Burlington and Lake Champlain. The main campus is primarily concentrated between Main Street and Cliff Street to the north and south and Summit Street and South Union Street to the east and west. There are additional residence halls just north of Main Street and east of Summit Street as well as downtown apartments at the corner of St. Paul Street and Maple Street, four-tenths of a mile from the main campus. In addition, there are academic and facility buildings located approximately 1.3 miles from main campus off of Lakeside Avenue and Sears Lane.

Existing & Anticipated Infrastructure and Development

There are 47 buildings that provide Champlain College just over 850,000 gsf of academic, administrative, residential, athletic, dining, and facility space across the campus. Over half of the buildings are small residential halls with an average of just over 50 beds per location. These residential beds serve the majority of students that are enrolled in on campus programming. The campus infrastructure includes 642 spaces for parking, serving the range of users that access the campus or reside on campus.

Table 7 Existing and Anticipated Champlain College Infrastructure

Infrastructure	Existing[4]	Anticipated[5]	Units
Number of Buildings	47	48	buildings
Gross Square Footage[1]	851,517	890,517	gsf
Residential Beds[2]	1,418	1,448	beds
Parking Supply[3]	642	642	spaces

1. Leased facilities do not contribute to the number of buildings or total GSF.
2. Residential beds in leased facilities included in total.
3. Parking spaces from leased facilities included.
4. Existing data based on data from Fall 2022 to represent base year 2023.
5. Anticipated data based on estimates for 5-year plan to represent 2028.

Table 8 Champlain College Status of Previously Identified Projects

Building Project	Completion Status
Miller Information Commons Addition	No Longer Planned
Foster Hall Addition	Move Forward to 2023-2028 JIPMP
Information Technology & Sciences Building	
Career Center	

The previous two-year JIPMP identified four projects that require status updates in the current JIPMP. At this point, there are no plans to carry forward the Miller Information Commons Addition, however there are three projects that were identified in the previous JIPMP that are anticipated to be carried forward into the next 5-year development plan and will contribute additional building square footage. See Table 9 for preliminary estimates on building area changes and estimated completion dates for these projects. Champlain College additionally anticipates converting a building to residential use, contributing an additional 30 beds. The South End will be a very active area in the future around redevelopment. At this time, there are no plans to change Champlain College's parking supply or location.

Existing & Anticipated Community Population

Champlain College is considered a small college, a category with a ceiling student population of 5,000 enrollments. The on-campus undergraduate population includes 1,675 full time and 61 part-time students. Of the full-time students, 30 are enrolled in the study abroad programming offered on the Montreal and Dublin sister campuses and therefore not included in the user population accessing Burlington's campus. Over half of the College's enrollments are through Champlain College Online. This programming currently serves 559 graduate and 1,439 undergraduate students, totaling nearly 2,000 enrollees in the online programming. These students are similarly not counted towards the population accessing campus.

Table 9 Anticipated Champlain College Building Development Program

Project Name	Change in Building Area (gsf)	Associated Change in Parking (spaces)	Estimated Completion
Foster Hall Addition	3,500	0	2026
New ITS Building	31,500	0	2026
Career Center Addition	4,000	0	2025
Conversion of Building to Res Hall	N/A	0	2024

Champlain College employs just over 900 faculty, staff, and contractors split between the on-campus programming and off-campus and online programming. There are 353 full-time, 193 part-time, and 66 contracted employees that serve the Burlington campus. Additionally, there are 26 full-time, 263 part-time, and 22 abroad employees serving the off-campus and online programming that do not contribute to the user population accessing the Burlington campus.

It is anticipated that in the coming 5 years, the Champlain College student and employee populations will grow. Enrollment in on-campus programming is anticipated to expand to serve 2,080 full-time and 80 part-time undergraduate students. The Dublin and Montreal programs are expected to expand to serve 40 students. Similarly, the online programming is expected to expand to serve 740 graduate and 1,750 undergraduate students remotely, bringing the online programming to just under 2,500 students. Details on current and projected populations are further detailed in the Supplemental Materials.

Existing & Anticipated Parking Demand

As previously discussed, the peak parking demand was estimated using two methodologies: utilization counts and survey data. The parking supply for the campus is currently at 642 spaces. These spaces are spread across the College lots as depicted in Figure 6. In addition, Figure 6 demonstrates the average parking utilization rates for each Champlain College owned lot. These rates are based on the quarterly lot counts conducted by Champlain College across three days during peak periods. Although it is not accounted for in the parking supply, it is noted that there are 145 on-street spaces in designated zones adjacent to campus that Champlain College affiliates are allowed to park in, contributing informally to the supply of parking in the immediate adjacency of campus activities.

The maximum parking utilization was compared across the available data from previous peak period observations to demonstrate changes over time. The parking utilization trends in Figure 5 show there was significantly diminished utilization through the Fall 2020 to Summer 2021 period, resulting in peak period utilization of approximately 30%. The utilization, starting in Fall 2021, rebounded to a maximum peak utilization of 67% in Fall 2021 and again in Fall 2022. This remains below the peak utilization demonstrated in Fall 2019 of 84% and Winter 2020 of 75% (prior to the COVID pandemic).

Figure 5 Champlain College Parking Utilization Trends

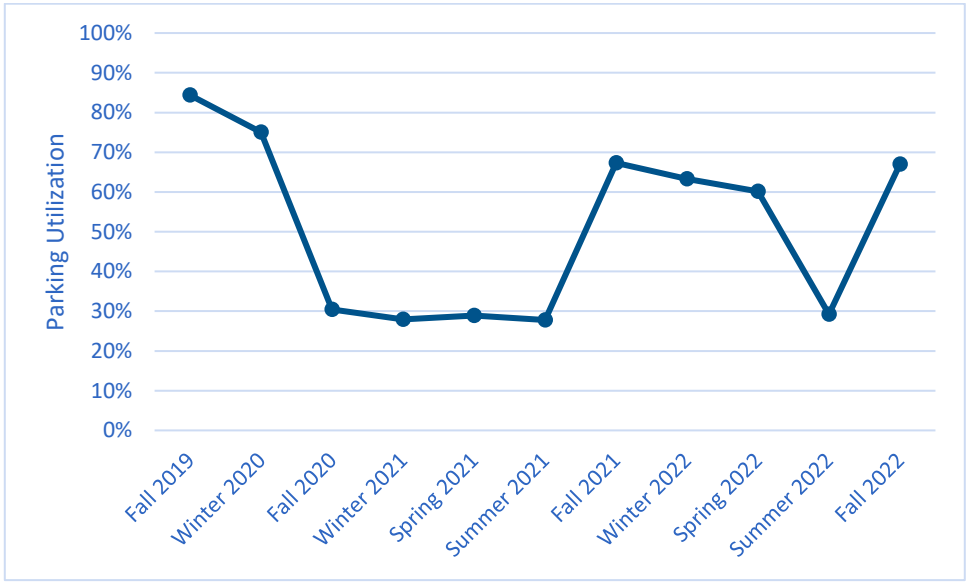
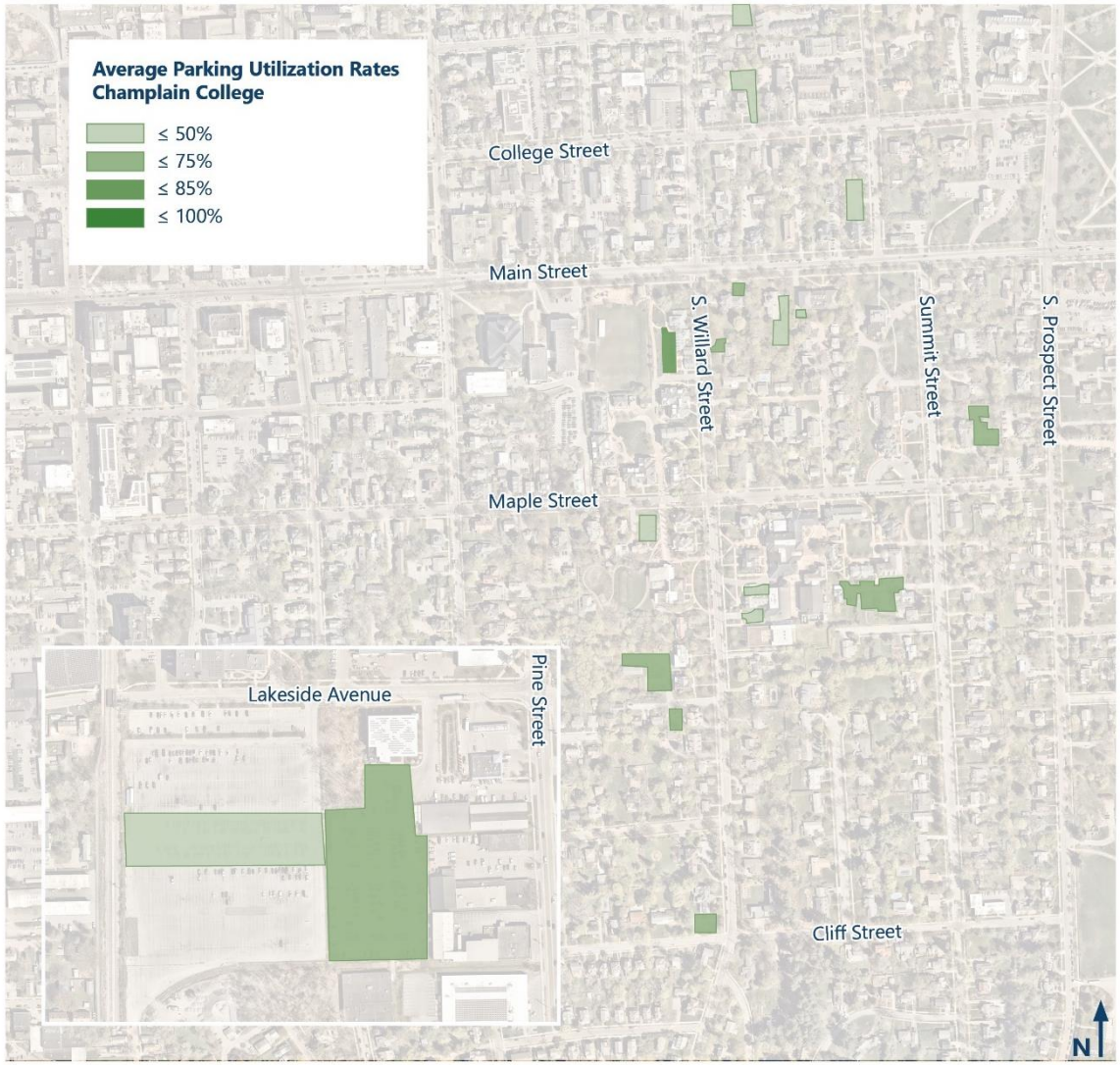


Figure 6 Champlain College Average Parking Utilization Rates



The current peak parking demand for Champlain College is estimated to be 427 vehicle spaces based on observed peak parking utilization counts, demonstrating a net available parking supply of 215 spaces. Peak parking demand based on survey data indicates peak parking demand of 741 spaces, or a net shortfall of 99 spaces. It is noted that this estimate and its future projections represent a likely overestimation of peak parking demand. The percent of users for each user group was estimated based on those that reported predominantly driving alone or carpooling to serve their transportation to campus and reported typically being on campus at the peak time. They may be using secondary modes at other times during a typical week, including teleworking. As such, it can be assumed that these estimates inflate the demand to represent an artificially high peak parking demand.

Table 10 Champlain College Current Parking Demand

Champlain College			
User Group	**Number of Potential Users**	**Peak Parking Demand[1]**	
		% of Users	**Spaces**
Employees	612	58.0%	355
On-Campus Students	1418	18.9%	269
Off-Campus Students	318	29.9%	96
Visitors			15
Fleet[2]			6
Peak Parking Demand			
Demand Based on Survey[3]			**741**
Utilization Based on Counts[4]			**427**
Parking Supply			
Total Spaces[5]			**642**
Net Spaces			
Peak Demand			**-99**
Peak Utilization			**+215**

1. Peak parking demand is calculated from data collected in the 2022 CATMA Survey where "% of Users" consists only of car users who are on campus at peak time.
2. Champlain has 15 fleet vehicles but estimates only ~40% attempt to park on campus at peak time.
3. Total peak parking demand has a margin of error of ±89 spaces.
4. Peak observed utilization occurred on October 6th, 2022 at 2 PM and has a margin of error of ±31 spaces based on 2022 count data.
5. Total Parking Supply does not include 145 on-street parking spaces in Designated Zones.

Future parking demand was estimated from the surveyed mode trends by user groups, accounting for the anticipated changes to infrastructure and user populations described above. For Champlain College, there are anticipated increases in population that

account for the increased peak parking demand, assuming the mode trends remain consistent with current behavior for each user group.

Table 11 Champlain College Future Parking Demand 2028

Champlain College			
User Group	**Number of Potential Users**	**Peak Parking Demand[1]**	
		% of Users	**Spaces**
Employees	830	58.0%	482
On-Campus Students	1448	18.9%	275
Off-Campus Students	712	29.9%	214
Visitors			15
Fleet[2]			6
Peak Parking Demand			
Future Demand Based on Survey			**992**
Parking Supply			
Total Spaces[3]			**642**
Net Spaces			
Peak Demand			**-350**

1. Peak parking demand is calculated from data collected in the 2022 CATMA Survey where "% of Users" consists only of car users who are on campus at peak time.
2. Champlain has 15 fleet vehicles but estimates only ~40% attempt to park on campus at peak time.
3. Total Parking Supply does not include 145 on-street parking spaces in Designated Zones.

Fleet

Champlain College has a total of 15 fleet vehicles on their campus in designated "Service Only" spaces. Four passenger vans are typically parked in Rowell and Cushing, and eleven pick-up trucks and facilities vehicles are typically parked in the Sears Lane lot near the facilities building. There are no current plans to grow the fleet.

Highlighted Strategies

Parking Restrictions and Permits

Champlain College provides clear guidance for all campus community members to follow regarding parking policies. It is mandatory that all Champlain College affiliates obtain a permit for their vehicles each semester. Permits are affiliated with particular parking zones.

First year students are restricted from bringing vehicles to campus. This policy was approved in 2018 to align with the Master Plan and Sustainability Vision. There are waivers available for demonstrated need based on strict criteria around employment, medical conditions, long-distance travel, and transfer students from other institutions.

Telework

Champlain College provides an Interim Workplace Flexibility policy that was updated in December 2022. The workplace flexibility is opportunity to support employees' safety, work life, along with their personal and family responsibilities while still supporting the College's need for coverage, efficiency, and productivity. The workplace flexibility assesses the job and employee's suitability prior to approving a work arrangement. This varies depending upon the employee's role and the specific nature of the work required. The work arrangement can be occasional, hybrid, or fully remote and approval is at the supervisor's discretion and must be reviewed with the functional area's Dean, Vice President, COO, or Provost.

Transportation Demand Management

Champlain College encourages all employees and students to register for CATMA membership which provides carpool and vanpool matching, bike/walk rewards program, Guaranteed Ride Home Program, unlimited access free rides on local and regional bus routes, CarShare Vermont membership discounts, Park and Ride options, and commuter workshops.

CarShare Vermont

Champlain College has a partnership with CarShare Vermont via CATMA's Campus Programs Contract and provides funding to CarShare Vermont for program support. Through this contract with CATMA, CarShare Vermont provides significantly discounted membership to any campus affiliate that does not hold a parking permit[13]. As of December 2022, there were a total of

[13] Rates for CarShare Vermont Campus Programs can be viewed here: https://www.carsharevt.org/memberships/campus/

45 members (28 students and 17 employees) registered to CarShare Vermont through Champlain College. There are CarShare Vermont pods located on Maple Street near West Hall, on College Street near Sanders Hall, and on St. Paul Street near 194 St. Paul Street Apartments[14].

Shuttles

There is free commuter parking at 175 Lakeside Avenue for Zone 1 permit holders. Champlain operates a free shuttle service seven days a week between Lakeside Campus, 194 Saint Paul Street, and Main Campus. All Zone 2 permit holders are automatically enrolled in CATMA's Guaranteed Ride Home program, which provides a free cab ride if the shuttles are not operating. All Zone 1 permit holders are also eligible to enroll. Locations of the Champlain shuttles can be tracked in real-time providing up to date information to users via website or mobile app[15].

Monitoring, Compliance, and Enforcement

Champlain College diligently monitors and enforces the parking plan through the year, with parking enforced 24 hours per day, 7 days per week. Further, every Champlain College affiliate, employees and students alike, are required to get a parking pass for their vehicle every semester. Lots on the main campus in close proximity to academic buildings are either designated for main campus employees with an appropriate permit (i.e. Zone 1 permit holders) or pay per use on weekdays between 8 AM and 4 PM for appropriate permit holders. It is noted that the pricing is structured to be most expensive in the lots closest to the core of campus and in the highest demand, with lots further out becoming less expensive.

Further, on city streets that have not been identified as eligible locations for Champlain College affiliates to park, Champlain affiliated vehicles can be ticketed in accordance with Champlain College's parking policy. The College's lots are monitored and patrolled daily. The College issued 1,223 citations and 1,296 warnings during the 2021-2022 school year and 2022 summer programming. This enforcement action represents an average of nearly 7 warned or ticketed infractions per day. It also represents an increase in enforcement action of over three times the warned or ticketed infractions from the previous year (2020-2021).

In addition to the daily monitoring, quarterly counts are conducted for a three-day period at every lot during peak times (i.e. intervals starting at 10AM, 12PM, and 2PM). Champlain College also counts City streets in the vicinity of campus, which is likely capturing other users of these public streets, like on Main Street and Summit Street, beyond their affiliate use.

[14] Locations for CarShare Vermont vehicles can be viewed here: https://www.carsharevt.org/locations/
[15] https://shuttle.champlain.edu/

4

University of Vermont

Founded in 1791, the University of Vermont has been a cornerstone of Burlington throughout the period following European settlement of the area, established prior to the founding of the City itself. The University is a medium sized public university and land grant institution that is considered a "Public Ivy." This designation is based on the strength of selective and rigorous undergraduate educational programming as well as renowned research. Known as UVM, or University of the Green Mountains in Latin, the University prides itself on being the ideal size to foster academic and research prominence while encouraging close faculty-student mentorships across all levels of study. The location of UVM as part of the fabric of Burlington and the state of Vermont, and in close proximity to Lake Champlain and the Green Mountains, enriches student educational experience and enables service to the state's communities through its land grant mission.

The University of Vermont is situated at the top of the hill overlooking the City of Burlington and Lake Champlain to the west and the Green Mountains to the east. The Main Campus extends approximately 460 acres inclusive of central, athletic, Redstone, and Trinity campuses, as well as Centennial Woods. These areas are predominantly within Burlington with a small, connected land area that crosses over into South Burlington. One satellite site to this contiguous campus area is the Rubenstein Ecosystem Laboratory, which is situated directly on Burlington's waterfront and serves as a research and teaching laboratory regarding the Lake Champlain basin. Main Campus areas are generally accessed from Main Street, East Avenue, Colchester Avenue, Prospect Street, Spear Street, University Place, and Williams Street, as well as many additional roadways and pathways.

In addition to Main Campus, UVM has land holdings in South Burlington, Colchester, Essex, and many other areas across the state. South Campus includes land holdings predominantly in South Burlington with a small area in Burlington made up of mostly agricultural, horticultural, and natural areas. The Colchester Research Campus serves research purposes associated with

the College of Medicine. Fort Ethan Allen in Colchester/Essex includes facilities for maintenance purposes, including fleet services.

Existing & Anticipated Infrastructure and Development

There are 200 buildings and an additional 29 accessory buildings that serve the University, accounting for over 5.6M gross square footage. The buildings serve academic, research, residential, administrative, athletic, student support, facilities, and other purposes. Of these buildings, over 75 support academic and research purposes and over 50 support residential purposes. The residential buildings support 5,775 beds for students to reside on campus with an additional 617 beds for students and 164 beds for faculty and staff provided through third party partnerships. Primarily the on campus residential beds are for first- and second-year undergraduate students, as they are generally required to live on campus.

Table 12 Existing UVM Campus Building Data

Building Use	Accessory Buildings	Total Buildings	GSF	Residential Beds
Mixed Uses				
Academic / Administrative / Student Support	0	3	242,857	
Academic / Research	7	69	1,937,764	
UVM / UVMMC Academic Research	1	7	253,501	
Administration	10	33	510,524	
Athletics	6	17	475,948	
Student Support	3	20	501,978	
Residential				
Residential Academic	0	3	110,961	
Residential Dining	0	4	260,602	
Residential Central Campus	2	7	209,342	5,775
Residential Redstone Campus	0	14	408,954	
Residential Trinity Campus	0	12	147,174	
Residential Athletic Campus	0	11	591,503	
Total	**29**	**200**	**5,651,108**	**5,775**

Parking spaces are available across the various segments of campus. Athletic commuter lots make up the majority of spaces available, with over 1,700 spaces. Core campus areas account for over 1,600 additional parking spaces. There are commuter lots that are largely leased out to other entities. And finally, there are Redstone and Trinity campus lots that primarily serve residential second-year students with vehicles on campus as well as some employee use. The off-site spaces reflect satellite parking within and outside of Burlington. The off-site parking within Burlington does not account for the 200 spaces at 351 Pine Street, as a project has been identified to remove that parking from UVM's inventory.

Table 13 Existing UVM Parking Capacity

Parking Lot Location	Capacity	Leased Spaces	Usable Spaces
Athletic Commuter	1,733		1,733
Core Central	50		50
Core East	767	-100	667
Core North	369		369
Core South	135		135
Core West	431	-47	384
Commuter Lots	808	-485	323
Redstone Campus	626		626
Trinity Campus	314		314
Off-Site: Burlington[1]	54		54
Off-Site: Outside Burlington[2]	210		210
Total in Burlington	**5,287**	**-632**	**4,655**
Total	**5,497**	**-632**	**4,865**

1. Includes parking at the Rubenstein Laboratory and Bioresearch Complex (South Campus).
2. Includes parking spaces at the Colchester Research Facility, Forestry Laboratory, and Miller Barn.

The previous two-year JIPMP identified many projects that require status updates in the current JIPMP. There were projects that were completed from the last JIPMP including the Music Building Recital Hall Addition, Jeffords East Lower Lot, University Heights Road (Southwick), Pomeroy Barn & 172 South Prospect Buildings, and a New Research Facility for the College of Medicine. In addition, there are projects that were previously identified that no longer have plans to move forward, including Fleming Museum Parking, Outing Club Relocation, Southwick Hall Parking, Future Structured Parking, Colchester Avenue / Dewey Buildings, Back 5 & Cottages (Trinity Campus) Buildings. There are 22 other projects that have been identified for the next 5 years, including 9 newly identified projects that are not carried forward from the previous JIPMP. One of these projects, discussed above, includes the removal of the satellite spaces at 351 Pine Street. This 200-space lot at 351 Pine Street was originally leased in 2019 to comply with permit conditions for the Firestone addition. At the time of permitting that project, there was not an approved JIPMP in place, which meant that the City could not consider UVM's extensive system of TDM and had to apply the minimum parking requirements identified in the ordinance without considering a waiver as would be normally considered under an approved JIPMP. This temporary condition was later resolved by approval of the 2020-2022 JIPMP. This JIPMP included the lot at 351 Pine Street however the lot was never actually needed or used. For the past two years, UVM has completed campus wide monthly lot counts, which have consistently shown that UVM has adequate on-

campus parking space, and this remote parking lot is not needed. UVM intends to apply to amend the permit requirement for this lot and remove this lot from campus inventory. UVM will continue quarterly campus wide lot counts at peak times, to ensure ongoing management of parking spaces. Other projects will include future student housing, potentially increasing the number of residential beds by approximately 600-1200 beds, located at Trinity or elsewhere on campus as noted in Table 14 and footnote 3. It is anticipated that the full list of identified projects will have a limited impact on the gross square footage of building area on campus but will result in a net gain of approximately 638 parking spaces. See Table 14 for preliminary estimates on building area changes and estimated completion dates for these projects.

Table 14 UVM Campus Building Program Data (completed and future)

Project Name	Included in Previous JIPMP	Change in Building Area (gsf)	Associated Change in Parking (spaces)	Estimated Completion
Music Building Recital Hall Addition	Yes	3,942	3	Completed
Jeffords East Lower Lot	Yes		67	
University Heights Road (Southwick)	Yes		5	
Pomeroy Barn & 172 South Prospect Buildings	Yes	-6,067	-3	
New Research Facility for COM (Firestone)	Yes	75,000	-121	
Bioresearch Complex Parking	Yes		153	2023
Hills	No	6,408	1	
Centennial Compound	No		40	
ADA Code Compliance	Yes		-20	2024
284 East Avenue	No		30	
Waterman	No	3,000	-10	
Votey Lot	Yes		-10	
Torrey Hall Addition	Yes	2,860	-6	
Future Student Housing[3]	No	100,000	0	2025
Future Additional Parking to Accommodate New Housing	No		200	
Colchester Research Facility Lot 1 Parking[2]	Yes		200	
University Road (East Ave to Compound)	Yes		15	
Interfaith Center Parking Lot	Yes		30	
Future Student Housing[3]	No	150,000	-25	2026
Future Additional Parking to Accommodate New Housing	No		200	
Villa	No	12,618	-7	
Future Compound Expansion	No		66	
Virtue Field Phase 3	Yes	5,000	0	2027
Blundell Parking	Yes		5	

Tarrant (Multi-Purpose) Event Center Building	Yes	119,099	0	
Miscellaneous Parking Adjustments[1]	Yes		25	Unknown
351 Pine Street	Yes		-200	
Coolidge Hall Building	Yes	-30,510		Not moving forward at this time
Fleming Museum Parking	Yes			
Outing Club Relocation	Yes	13,250		
Southwick Hall Parking	Yes			
Future Structured Parking	Yes			
Colchester Ave/Dewey Buildings	Yes	-82,622		
Back 5 & Cottages (Trinity Campus) Buildings	Yes	-64,907		
Total[4]		**471,860**	**638**	

1. Where possible UVM attempts to reallocate space to create more parking. It is estimated this will result in ~25 spaces over 5-years based on previous experience.
2. This facility is estimated to house between 200 and 400 parking spaces. Though it is off-site it will impact on-campus demand depending on UVM policy.
3. UVM and the City of Burlington have engaged in a process to rezone Trinity Campus in order to enable the creation of additional student housing on campus. As of this report, City Council has tabled the proposed rezoning language and it is unclear whether housing at Trinity Campus will move forward. UVM is actively exploring options to increase student housing on Trinity and/or elsewhere. UVM is not in a position to discuss the other sites publicly at this time. None of the sites are associated with a project from the previous JIPMP to remove Coolidge Hall, which is not moving forward at this time. The low end of range of potential gsf estimates was used for totaling change in area.
4. Total includes projects except those not moving forward at this time.

Existing & Anticipated Community Population

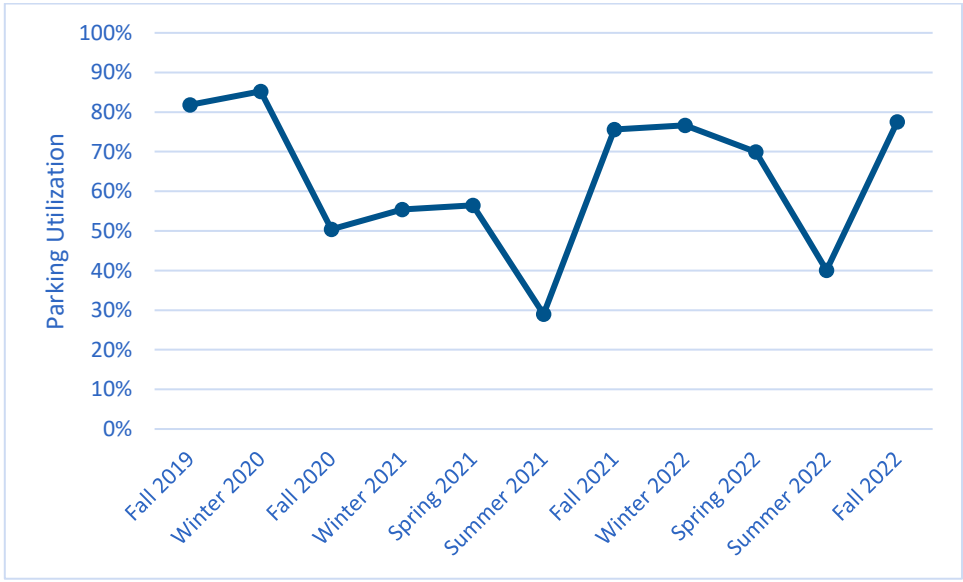
The UVM campus currently serves a total population of just over 18,000 on Burlington's Main Campus, inclusive of faculty, staff, and students. Employees include 2,311 full- and 155 part-time staff and 861 full- and 927 part-time faculty. These numbers include approximately 230 employees that are not Burlington based and therefore deducted from the employee users contributing to parking demand, which total approximately 4,024 employees. Student enrollment includes 11,326 undergraduate students, 1,707 graduate students, 483 medical students, and 572 continuing education students, totaling approximately 14,088 students. The majority of the first- and second-year undergraduate students reside on campus in the University's 5,775 residential beds.

The UVM campus population is expected to stay relatively consistent over the next five years based on projections from the date of this document. A slight increase in graduate and continuing education student enrollment are projected to account for the approximate 3% increase in student population. The undergraduate, staff, and faculty numbers are expected to remain largely consistent with present population levels.

Existing & Anticipated Parking Demand

As previously discussed, the peak parking demand was estimated using two methodologies: utilization counts and survey data. The parking supply for the campus is currently at 4,865 spaces. Sites within the campus that UVM ground-leases (and their associated parking spaces), such as Redstone Lofts, Redstone Commons, and Centennial Court Faculty/Staff Apartments, are not included in this total. When accounting for these additional 379 spaces that are nestled within the campus and utilized by students in Redstone Lofts & Apartments,

Figure 7 University of Vermont Parking Utilization Trends



but not part of UVM's parking supply for their exclusive use, there are 5,244 spaces. As such, there are two net parking space estimates provided to account for the UVM parking supply, and the UVM parking supply with consideration for these on site and student utilized spaces.

The UVM managed spaces are spread across the lots as depicted in Figure 8. In addition, Figure 8 demonstrates the average parking utilization rates for each UVM owned lot. These rates are based on the quarterly lot counts conducted by UVM across three days during peak periods.

The maximum parking utilization was compared across the available data from previous peak period observations to demonstrate changes over time. The parking utilization trends in Figure 7 demonstrate slightly reduced demand through the Fall 2020 to Summer 2021 period, where utilization ranged from 29% to 56%. Parking utilization rebounded starting in Fall 2021 with an in session (i.e. not summer) maximum utilization between 70% and 78% consistently. This more recent data falls below utilization observations made prior to the COVID pandemic, which were above 80%.

Figure 8 University of Vermont Average Utilization Rates

The current peak parking demand for UVM is estimated to be 3,508 vehicle spaces based on observed peak parking utilization counts, demonstrating a net available parking supply of 1,357 spaces. Peak parking demand based on survey data indicates peak parking demand of 4,943 spaces, or a net shortfall of 78 spaces. It is noted that this estimate and its future projections represent a likely overestimation of peak parking demand. The percent of users for each user group was estimated based on those that reported predominantly driving alone or carpooling to serve their transportation to campus and reported typically being on campus at the peak time. They may be using secondary modes at other times during a typical week, including carpooling, biking, and/or teleworking. As such, it can be assumed that these estimates inflate the demand to represent an artificially high peak parking demand.

Table 15 University of Vermont Current Parking Demand

University of Vermont			
User Group	**Number of Potential Users**	**Peak Parking Demand[1]**	
		% of Users	**Spaces**
Employees[2]	4,024	55.4%	2,228
On-Campus Students	5,775	16.8%	971
Off-Campus Students[3]	7,741	17.8%	1,376
Visitors			185
Fleet[4]			183
Peak Parking Demand			
Demand Based on Survey[5]			**4,943**
Utilization Based on Counts[6]			**3,508**
Parking Supply			
Total UVM Managed			**4,865**
Total UVM + Ground-Lease Spaces[7]			**5,244**
Net Spaces			
Peak Demand in UVM Managed Spaces			**-78**
Peak Demand in UVM + Ground-Lease Spaces			**+301**
Peak Utilization in UVM Managed Spaces			**+1,357**

1. Peak parking demand is calculated from data collected in the 2022 CATMA Employee and Student Transportation Survey using the methodology described in Appendix A. "% of Users" consists only of car users who are on campus at peak time.

2. Employees not located on Main Campus are not included in this count.

3. Off-Campus Students does not include Continuing Education students.

4. Fleet vehicles not located on Main Campus or in Burlington not included in this count.

5. Total peak parking demand has a margin of error of ±1046 spaces.

6. October 4, 2022 at noon was the peak utilization count and has a margin of error of ±217 spaces based on 2022 count data.

7. Ground-lease spaces include spaces that are interior to the campus but exclusively used by Redstone Lofts and Apartments.

Future parking demand was estimated from the surveyed mode trends by user groups, accounting for the anticipated changes to infrastructure and user populations described above. For UVM, the undergraduate population is expected to remain consistent with population increases coming largely from increased graduate student enrollment. An increase in the number of beds available for on-campus students was provided with a range of 600 to 1200 beds projected. For the purposes of calculating demand, the low end of the anticipated range of new beds was assumed at 600 beds. These assumptions provided a conservative estimate even though additional housing is being contemplated and may contribute to further increases in on-campus housing for students. Parking supply is expected to increase in the future condition, contributing to the estimate of a 515-space surplus of parking anticipated in the projection to 2028. This estimate assumes the mode trends remain consistent with current behavior for each user group.

Table 16 University of Vermont Future Parking Demand 2028

University of Vermont			
User Group	**Number of Potential Users**	**Peak Parking Demand[1]**	
		% of Users	**Spaces**
Employees[2]	4,020	55.4%	2,226
On-Campus Students	6,375	16.8%	1,073
Off-Campus Students[3]	7,425	17.8%	1,321
Visitors			185
Fleet[4]			183
Peak Parking Demand			
Demand Based on Survey			**4,988**
Total Parking Supply			
Total UVM Managed			**5,503**
Total UVM + Ground-Lease Spaces			**5,882**
Net Spaces			
Peak Demand in UVM Managed Spaces			**+515**
Peak Demand in UVM + Ground-Lease Spaces			**+894**

1. Peak parking demand is calculated from data collected in the 2022 CATMA Employee and Student Transportation Survey using the methodology described in Appendix A. "% of Users" consists only of car users who are on campus at peak time.

2. Employees not located on Main Campus are not included in this count.

3. Off-Campus Students does not include Continuing Education students.

4. Fleet vehicles not located on Main Campus or in Burlington not included in this count.

Fleet

In 2019, UVM created a Fleet Vehicle Procurement Procedure to attempt to achieve a high level of fiscal, social, and environmental responsibility in fleet vehicle procurement. This procedure defines the process for purchasing new or replacement vehicles. The University will prioritize alternative fuel vehicles (AFVs) and vehicles with high fuel economies relative to their market class.

UVM has 212 fleet vehicles that park throughout the main campus and other off campus locations. The fleet vehicles parked in Howe and Votey parking lots have designated "Service Only" spaces. The other lots the fleet vehicles are parked in have a combination of spaces, including designated "Service Only" spaces. Ambulances are parked in the Rescue Building and CATS shuttle buses are parked in Catamount West when not in use. CATS shuttle buses may be parked at the Bioresearch Complex in the future.

Highlighted Strategies

Parking Restrictions and Permits

The University of Vermont provides clear guidance for all campus community members to follow regarding parking policies. It is mandatory that all UVM affiliates obtain a permit for their vehicles each semester. Permits are affiliated with specific parking zones.

First year students living in residential halls are prohibited from registering a vehicle for campus parking. The University has determined approved, eligible employment and documented medical needs to be the only exceptions. Students are required to take a parking permit course prior to receiving a parking permit. This course is designed to educate potential permit holders on the alternatives to and impact of driving alone.

UVM has a virtual permit system that uses license plate recognition (LPR) technology to captures the vehicles license plate to confirm your vehicle is registered. Parking regulations are enforced on campus 24 hours a day, seven days a week using a system of warnings, citations, and/or removal of vehicles by towing.

Telework

UVM offers flexible working arrangements and telework policies. Telework requests are reviewed on a case-by-case basis in the context of established and consistent guidelines. Telework requests are approved or denied at the discretion of the appropriate Dean, Vice President or Vice Provost and may be discontinued at any time at the University's sole discretion.

Transportation Demand Management

UVM partners with CATMA to offer employees and students bike/walk rewards, personalized trip planning assistance, and Guaranteed Ride home. UVM affiliates have access to Go! Vermont resources and Carpool and Van Pool matching to find greener travel options. In addition, UVM provides funding to GMT through the Unlimited Access Program to offer affiliates free bus transit rides on GMT routes.

CarShare Vermont

UVM has a partnership with CarShare Vermont via CATMA's Campus Programs Contract and provides funding to CarShare Vermont for program support. Through this contract with CATMA, CarShare Vermont provides discounted membership to any campus affiliate that does not hold a parking permit[16]. As of December 2022, there were a total of 251 members (194 students and 57 employees registered to CarShare Vermont through UVM). There are two CarShare pods on the UVM campus including locations just off of University Place and on University Heights. Currently there are two cars located on UVM campus[17].

Shuttles

UVM provides an on-campus shuttle (CATS) for students that runs 7:30 am until 5:30 pm. On the weekdays, these shuttles generally run every 15 minutes between Redstone and Central campus, every 15-20 minutes on the on-campus route during the daytime, and every 15-30 minutes on-campus during the evening. Weekend service of the on-campus shuttle runs every 30 minutes in the evenings. Locations of the CATS shuttles can be tracked with the Real-Time CATS Shuttle Locations[18] providing up to date information to users via website or mobile app. In addition to the on-campus and Redstone Express routes, there has historically been an off-campus bus that serves key destinations beyond campus focused shuttle routes; however, it is not currently running due to driver shortages.

[16] Rates for CarShare Vermont Campus Programs can be viewed here: https://www.carsharevt.org/memberships/campus/
[17] A map of CarShare Vermont locations can be viewed here: https://www.carsharevt.org/locations/
[18] https://uvm.transloc.com/

UVM also offers CATSride as a shuttle service on a first come, first serve basis. The intent of this shuttle service is to provide transportation between UVM sites within 10 miles of central campus. UVM employees and students can reserve a ride with the demand response-based service by scheduling in advance or can reach out directly to the shuttle for same day service.

Local and regional bus routes via GMT serve students and employees beyond the on-campus routes, with fare free transit available to all users tentatively until later in 2023. It is anticipated that UVM will continue to provide funding to enable their affiliates to ride GMT bus routes for free with a valid UVM ID should fares be reinstated.

A key to limiting the need for students to come to campus with a vehicle is connecting students to transportation options around break times. UVM provides shuttle services between campus and Downtown Transit Center for connections to regional bus services, Amtrak stations in Burlington and Essex Junction, and Burlington International Airport prior to and following school recess periods. Shared shuttle services with Champlain College around break times are also offered.

Monitoring, Compliance, and Enforcement

UVM has enabled technology to assist their diligent efforts in monitoring and enforcing the parking plan on campus. UVM has implemented a virtual parking permit system that utilizes license plate reader technology. Permit holders no longer use hang tags, but rather their registered vehicle's license plate serves as the key to the permit they hold. LPR equipped service vehicles monitor all of the parking areas on campus routinely, identifying the vehicles parked on campus and whether they are parked appropriately given the permit type.

In 2022, over 8,000 citations were issued, with the most common violations of parking with no valid permit (2,994), in a restricted area (1,781), or parking in an expired space (1,268). Fines for expired metered spaces are $25, for parking in restricted areas are $30, and for parking with no valid permit are $50. Habitual offender fines go up significantly, with habitual offenders in expired spaces fined $80, in restricted areas fined $90, and without a valid permit $110. These fines act as a significant deterrent to improper parking on campus.

In addition to the daily monitoring, quarterly counts are conducted for a three-day period at every lot during peak times (i.e. intervals starting at 10AM, 12PM, and 2PM).

Other Key Areas of Concern

Although the JIPMP is generally focused on the peak demand for parking, it is recognized that concerns regarding special event parking have been raised. UVM has a clear set of procedures for accommodating events with significant parking demand on

campus. Event parking areas can be dedicated for an event or commingled, depending on the size of the event. These events tend to fall outside of the typical peak demand times, relegated generally to the evenings and weekends when many of the employee and student commuters accessing campus are not parked in campus spaces. In the efficiency-based standards framework, this opportunity to share parking resources during periods of underutilization for other purposes (i.e. daytime commuter parking) would be viewed positively. In alignment with efficiency-based standards, the written protocol for events allows for the parking in closest proximity to the event to fill up first. Should that primary parking fill, the assigned officer and staff will shift to reroute parking demand to overflow parking designated for the event. This overflow parking is served by shuttles to and from the main entrance of the event. For events that regularly utilize the overflow parking, like major sports events, attendees are encouraged to utilize the overflow parking and shuttle service. During Commencement, UVM's largest event annually, the University is able to manage the demand within the institution's resources to meet the needs of the event.

5

University of Vermont Medical Center

The University of Vermont Medical Center (UVMMC) is designated as a Level I Trauma Center situated in an academic teaching and research hospital serving the Vermont and Northern New York region. The campus in Burlington is the hub of a large, integrated healthcare system in partnership with an extensive network of hospitals and healthcare facilities throughout the region. Partnership with the Larner College of Medicine and College of Nursing and Health Sciences at UVM enables training for the next generation of healthcare professionals and innovation through advancing research.

The UVMMC campus sits prominently on the hill in Burlington adjacent to the UVM core campus area. Founded in 1879, the original hospital was partially housed in the Mary Fletcher Hospital building that still sits on the site today. The hospital's campus has expanded significantly over the years, adding buildings and square footage to support the hospital's mission and growing role in serving the communities of Vermont and Northern New York.

UVMMC campus is flanked on three sides by Colchester Avenue, East Avenue, and Main Street. Each of these three perimeter roadways provide entrance access points to the campus. Additional internal roadways and pathways, including Carrigan Drive and Beaumont Avenue, allow for circulation within the site.

Existing & Anticipated Infrastructure and Development Plan

The main medical center campus has 786,057 gsf serving the hospital's in-patient units, 35,597 gsf serving educational purposes, and an additional 877,085 gsf serving other purposes. Satellite sites within Burlington account for an additional 197,922 gsf of building space, with 1 South Prospect making up the majority of that area with 149,404 gsf. The hospital's infrastructure is served by 3,788 parking spaces, with 2,500 of the spaces in on-site facilities including the ACC Garage, Emergency Room Lot,

McClure Garage, South Lot, and 1 South Prospect. Off-site lots include 1,276 additional spaces with 86 spaces available at other off-site Burlington satellite facilities[19] and the remaining at lots served by shuttle services.

At the time of this document, projects being contemplated include evaluation of the McClure Parking Garage due to deteriorating structural conditions and potential adjustments to leased satellite parking. There are no plans for projects within Burlington that would alter building square footage. The previously approved JIPMP had no plans for changes to building or parking footprints for UVMMC.

Existing & Anticipated Community Population

The UVMMC is a hospital with 580 licensed in-patient beds. In 2022, the average daily number of appointments and procedures was approximately 2,952 per day across the Medical Center Campus, 1 South Prospect, and other Burlington sites, including in person and telehealth visits. That accounts for nearly 675,000 in person appointments or procedures across the year or over 750,000 total visits. One practice that continues to serve the patient population of UVMMC is telehealth visits. With a significant rise in telehealth visits during the COVID pandemic, data from 2022 indicates that this practice will continue to serve some baseline portion of visits that would otherwise be in person. For 2022, approximately 10% of appointments were served via telehealth, amounting to over 75,000 additional patient appointments over the year served without a need for patient transportation to or parking on campus.

There are a total of 6,475 employees of UVMMC that report to sites within Burlington. The main medical center campus accounts for 5,725 of those employees with another 646 at 1 South Prospect and the remaining 104 at other sites in Burlington. In addition to the paid staff, there are also honorary members of the medical staff and volunteers that are regularly on campus to serve the patients and visitors, with 188 total individuals that fill these roles.

Existing & Anticipated Parking Demand

As previously discussed, the peak parking demand was estimated using two methodologies: utilization counts and survey data. The parking supply for UVMMC is currently at 2,500 on-site spaces. The demand was evaluated based on the employees that report to sites within Burlington and are parking on-site, as well as patients and visitors accessing the facilities and parking on-site. The analysis here focused on the on-site parking supply and demand, however, the full system parking including off-site and satellite parking was included in the *Institutional Supplement*. These spaces within Burlington are spread across the lots as

[19] These additional spaces do not include 184 Peal Street, which is leased by UVMMC, but staffed by others with no UVMMC affiliated parking.

depicted in Figure 9. In addition, Figure 9 demonstrates the average parking utilization rates for each UVMMC lot. These rates are based on the quarterly lot counts conducted across three days during peak periods.

Figure 9 University of Vermont Medical Center Average Utilization Rates

The maximum parking utilization was compared across the available data from previous peak period observations to demonstrate changes over time. The parking utilization trends in Figure 10 demonstrate slightly reduced demand through the Fall 2020 to Summer 2021 period, but still remained above 73%. Parking utilization has not returned to the above 90% peak utilization like that observed prior to the COVID pandemic. The maximum peak utilization is most recently hovering in the mid-80% range.

The current peak parking demand for UVMMC is estimated to be 1,941 vehicle spaces based on observed peak parking utilization counts for on-site facilities, demonstrating a net available parking supply of 559 spaces. Peak parking demand based on survey data indicates peak parking demand of 2,145 spaces in on-site facilities, or a net surplus of 355 spaces. It is noted that this estimate and its future projections represent a likely overestimation of peak parking demand.

Future parking demand was estimated from the surveyed mode trends by user groups, accounting for any anticipated changes to infrastructure and user populations described above. For UVMMC, the employee population, patients served, and visitor activity are expected to remain consistent with the current status. The infrastructure is also anticipated to remain consistent with no changes to buildings and limited changes to on-site parking supply. Assuming mode trends remain consistent with current behavior for each user group, the on-site parking surplus is anticipated to be 355 spaces projected to 2028.

Figure 10 University of Vermont Medical Center Parking Utilization Trends

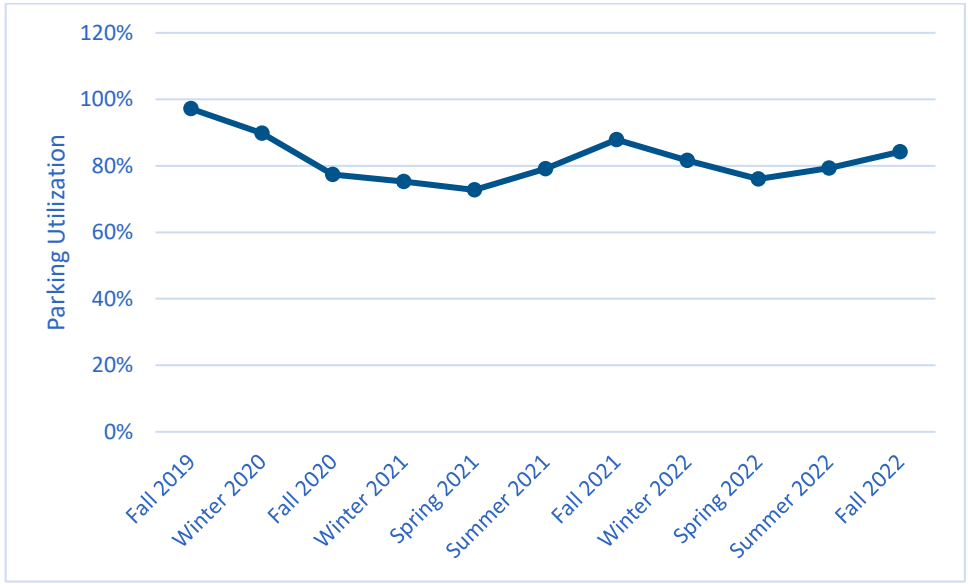


Table 17 University of Vermont Medical Center Current Parking Demand

UVM Medical Center			
User Group	**Number of Users**	**Peak Parking Demand[1]**	
		% of Users	**Spaces**
Medical Center Campus			
Employees	5725	13.7%	785
Out-Patients[4]	2388		**700**
In-Patients[4]			**75**
Visitors[2]			**250**
Fleet			**11**
Subtotal			*1,821*
1 South Prospect			
Employees[3]	646	11.7%	75
Out-Patients[4]	563		**230**
Fleet			**10**
Subtotal			*315*
Other			
Employees	104	8.3%	9
Subtotal			*9*
Peak Parking Demand Based on Survey[5]			**2,145**
Peak Parking Utilization Based on Counts[6]			**1,941**
Total Parking Supply			**2,500**
Net Spaces Peak Demand			**+355**
Net Spaces Peak Utilization			**+559**

1. Peak parking demand is calculated from data collected in the 2022 CATMA Employee and Student Transportation Survey using the methodology described in Appendix A. "% of Users" consists only of car users who are on campus at peak time.

2. UVMMC volunteers are included in visitor parking demand, as volunteers park in the ACC Garage and get a voucher to avoid paying upon their departure.

3. Employees of 1 South Prospect assigned to Centennial have been allowed to park on-site due to suspended shuttle service.

4. Average daily patient estimates are based on total annual in person and telehealth appointments and procedures by location for 2022 at the Medical Center and 1 South Prospect facilities. Patient and visitor parking is allocated to 50% of the parking supply on-site. Policies are in place should the patient parking demand exceed this supply.

5. Total peak parking demand has a margin of error of ±122 spaces.

6. Peak observed parking utilization occurred on October 4th, 2022 at 10 AM and has a margin of error of ±65 spaces based on 2022 count data.

Table 18 University of Vermont Medical Center Future Parking Demand 2028

UVM Medical Center			
User Group	**Number of Users**	**Peak Parking Demand[1]**	
		% of Users	**Spaces**
Medical Center Campus			
Employees	5725	13.7%	785
Out-Patients[4]	2388		**700**
In-Patients[4]			**75**
Visitors[2]			**250**
Fleet			**11**
Subtotal			*1821*
1 South Prospect			
Employees[3]	646	11.7%	75
Out-Patients[4]	563		**230**
Fleet			**10**
Subtotal			*315*
Other			
Employees	104	8.3%	9
Subtotal			*9*
Peak Parking Demand Based on Survey			**2,145**
Total Parking Supply			**2,500**
Net Spaces Peak Demand			**+355**

1. Peak parking demand is calculated from data collected in the 2022 CATMA Employee and Student Transportation Survey using the methodology described in Appendix A. "% of Users" consists only of car users who are on campus at peak time.
2. Average daily patient estimates are based on total annual in person and telehealth appointments and procedures by location for 2022 at the Medical Center and 1 South Prospect facilities. Patient and visitor parking is allocated to 50% of the parking supply on-site. Policies are in place should the patient parking demand exceed this supply.
3. Employees of 1 South Prospect assigned to Centennial have been allowed to park on-site due to suspended shuttle service.
4. Patient parking is allocated to 50% of the parking supply on-site. Policies are in place should the patient parking demand exceed this supply.

Fleet

UVMMC fleet is comprised of 40 vehicles total and 28 are typically circulating in Burlington. The fleet includes cargo vans, ambulances, trucks, SUVs, and other vehicles. All but five of UVMMC fleet vehicles are typically parked in designated "Service Only" spaces.

Highlighted Strategies

Parking Restrictions and Permits

There are clear directions and information regarding parking locations and prices for UVMMC patients and visitors on the UVMMC website. For patients and visitors, on-site parking is available in a garage adjacent to the main campus with entrances to the hospital at each garage level. There is also curbside service including assistance to patients and valet parking service. Valet service is available for $8 per vehicle Monday through Friday from 6 AM to 5 PM, with the ability to retrieve vehicles until 9 PM. Patients or visitors with valid handicapped parking placard or plate displayed can park for free in the parking garage.

For employees, UVMMC has a detailed parking policy that outlines parking requirements based on job title and shift. All UVMMC staff and affiliates who wish to park their vehicles in a UVMMC controlled parking lot must register their vehicle with the UVMMC Security Department. The hang tags are color coded based on parking assignment (on-site lot or satellite lot). The satellite lots include a free shuttle to the main campus. Generally on-site parking is limited to permits reserved for senior staff, physicians, residents, business needs, and medical needs. For on-call employees, parking is also available on site. In 2022, there were 1,773 permits issued for parking on-site of the 8,138 permits issued total.

Telework & Telehealth

UVMMC has a Remote and Hybrid Work Policy to increase employee engagement and job satisfaction. By allowing remote work, UVM Medical Center expects to realize the efficiencies of decreased turnover, reduced office and parking space needs, and increased work productivity. There are several remote designations, On-site Flex (0-30%), Hybrid Flex (31-70%), Remote Flex (71-100%). The amount of time spent remote is indicated by the numerical values.

Telehealth continues to serve some of the patient and visitor demand for parking on the Medical Center Campus. As previously discussed, telehealth visits represented approximately 10% of patient appointments and procedures for UVMMC based on 2022

figures. It is anticipated that this trend will continue to serve a baseline need in the community and effectively reduce the daily demand for patient and visitor parking on site.

Carpool

UVMMC has a robust and mature carpooling policy for employees with a strong incentive program. Employees who carpool are provided with the opportunity to park in more desirable parking lots, receive gas coupons, and utilize the guaranteed ride home program from CATMA. Employees who wish to carpool must register as a carpool group with the UVMMC Security Department. The carpool program issued 427 carpool permits for 854 participants in 2022, demonstrating the program's popularity.

Bike parking, in particular covered bike parking, is also an area receiving some attention from UVMMC. Re-envisioning of the covered bike parking just outside of the McClure building, which is often full, to maximize the space available and accommodate more bike parking in close proximity to a key entrance of the facility. UVMMC is exploring making this area secure bike parking with fencing for employee bike parking. This project is just one example of the multimodal enhancements taking place to better serve active or alternative modes of transportation to and from UVMMC.

Shuttle and Transit Services

For employees accessing the Medical Center Campus through off-site parking, UVMMC contracts with a bus company to serve the off-site lots with shuttle service. The shuttles serve AM and PM peaks with more frequency of service and more shuttle buses in circulation to serve start and end of shift transit. The off-site lots generally have between 59 and 76 shuttle runs per day serving trips between the hours of 4:15 AM and 9:20 PM. The exception to this is the shuttle serving Centennial and 1 South Prospect, which typically operates with 30 shuttle runs per day serving the AM and PM peaks and on demand service midday. These two lots are in close proximity of the Medical Center Campus, with many users choosing to walk between parking and campus. This Centennial and South Prospect shuttle service is currently suspended due to COVID, and 1 South Prospect staff assigned to Centennial are allowed to park on-site in the interim.

UVMMC has supported discounted local and regional bus transit service for employees in the past. With fare free transit in place, this subsidy has not been tracked through the pandemic. This discounted transit opportunity would return and be tracked should fares return as tentatively planned in 2023. UVMMC has continued to support subsidized ferry service for employees that reside in New York to utilize Lake Champlain Ferries for commuting purposes. For October 2021 through September 2022, an average of 93 monthly car and driver passes and 13 passenger ten ride passes were discounted through this program.

For patients, UVMMC and Special Services Transportation Agency (SSTA) have partnered to provide shuttle services between the Downtown Transit Center and practices within the UVMMC network, like the Tilley Drive and Hinesburg Road locations.

The shuttle service is a free, scheduled service running weekdays between 7:30AM and 4:25PM with reliable and accessible service. UVMMC continues to identify ways like the Tilley Drive Shuttle to serve employees and patients with more efficient transportation options.

Monitoring, Compliance, and Enforcement

The parking on-site and off-site that serves UVMMC is diligently monitored and regulated parking is enforced by UVMMC Security staff per the procedures set forth in the University of Vermont Medical Center Parking and Parking Enforcement Policy documents. UVMMC has a strict vehicle registration and parking permit system that employees are expected to comply with. There are penalties of $10 for violating any of the parking policies. Repeat offenders are subject to towing/booting at owner's expense with violation notifications to direct supervisors for corrective action. Repeat offenses may result in forfeiture of future parking in UVMMC facilities.

6

Conclusions

This JIPMP demonstrates the ability of the Hill institutions collectively and individually to meet parking demand both currently and in the near-term future. Champlain College, UVM, and UVMMC are jointly committed to continued progress on reducing drive alone, single occupancy vehicle access to their campuses rooted in overarching commitments to climate initiatives. They have demonstrated pursuit of efficiency-based parking management, enabling various TDM strategies to actively manage and mitigate parking demand and encourage alternative mode use.

Two different methodologies demonstrated that the parking supply will serve the peak demand for parking on each institution's campus both currently and into the future. It is noted that the more robust count program that is now in place serves to provide the ground truth for observed parking demand on each respective campus. This data is invaluable to demonstrating the ability of each institution to meet the peak parking demands of their populations. Given these data can only provide a look back at how the demand was served, it is important to have the secondary method of estimating demand based on survey data to demonstrate both current and future peak parking demand, even if these estimates are notably inflated compared to the demonstrated parking utilization. These two methods likely provide the book ends of the actual parking demand on campus at peak times.

The findings shared here will be supplemented over the next five years with annual updates to track demand trends and efficacy of demand management strategies employed.

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A

Appendix A

Lot Counts

The institutions continue conducting quarterly lot counts for three days (Tuesday, Wednesday, and Thursday) and three times (10:00 AM, 12:00 PM, 2:00 PM) to support the 5-year and annual JIPMPs. This constant and consistent data collection has strengthened our demand estimations in the 5-year JIPMP.

There are advantages and drawbacks to using lot counts or survey data to estimate demand. Though lot counts are an inexpensive method to calculate parking demand, they are also usually only representative of a limited time frame. This limitation means typical peak demand may not be captured due to variability (i.e. seasonal mode change, time-off, etc.), and may underestimate demand. Survey data may overestimate demand because it fails to capture daily variation seen in lot counts. However, survey data can break down demand by user group, understand different mode trends, and can forecast future demand patterns. For more information about the advantages and drawbacks of lot counts and survey data for estimating demand, please see the 2020-2022 JIPMP Appendix B which was provided by Jonathan Dowds formerly with UVM's Transportation Research Center.

Survey Administration

The 2022 CATMA Student & Employee Transportation Surveys were launched on October 4, 2022. Direct solicitation emails were sent to employees and students. Table A-1 describes the solicitation process in more detail.

Table A-1. Overview of CATMA's 2022 Transportation Survey solicitation and responses.

	Launch Date	Population Total	Solicitation Total	Total Responses	Response Rate	Margin of Error
	Student Survey					
Champlain	10/4/2022	1,736	1,781	416	24%	4%
UVM	10/4/2022	14,088	1,000	189	19%	7%
	Employee Survey					
Champlain	10/4/2022	612	944	175	19%	6%
UVM	10/4/2022	4,254	1,000	304	30%	5%
UVMMC	10/4/2022	6,371	8,572	2,279	27%	2%

Survey Weighting

With guidance from UVM's Transportation Research Center, the results of CATMA's 2022 surveys were weighted using population parameters provided by the institutions. Survey weighting is intended to weight survey responses in a way that is reflective of the actual population. This process corrects for segments in population who are either under or overrepresented by those who answered the survey.

Demand Calculation

The demand estimation calculation used in the 2020-2022 JIPMP was provided by UVM's Transportation Research Center. Rather than finding the peak time on campus for all users and the demand for parking of all users, this calculation relies on the peak time on campus for auto-users. This adjustment is reflected by the **peak parking demand percent** listed in each demand calculation (see Table A-2). By making this slight distinction, some overestimation of demand is reduced as well as a reduction in the margin of error.

Peak parking demand percent is calculated by first finding the time the most auto users are on each campus. For employees and off-campus students, auto users are either those who drive alone and half of those carpool as their main mode. For on-campus students, auto users are all individuals who own a car. Then, a proportion is created for each user group (employees, on-campus students, and off-campus students) by taking the number of auto users on campus at peak time and dividing it by the total number of individuals in that user group in the survey. That percentage (which is the peak parking demand percentage) is

multiplied by the total number of users in that group given by the institution which results in demand (see Figure A-1 for formulas).

Table A-2. Summary of peak parking demand on each campus as identified by the 2022 CATMA Employee and Student Transportation Surveys.

Champlain College	Thursday	12:00 PM – 2:00 PM
UVM	Wednesday	2:00 PM – 4:00 PM
UVM Medical Center	Monday	2:00 PM – 4:00 PM

Figure A-1. Top: Formula for calculating peak parking demand percent for employees and off-campus students. Bottom: Formula for calculating peak parking demand percent for on-campus students.

$$\text{Peak Parking Demand \%} = \frac{\text{Drive Alone at Peak Time} + \text{1/2(Carpool at Peak Time)}}{\text{All Users}}$$

$$\text{Peak Parking Demand \%} = \frac{\text{Own Vehicle}}{\text{All Users}}$$

Margin of Error

The margin of error is the range within which a true value may be found given a certain confidence interval. All margins of error reported in the 2023-2028 JIPMP are within a 95% confidence interval. The margins of error were calculated using the Complex Samples modules in SPSS and were found for the peak parking demand percent for each user group. For each of the institutions, the composite margin of error was found by summing the squares of each user group's margin of error and taking the square of root of the sum. Knowing the margin of error is useful, because within a 95% confidence interval, we can know the total parking demand for any institution is above or below a certain percentage of the estimated demand given.

B

Appendix B

Comprehensive Development Ordinance – Parking

Sec. 8.3.3 Institutional Parking Management Plans

An Institutional Parking Management Plan shall include the following:

(a) A narrative that outlines how the proposed parking management plan addresses the specific needs of existing and anticipated development and effectively satisfies the intent of this Article and the goals of the Municipal Development Plan.

(b) Information specifying the current and anticipated numbers over the ensuing 5 year period for: number of students of all academic programs (full-time, part-time, commuter, on-campus, off-campus, and continuing education), faculty and staff (full-time and part-time), patients and visitors being served by the institution.

(c) An analysis of the anticipated parking demand by user group, time of day and/or demand by use and parking provided to meet that demand currently and anticipated over the ensuing five-year period;

(d) Information specifying the number and composition of the institution's vehicle fleet, where these vehicles are regularly kept, and designated "service vehicle-only" parking;

(e) Strategies used to reduce or manage the demand for parking which may include but are not limited to:

1. Policies which restrict and/or prohibit the bringing of vehicles to the institution for various users or groups of users;

2. A telecommuting program;
3. Programs and employee and student subsidies to encourage the use of public transit, car-share, walking, and bicycling;
4. Implementation of a shuttle service system serving off-site parking;
5. Implementation of a parking permit system to allocate parking throughout the system; and,

(f) Implementation of a monitoring, compliance and enforcement system to measure and ensure compliance with the plan.

Sec. 8.3.4 Review and Approval of Institutional Parking Management Plans

(a) Plan Approval

Such a plan shall require review and approval by the DRB, after consultation with the planning commission, and after a public hearing. In order to approve a proposed Institutional Parking Plan, the DRB shall find:

a. the proposed Institutional Parking Plan adequately serves existing and proposed development and user groups by the institution(s);
b. the proposed Institutional Parking Plan effectively meets the intent of this Article and the goals of the municipal development plan.

Such a plan, if approved by the DRB, shall be applicable for a period not to exceed five (5) years, and may be amended as necessary pursuant to the requirements of this Part. The DRB may approve one extension of up to six (6) months so long as the extension is requested prior to the Plan's expiration.

(b) Annual Reporting

The institution shall provide a report annually to the administrative officer regarding the implementation and performance of the approved plan and any significant changes in the size or makeup of user groups, parking supply, travel by mode for user groups, availability and utilization of parking management strategies, anticipated development activity, and any other conditions impacting supply and/or demand.

Failure to submit such annual report shall be a violation of this ordinance.

Sec. 8.3.5 Review and Approval of Applications for Future Development

Pursuant to Sec. 2.7.8 of this ordinance, no zoning permit or certificate of occupancy may be granted for projects which will impact the supply of or demand for parking without an approved or amended plan. Projects such as routine maintenance, repair, equipment installation, walkways, landscaping, installation of public art, and the like are exempt from this requirement so long as they do not result in a change of use, habitable area, or parking facilities upon which a plan's supply and demand calculations are based.

(a) In reviewing any application for development from a post-secondary educational or medical institution within the Institutional district, the DRB shall find that the proposal is included and addressed within an approved Institutional Parking Plan and that the proposal is consistent with the approved Plan.

(b) Any development proposed by a post-secondary educational or medical institution within the Institutional district that is not included and addressed within an approved Institutional Parking Plan shall only be approved pursuant to the underlying parking requirements of Parts 1 and 2 of this Article and upon approval of an amendment to an approved plan.

In addition to application requirements specified in Article 3 and this Part, the Institutions(s) shall submit an amendment to an approved plan that addresses how the development is consistent with or modifies supply and demand calculations and applicable TDM strategies contained in the approved Plan. Amendments may be in the form of an addendum that addresses any relevant sections of an approved Plan. The amendment shall be approved by either the administrative officer or DRB based on the underlying application type. Such developments shall be reflected in subsequent annual reports submitted to the administrative officer, and future plan updates.

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