



BUFFALO NIAGARA MEDICAL CAMPUS

CLEAN MOBILITY PLAN

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Co-Authors: Michael Galligano, Tyler Madell, Alex Maccallini, Viyona Chavan





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Abbreviations

ADA: Americans with Disabilities Act
BCAR: Buffalo Civic Auto Ramps
BCS: Buffalo CarShare
BNMC: Buffalo Niagara Medical Campus
BRRTH: Black Rock Riverside Transit Hub
BRT: Bailey Rapid Transit
CDTA: Capital District Transportation Authority
CLCPA: Climate Leadership and Community Protection Act
CMAQ: Congestion Mitigation and Air Quality Improvement Program
DAC: Disadvantaged Communities
EPA: Environmental Protection Agency
EV: Electric Vehicle
GBNRTC: Greater Buffalo-Niagara Regional Transportation Council
GHG: Greenhouse Gas
GPS: Global Positioning System
HDS: Human Driven Shuttle
HOCN: Heart of the City Neighborhoods
ICE: Internal Combustion Engine
NFTA: Niagara Frontier Transportation Authority
NEC: National Electric Code
NYSDEC: New York State Department of Environmental Conservation
NYSERDA: New York State Energy Research and Development Authority
PAL: Paratransit Access Line
RAP: Residential Area Permit
ROW: Right-of-way
SDS: Self-Driving Shuttle
SMI: Shared Mobility Inc.
TDM: Transportation Demand Management
UB: University at Buffalo
UL: Underwriter Laboratories
VMT: Vehicle Miles Traveled
ZEV Co-op: Zero Emission Vehicle Cooperative

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Executive Summary

Shared Mobility Inc. (SMI) on behalf of the Buffalo Niagara Medical Campus (BNMC) and the Niagara Frontier Transportation Authority (NFTA) has compiled this planning study to develop an action plan for electrification enhancements to the Buffalo All Access Shuttle program and building electric mobility charging hubs in Buffalo that serve the transportation needs of disadvantaged communities (DACs). Supported by the NYSDOT's Clean Mobility Program, this plan builds upon the Buffalo All Access program and other clean mobility initiatives in Buffalo to understand existing gaps in electric mobility services and charging infrastructure and how electric mobility charging hubs at BNMC and NFTA sites can help to better connect DACs to more affordable transportation options.

Grounded in extensive community engagement and a robust needs assessment, the plan identifies disparities in vehicle ownership, income, and transportation access, particularly among East Side neighborhoods such as Fruit Belt and Masten Park where over 40% of households lack a vehicle. Additionally, key community stakeholders informed the planning process by explaining how DACs in Buffalo currently have very limited access to electric mobility charging infrastructure which limits the ability of residents to access affordable clean mobility options.

Based on community and stakeholder feedback, this plan builds upon the existing Buffalo All Access initiative and proposes three interconnected electric mobility charging sites: a central Electric Mobility Charging Depot at 821 Washington Street, and two Electric Mobility Hubs located at 941 Washington Street on the BNMC campus and at the Black Rock Riverside Transit Hub (BRRTH). The Depot at 821 Washington will serve as a secure facility for micromobility charging, personal e-bike storage, and carshare fleet maintenance. The 941 Washington hub, adjacent to the NFTA Metro Rail station, will integrate EV carshare, bikeshare, and personal micromobility charging to serve students, healthcare workers, and nearby residents. At the BRRTH, the plan recommends expanding bikeshare access and installing EV charging infrastructure to support carsharing, enhancing connectivity for residents of Buffalo's Riverside neighborhood. This plan also evaluates electrification and service area expansion options for the Buffalo All Access Human Driven Shuttle (HDS) and examines potential route expansion for the fixed-route Self-Driving Shuttle (SDS), along with supporting on-campus charging infrastructure to enable long-term operations.

The mobility hubs will serve as replicable models for other Buffalo based mobility hub projects currently in development including in downtown Buffalo, as part of NFTA's Bailey Bus Rapid Transit (BRT) project, and various car sharing initiatives. Electric charging infrastructure for personal electric micromobility devices will help to fill a growing need for safe and secure charging facilities in the city at affordable housing residents, workplaces, and transit hubs.

By prioritizing these efforts of equity, long-term sustainability and accessibility, this plan aligns with key state and regional climate goals, including New York's Climate Leadership and Community Protection Act (CLCPA) and regional goals outlined in Western New York's Metropolitan Transportation Plan, Moving Forward 2050. These efforts reflect the state and regional commitment to advancing low-emission, people-centered transportation in DACs. Impact assessment findings suggest that these mobility hubs, when fully implemented, could contribute to meaningful reductions in greenhouse gas (GHG) emissions in greatly expanded access to clean, affordable transportation options for DACs in the immediate vicinity and throughout Buffalo.



Introduction

Vision and Mission Statement

This mobility plan provides a blueprint for building out electric mobility hubs for the Buffalo Niagara Medical Campus (BNMC) and Niagara Frontier Transportation Authority (NFTA). Through the implementation of multimodal mobility hubs, electrified shuttles, shared micromobility, safe and accessible private micromobility charging, and infrastructure for electric car sharing, this plan connects multiple existing and future efforts around expanding access to clean, affordable transportation, to meet the needs of disadvantaged communities (DACs) in Buffalo, NY. Based on community feedback and an extensive multilayered analysis, this plan details a proposal for three electric mobility hubs that can serve as a replicable model for other sites in Buffalo, the Western New York region and around the state.

Background Information

About BNMC

The Buffalo Niagara Medical Campus (BNMC) is a 120 acre hub of healthcare, life-sciences and educational institutions located adjacent to downtown Buffalo, NY. It is home to a diverse mix of hospitals, universities, startups and non profits- including Roswell Park Comprehensive Cancer Center, Buffalo General Medical Center, the University at Buffalo (UB)'s Jacobs School of Medicine and Biomedical Sciences, and Kaleida Health attracting together over 16,000 daily users and over 1.5 million annual visits creating a high demand in for transportation across a wide range of users.¹ The BNMC is located within a DAC and largely surrounded by DACs (most of Buffalo is considered DACs)..

The BNMC has long been a regional leader in transportation innovation, particularly when it comes to programs that advance affordable access to public transportation, shared mobility, biking/walking, and multi-modal options for employees on the campus as well as residents of nearby DAC communities. One initiative that is currently poised to transform transportation innovation in and around the BNMC is Buffalo All Access, which is funded by the U.S. Department of Transportation under the ITS4US Deployment Program. This initiative is designed to break down transportation barriers for those who need it most: residents of nearby neighborhoods, older adults, individuals with disabilities, and others facing systemic mobility challenges. Currently in its planning and demonstration phase, Buffalo All Access will include an on-demand Human Driven Shuttle (HDS), a Self-Driving Shuttle (SDS), smart wayfinding infrastructure, and an inclusively designed coordinated navigation/booking platform.

About NFTA

The Niagara Frontier Transportation Authority (NFTA) is the public agency responsible for providing bus, rail, paratransit, and airport services across Erie and Niagara counties. As the region's primary transit operator, NFTA serves as a critical mobility provider for residents of Buffalo and surrounding communities, many of whom rely on fixed-route buses and Metro Rail for daily commuting. NFTA is currently in the planning phases of expanded mobility hubs in a number of locations, many of which are in conjunction with NFTA's Bailey Ave Bus Rapid Transit (BRT) and Metro Rail extension projects. To inform these future mobility hubs, NFTA is interested in expanding electric mobility integration at its existing mobility hub at the Black Rock Riverside Transit Hub (BRRTH).

At the BNMC, NFTA operates several intersecting bus lines and the Allen/Medical Campus Metro Rail Station, offering high-frequency light rail service between downtown Buffalo and the UB South Campus. NFTA is also a lead partner on Buffalo All Access, working alongside BNMC and other stakeholders. NFTA will be operating the HDS through Buffalo All Access.

1. The Buffalo NY ITS4US Deployment Project Report, ICF, 2021: https://rosap.ntl.bts.gov/view/dot/57571/dot_57571_DS1.pdf



Community Engagement

Community engagement was undertaken to ensure the plan reflected the needs of residents, campus users, and DACs. Participants were asked about their daily travel patterns, access to vehicles and public transit, priorities for mobility hub features, and desired destinations for the Buffalo All Access shuttle. This framing helped surface both barriers and opportunities, directly shaping site selection and service recommendations.

Events and Participants

Community engagement was a key element of the BNMC Clean Mobility Planning Project, designed to gather perspectives from residents, employees, and mobility stakeholders. Activities included an online public survey, in-person outreach on campus, and stakeholder meetings with partners from Buffalo's clean mobility ecosystem. These activities took place from April to June 2025.

Public Survey Highlights

The online survey drew responses from individuals who live, work, and study in and around the BNMC. While 92% of respondents reported access to a personal vehicle, 8% lacked it, highlighting the need for enhanced shared mobility services. Low public transit use—two-thirds of respondents never use it—suggested potential service gaps and limited awareness. Respondents prioritized bikeshare expansion, secure e-bike storage, EV charging stations, and clearer wayfinding to strengthen multimodal options on and near campus. Respondents also suggested service route expansions for the Buffalo All Access shuttle to increase coverage to additional destinations and neighborhoods that DAC residents would like better access to.

On-Site Engagement

Conversations held near shuttle stops and campus facilities revealed transportation barriers faced by low-wage workers and residents of nearby DACs. Participants emphasized flexible, affordable mobility options, better first/last mile connections, and increased EV charging infrastructure to support equitable transportation access.

Stakeholder Perspectives

- **University at Buffalo, NFTA, and GBNRTC:** This joint session explored coordination opportunities for integrating BNMC's mobility hub model with regional initiatives. NFTA highlighted the potential for micromobility integration at major shuttle corridors and future use of electric buses through Buffalo All Access. UB provided updates on the SDS component of Buffalo All Access, with plans for demonstration in late 2025 and identified BNMC as a potential site for midday charging and storage. The Greater Buffalo-Niagara Regional Transportation Council (GBNRTC) encouraged scalable solutions that align with regional transportation goals, emphasizing shared micromobility charging and cross-agency coordination.
- **Heart of the City Neighborhoods (HOCN)** underscored first/last mile connectivity gaps and noted that current transit routes often bypass key community locations. They highlighted the potential for secure electric micromobility charging in affordable housing developments and stressed the importance of maintaining charging infrastructure to support DAC populations. HOCN also suggested that a charging infrastructure hub for personally owned electric micromobility located at the BNMC could serve as a replicable model for property owners seeking to install on-site micromobility charging stations.
- **Buffalo Place Inc.** emphasized downtown mobility priorities, noting increased electric micromobility use and the absence of supporting infrastructure like charging stations and secure parking. They reflected on past park-and-ride shuttle services, highlighting challenges with fare increases and ridership retention, and emphasized the need for affordable, reliable mobility solutions to strengthen access between BNMC and the downtown core. The conversation explored a possible extension of the SDS route into downtown, to provide better links between downtown, the BNMC and other nearby DACs.

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- **Buffalo Civic Auto Ramps (BCAR)** discussed the potential to expand EV charging, car sharing, and bikeshare within existing parking facilities as part of broader Transportation Demand Management (TDM) efforts. They identified several locations for possible mobility hub integration and noted current EV charger utilization rates of 60–65%. BCAR expressed interest in leveraging this plan’s insights to inform citywide efforts in expanding clean mobility charging infrastructure and services.

The engagement process provided critical insights into mobility challenges and opportunities at BNMC and throughout DACs in Buffalo. By centering the voices of community members and leveraging stakeholder expertise, the plan is well-positioned to develop clean, equitable, and connected mobility solutions that meet the diverse needs of Buffalo’s workforce, residents, and visitors. A more detailed summary of community engagement findings is included in the appendix.

Mobility Focused Needs Assessment and Gap Analysis

Several transportation services currently operate in and around the BNMC and in Buffalo, with new programs and initiatives underway. While each service provides important options, there is an opportunity to strengthen how these systems connect and complement one another. This section outlines existing services and infrastructure, highlights key access and integration gaps, and identifies opportunities to support a more equitable, practical, and sustainable transportation system through well-placed electric mobility hubs.



SERVICE	EXISTING SCOPE at BNMC/ NFTA sites	KEY GAPS	OPPORTUNITIES
Buffalo All Access	In the final testing /review stage; includes a Complete Trip Platform, on-demand shuttles, Americans with Disabilities Act (ADA) compliant features, and digital wayfinding. Designed to serve DACs and users with disabilities.	Deployment has been delayed; limited public awareness; ongoing funding has not been identified.	Electrify HDS shuttle fleet; expand shuttle coverage for HDS and SDS; co-locate with bikeshare and Metro Rail; serve as anchor for future mobility hubs; investigate on-campus charging for SDS
Bikeshare	Reddy Bikeshare operates three active stations on BNMC: Summer Best Metro station, Allen/ Medical Campus station and Virginia and Ellicott intersection.	Lack of on-street charging for e-bikes: bikeshare is not well integrated into NFTA sites such as the Black Rock Riverside Transit Hub	Build out charging stations for bikeshare; inclusion of bikeshare in future mobility hub implementation
Micromobility Charging Infrastructure	Currently testing a battery swapping technology unit from Swobbee at the BNMC campus	No designated outdoor charging stations; lack of charging station precedents for private developers to emulate in their projects	Install secure, outdoor micromobility charging stations at hubs; promote battery safety; offer storage and wayfinding for personally owned electric micromobility devices.
NFTA Metro Rail	Light rail line connecting downtown Buffalo to UB South Campus; Allen Station located directly on BNMC campus.	Serves a smaller portion of the region than initially envisioned.	Increase and incentivize co-location of shared mobility programs and electric charging infrastructure
NFTA Bus network	Multiple fixed-route bus lines serve the area, with stops near BNMC, BRRTH and nearby neighborhoods.	Gaps in frequency during times that are outside normal 9-5 commute times	Coordinate schedules with shuttles; enhance stop infrastructure at hubs; real-time info and digital wayfinding.
EV Carshare	There was previously a car sharing service and while there have been various initiatives to bring it back, there currently is no active car sharing service in Buffalo.	No affordable, flexible access to shared car fleets for DACs and others who cannot afford to own/ maintain their own vehicle, affecting access to jobs, healthcare and other opportunities	Launch EV car sharing tied to electric mobility hub locations; prioritize access near housing, healthcare, and transit stations.
EV Car Charging Stations	There are limited publicly accessible EV chargers throughout most neighborhoods in Buffalo, particularly those nearby the BNMC.	Lack of existing EV infrastructure has been a barrier to car sharing implementation and makes it difficult to support EV adoption	Expand charger network and integrate with mobility hub design

Table 1 : Mobility needs assessment and gap analysis



Site Identifications and Operations

Mobility options

Based on the community feedback received through ongoing outreach efforts as well as past engagement efforts, this mobility plan identifies a set of proposed solutions that aim to improve affordable access to clean transportation options for DACs in Buffalo. The options respond to the barriers identified by the community, including limited access to multi-modal connections, affordability concerns and lack of publicly accessible charging infrastructure.

The following interventions are currently prioritized:

- **Electrification of Buffalo All Access HDS**

Community members expressed the need for sustainable and reliable shuttle services that can reach deep into DACs. With many residents and stakeholders eager to see transit options that are more convenient, the Buffalo All Access on-demand HDS will provide a flexible transit option to fill localized transportation needs within DACs in and around the BNMC. Electrification of this service will reduce emissions and could help the service area expand due to the simplified maintenance of electric vehicles and a potentially expanded fleet. Charging infrastructure may be co-located at mobility hubs to support service reliability and future expansion.

- **Expansion of Buffalo All Access SDS**

As part of this plan, opportunities to expand the fixed route SDS service will be evaluated to improve connectivity for surrounding DACs. The plan will also investigate the feasibility of installing on-campus charging infrastructure to support SDS operations and ensure long-term sustainability.

- **Evaluation EV Carshare services**

Residents and workers consistently highlight the need for flexible, affordable access to cars without the burden of ownership. The plan will evaluate the feasibility of introducing mobility hubs that include EV charging stations that would support an EV car sharing program. These charging infrastructure sites may help support coordination amongst existing EV Carshare efforts underway in the City of Buffalo through three different programs/grants: Clean Mobility Buffalo (NYSDERDA Clean Transportation Prizes), City of Buffalo/BCAR (Congestion Mitigation and Air Quality Improvement Program [CMAQ]), and the West Side Mobility project (New York State Department of Environmental Conservation). In addition, Buffalo CarShare (BCS) relaunched in August 2025 as an all-electric pilot operated by Mobility Development Operations, with vehicles priced at \$7/hour. The program's presence on the BNMC campus represents an immediate opportunity to align proposed EV carshare infrastructure with an active service. Coordination with BCS could help accelerate deployment at the BNMC hub and support expansion into surrounding DACs

- **Micromobility Charging and Battery Storage Infrastructure**

Survey respondents and stakeholders noted safety risks and inconvenience due to the lack of designated charging options for personal micromobility devices. This plan includes assessing the potential for secure outdoor micromobility charging stations designed specifically for personally owned electric micromobility devices such as e-bikes and e-scooters.

- **Mobility Hub Integration of Bikeshare Charging**

Buffalo's Reddy Bikeshare currently operates three active stations on the BNMC campus, providing an important micromobility option for students, employees, and visitors. However, community feedback strongly emphasized the need to expand bikeshare availability, particularly further into underserved neighborhoods where transportation access remains limited. There is not currently charging infrastructure integration at the BRRT and other NFTA sites.

Mobility Hub Service Areas

What is a Mobility Hub?

A mobility hub is a strategically designed, multi-modal transport node where various forms of mobility services connect in a single accessible space. It simplifies transfers between different modes of transportation, reduces reliance on personal vehicles and improves first/last mile connectivity through integrated infrastructure. These hubs are typically located near transit stations, high foot fall urban locations and/or in underserved communities which are designed to support daily commute or occasional trips.

Academic literature reinforces the transformative potential of mobility hubs by highlighting evidence-based strategies that enhance their effectiveness and adoption. Studies show that strategically located hubs, especially near public transit and in high-density, mixed-use areas are most successful in promoting first/last mile connectivity. When designed with integrated charging infrastructure, real-time data tools, and user-friendly features, these hubs support increased ridership and lower emissions. Researchers also emphasize the importance of equitable deployment in underserved communities, clear regulatory frameworks, and stakeholder engagement to ensure accessibility and long-term success.²

A mobility hub may include:

- **Public transit access:** Connections to buses, light rail, metro depending on the local transit network, often mobility hubs are located where several lines intersect
- **Micromobility stations:** Docked bikeshare/scootershare systems for short distance travel, enabling users to complete first/last mile travel.
- **Electric micromobility charging infrastructure:** Charging infrastructure to support charging of micromobility on-site through safe and secure infrastructure. This may include charging for shared devices from a bikeshare/scootershare and/or charging for personally owned devices.
- **Park-and-ride facilities:** Parking areas where individuals can park their private vehicles and transfer to public transport, encouraging individuals to use public transport and reduce congestion.
- **Carshare station:** Designated parking spots for cars that can be rented by the hour at low cost rates, providing a mode for people that do not own a vehicle
- **EV charging infrastructure:** Charging infrastructure to support EV car sharing and for charging personally owned electric vehicles. Publicly accessible EV chargers can support residents, employees, and visitors, especially those living in DACs without access to home-based charging.
- **Ride-hailing pick-up/drop-off zones:** Clearly marked areas for pickup and drop off services for on demand transportation modes like Uber or Lyft, to reduce curbside congestion and improve safety.
- **Pedestrian friendly pathways:** Safe and well lit, accessible walking routes within and around the hub.
- **Digital info kiosks and wayfinding tools:** Real time transit updates, interactive maps, and signage to assist customers in planning trips.
- **Ticket machine / Fare kiosk:** Automated kiosks or smart card systems that allow customers to purchase or recharge transit passes.
- **Retail, restrooms, and waiting areas:** Sheltered waiting areas, public restrooms, retail kiosks and seating to enhance usability and encourage use of shared mobility options.

2. Liu, Zehao, Yongping Zhang, and Wei Fan. "Optimising Shared Electric Mobility Hubs: Insights from Performance Analysis and Factors Influencing Riding Demand." *Case Studies on Transport Policy* 11, no. 4 (2023): 1504–16. <https://www.sciencedirect.com/science/article/pii/S2213624X23001062>



Existing Transportation Options

The BNMC is located at multiple transportation crossroads in Buffalo. The Campus is located along Main Street (NY Route 5), and the terminus of NY Route 33, which are major arteries for vehicle traffic to Buffalo's downtown from across the region. The campus also has convenient access to several NFTA Bus routes that travel both north/south and east/west including Routes 8, 14, 16, and 22. The campus also has convenient access to the NFTA Metro Rail line, at the Allen/Medical Campus Station.

Buffalo All Access is anticipated to help provide greater connectivity in and around the BNMC. It is not a single service, but rather an integrated "Complete Trip" solution that includes:

- A user-friendly trip planning platform (app and web) tailored for users with limited mobility or cognitive challenges
- Deployment of accessible mobility shuttle services, including a HDS and SDS
- Enhanced infrastructure and wayfinding, such as smart signage, safe crossings, and accessible pickup/drop-off zones
- Support services like travel training and user education to increase confidence among first-time or hesitant users

The program specifically targets DACs adjacent to the campus including Fruit Belt, Masten Park, and Allentown where poverty rates are high, car ownership is low, and access to high-frequency transit is limited. These conditions create critical gaps for vulnerable residents in reaching healthcare, jobs, and education. Though still under development, Buffalo All Access will serve as a foundational platform for the proposed mobility hub network by supporting first/last mile connectivity and enabling more inclusive use of bikeshare, transit, and EV infrastructure.

Figure 1 shows the service range of NFTA service routes that intersect the Buffalo All Access service area. The routes serve portions of Buffalo's East Side and Downtown, all of which are designated as DACs.

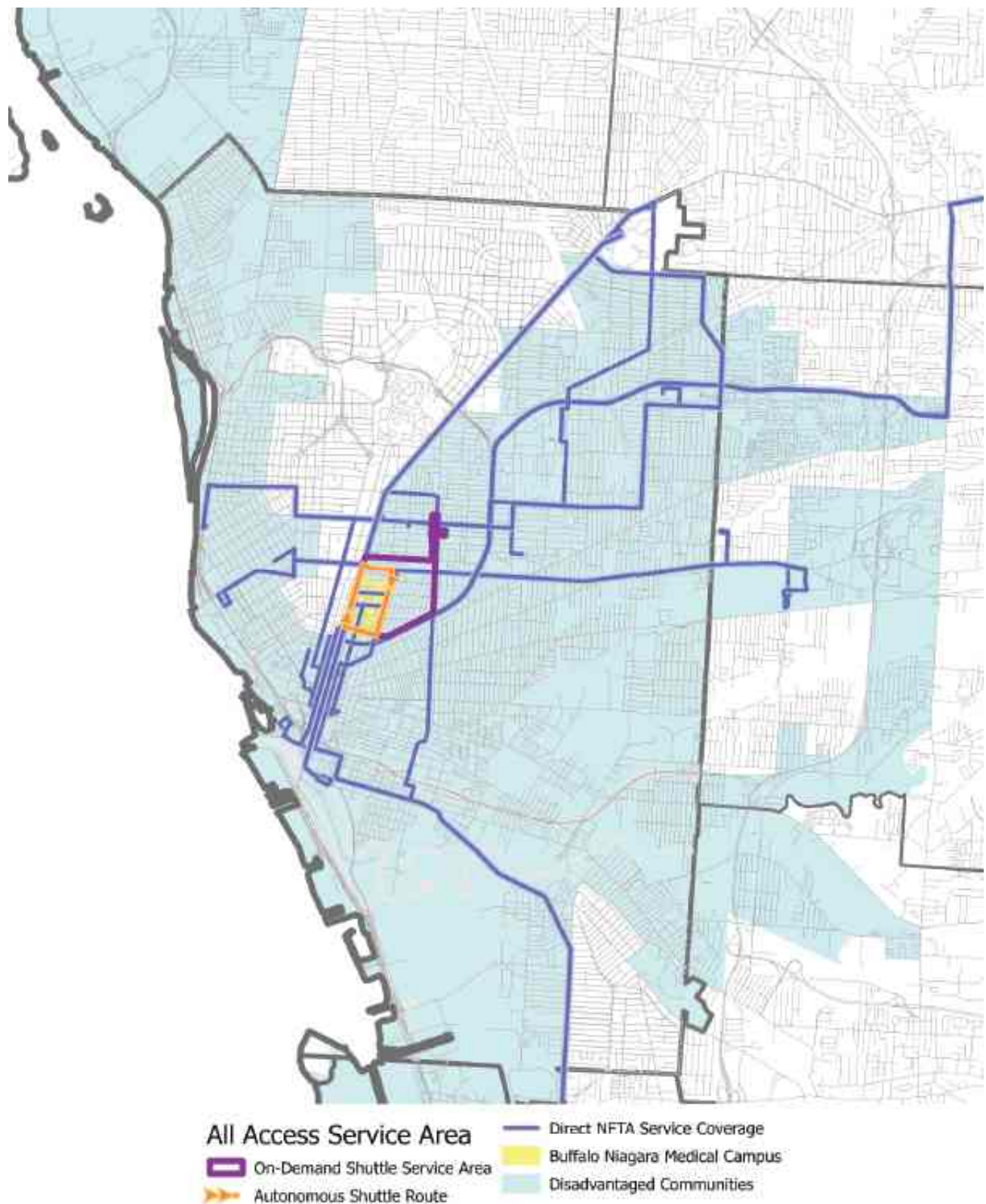


Figure 1: Intersection of NFTA service routes with Buffalo All Access service area



Figure 2 shows existing mobility solutions on the campus, including the proposed Buffalo All Access SDS service route, NFTA Service stops and Reddy Bikeshare hubs, and EV charging infrastructure at the BNMC.



Figure 2: Mobility solutions on BNMC

In addition to the 3 bikeshare hubs at the BNMC, Reddy Bikeshare has coverage across the City of Buffalo, creating opportunities for zero-emission transportation for campus visitors. Figure 3 represents Reddy Bikeshare hubs in the City of Buffalo in relation to the BNMC and DACs. While the service does provide access to many areas of the city, Reddy Bikeshare has yet to deploy on-street electric charging stations which could improve operational efficiency and overall uptake of the service.

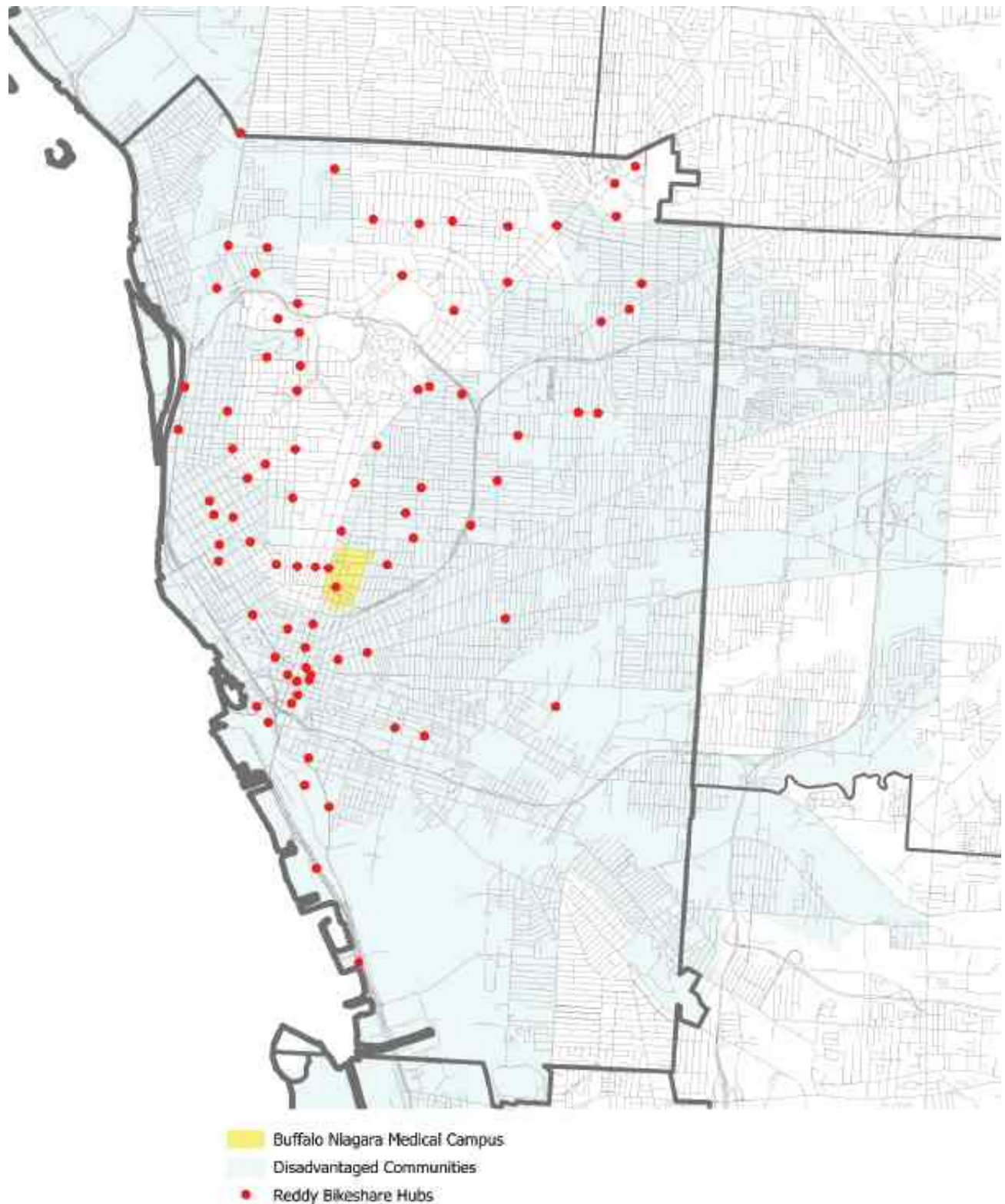


Figure 3: Reddy bikeshare hubs in the City of Buffalo



The Buffalo All Access project area shown in Figures 4 and 5 are the existing service area boundaries of the HDS and Route of the SDS in relation to potential expansion zones. The BNMC and NFTA may want to consider expanding the HDS service area to include other nearby DACs to further reinforce service coverage in neighborhoods where campus workers often live and need to travel too, including Masten Park and downtown. These were expansion areas recommended by survey respondents during the community engagement process. Expanding the HDS service area to Masten Park would improve connections for workers from surrounding DACs to the campus, and provide better linkages to downtown amenities. This expansion would also add 2.5 miles to the existing 4 mile service area.

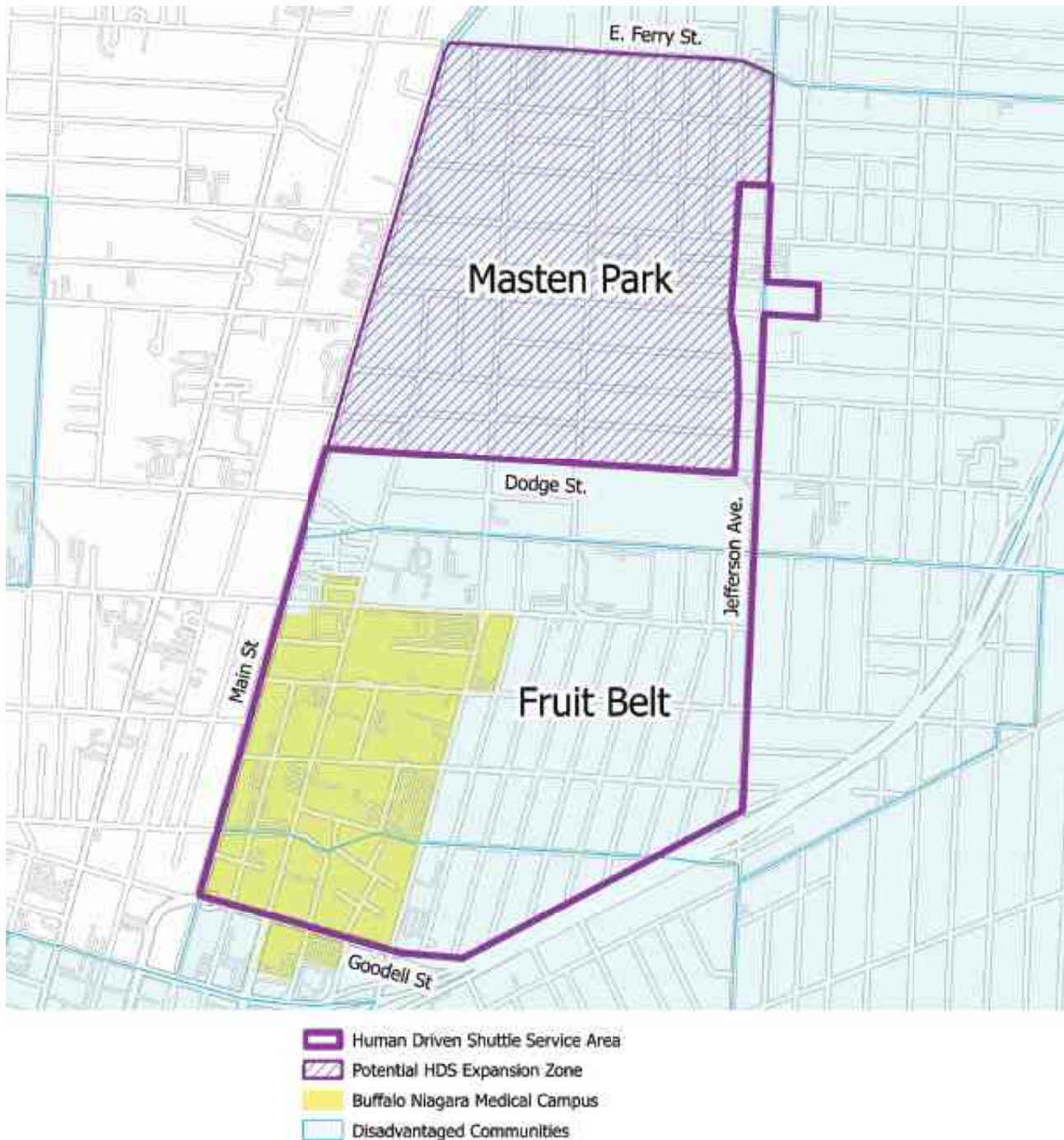


Figure 4: Existing service area boundaries of the HDS

Route expansion for the SDS could improve connections to NFTA bus service as well as developing and existing mobility projects in Downtown Buffalo and the Lower West Side. Expanding to downtown would create a direct connection between Buffalo All Access and NFTA route 77 - Buffalo Niagara Fall Express, creating express access to the BRRTH. Figure 5 represents zones for route expansion that would serve Downtown, the Lower West Side, and Allentown, as well as connect riders to the BRRTH via the Buffalo - Niagara Falls Express.



Figure 5: Route of the SDS in relation to potential expansion zones



It is also worth noting that the campus is in proximity to several key mobility programs in Buffalo. Figure 6 represents these programs in relation to the BNMC and Buffalo All Access Service Area. The campus is within the East Side of Buffalo, and is a project partner with the Clean Mobility Buffalo program. Furthermore, it is located near a City of Buffalo led CMAQ-funded program aimed at developing mobility hubs in BCAR parking ramps in Downtown Buffalo, as well as the NFTA Bailey Avenue BRT project area, and a new project award from GOBike Buffalo to develop a new small-scale EV car sharing on Buffalo's Lower West Side. Expanding the service area of the HDS to cover more areas served by these other programs may help to increase connectivity and reliability between these various clean mobility initiatives happening within Buffalo's DACs.

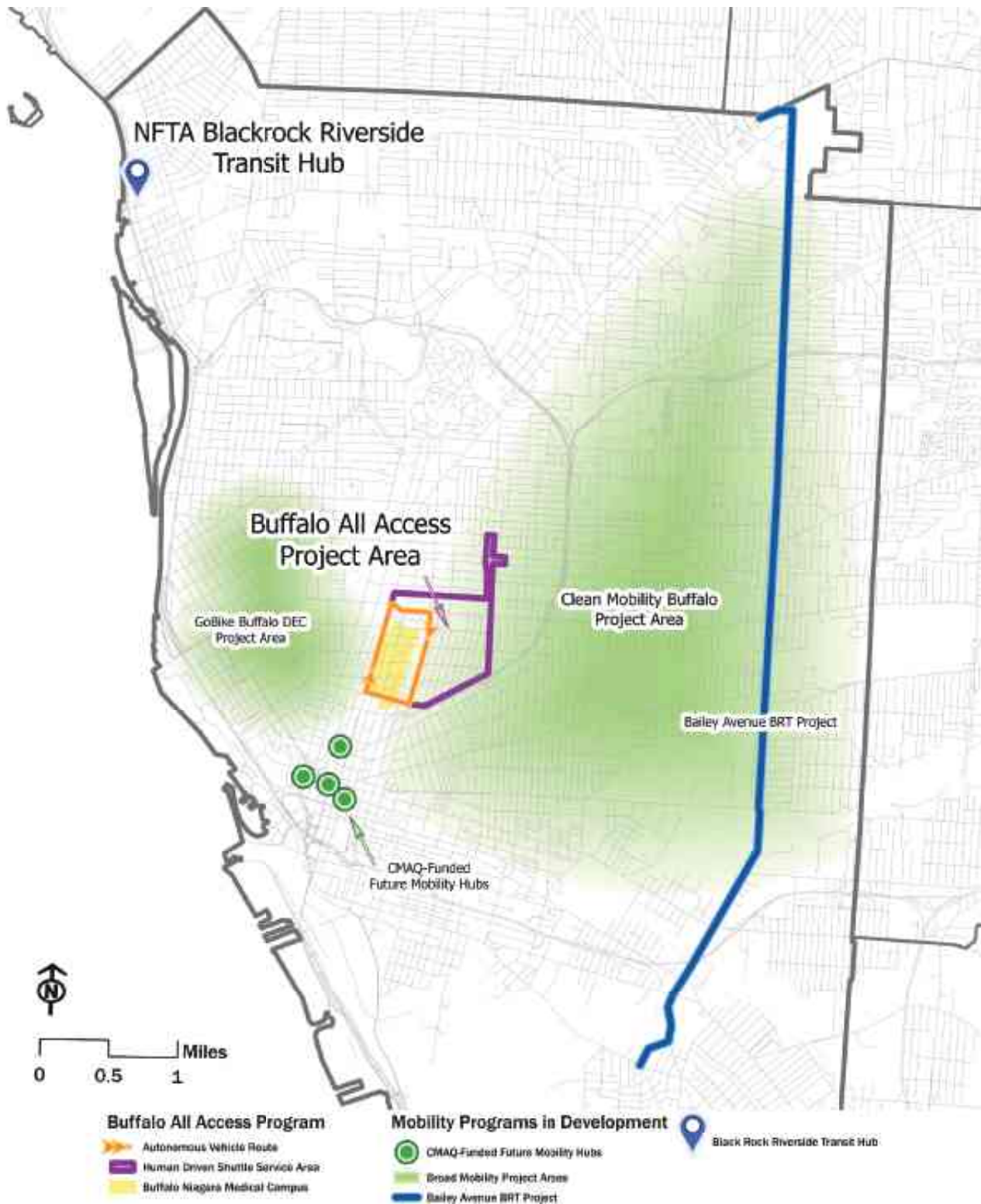


Figure 6: Existing service area boundary of HDS

In addition to mobility projects that are currently in development, the NFTA has an existing mobility hub that they are interested in enhancing with improved integration with shared electric mobility options. The BRRTH serves 6 bus routes, with direct service across the region from Niagara Falls to Cheektowaga. Figure 7 represents the service area of the transit hub. The hub has a sheltered bus stop, ample seating, car parking, bicycle storage and repair stands. While the hub incorporates several mobility amenities, the hub does not currently have any electrified mobility options. The hub also is positioned in an area not currently served by Reddy Bikeshare, despite its proximity to the Shoreline Trail, which connects downtown Buffalo to Niagara Falls. As an NFTA owned site, the BRRTH has ample space and opportunity to incorporate electric mobility improvements.



Figure 7: Location of Black Rock Riverside Transit Hub



There are multiple overlaps between NFTA bus routes that serve the BRRTH and the BNMC All Access Service Area. Figure 8 represents these overlaps. Together, these services cover much of the City of Buffalo and surrounding region, with strong coverage in DACs and also suburban job centers where DAC residents are employed. In addition to electrified mobility hub planning for the BNMC, the NFTA has also expressed interest in creating a replicable electrified mobility hub model, which could be implemented at new and existing transit hubs. Given the strong need for more affordable transportation options for members of DACs in the area, this report will also consider electrified mobility solutions at the BRRTH to mirror the solutions proposed at the BNMC.



Figure 8: Service overlaps of NFTA service routes at BRRTH and Buffalo All Access services

Transportation Characteristics

The surrounding area of BNMC is characterized by high rates of households without vehicle access, as well as comparably high rates in commuters who travel by public transportation according to the 2023 American Communities Survey. In the census tracts in and surrounding the BNMC, there is a prevailing disparity between the percentage of households that do not have vehicle access, and the rate at which people commute by public transportation. This disparity is also rather prevalent in census tracts nearby the BRRTH. These disparities suggest that there are many households that could stand to benefit from improved electric mobility options that help to connect or complement existing public transit. Table 2 highlights this disparity by census tract.

Location	Census Tract	DAC	Percent of Households with No Vehicle Access	Percentage of Commuters by Transit	Disparity in Vehicle Access to Transit Commuting
BNMC East of Main Street	Tract 25.02	Yes	39.9%	8.9%	31%
	Tract 31	Yes	44.1%	16.6%	27.5%
	Tract 168.01	Yes	36.4%	28.2%	8.2%
West of Main Street Adjacent to BNMC	Tract 67.02	No	19.9%	10.2%	9.7%
	Tract 68.01	No	19.9%	5.7%	14.2%
Black Rock Riverside Transit Hub	Tract 57	Yes	24%	12.2%	11.8%
	Tract 58.02	Yes	30%	5%	25%
Buffalo Average			24.1%	7.8%	16.3%

Table 2: Disparities in vehicle access and public transit use by census tract



Figure 9 highlights the concentration of households that do not have vehicle access across the City of Buffalo. There is a clear concentration in the East Side by the BNMC and in areas nearby the BRRTH.

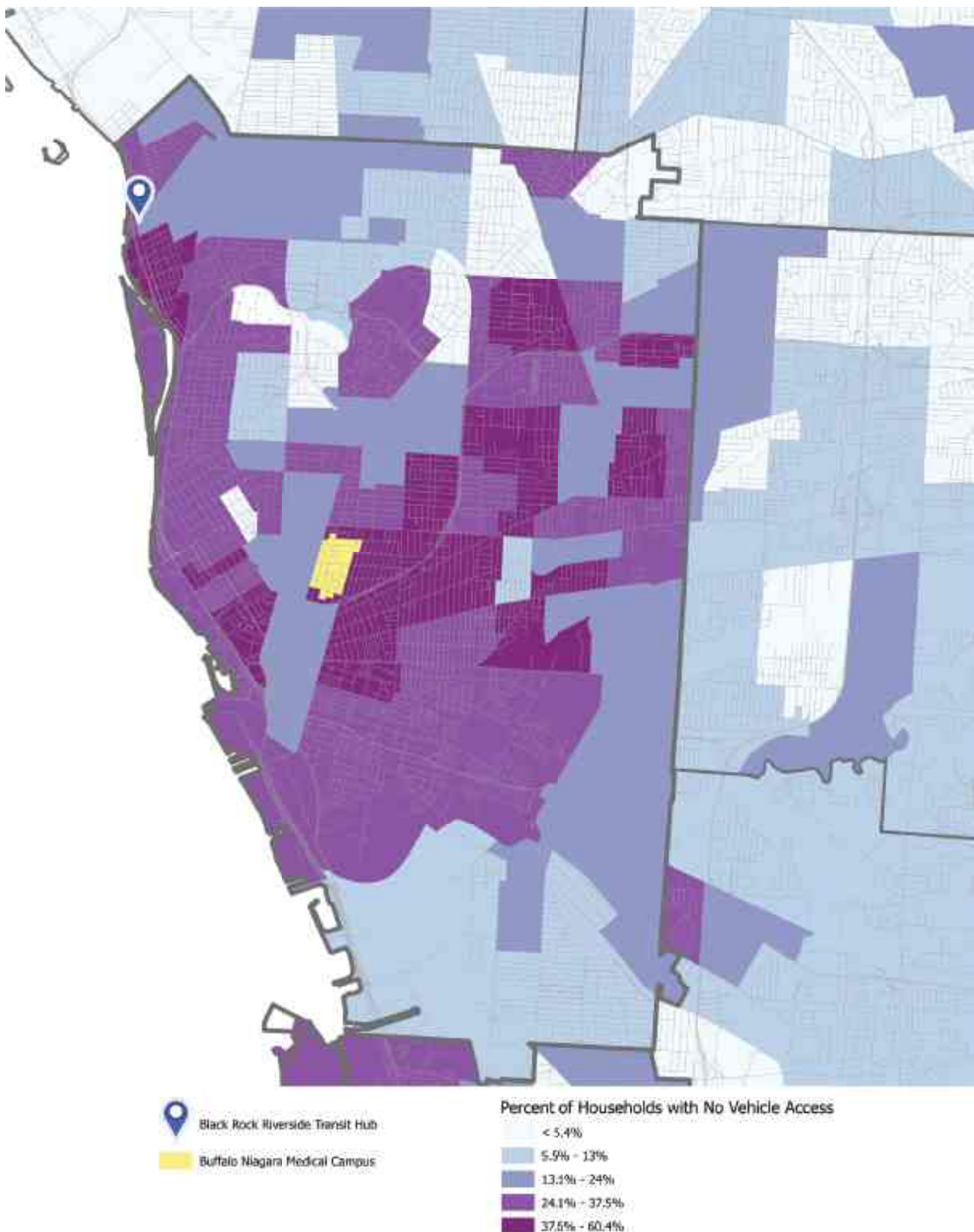


Figure 9: Percentage of Households with No Vehicle Access

Figure 10 represents the rate of transit commuting in the City of Buffalo. Similar to the rates of households without vehicle access, there is a concentration of transit commuting on the East Side of Buffalo. This, paired with the disparity in vehicle ownership rates and transit commuting rates around the BNMC present an opportunity to improve connectivity to transit to improve commuting patterns for people who need alternative forms of transportation. Similar patterns exist nearby the BRTH.

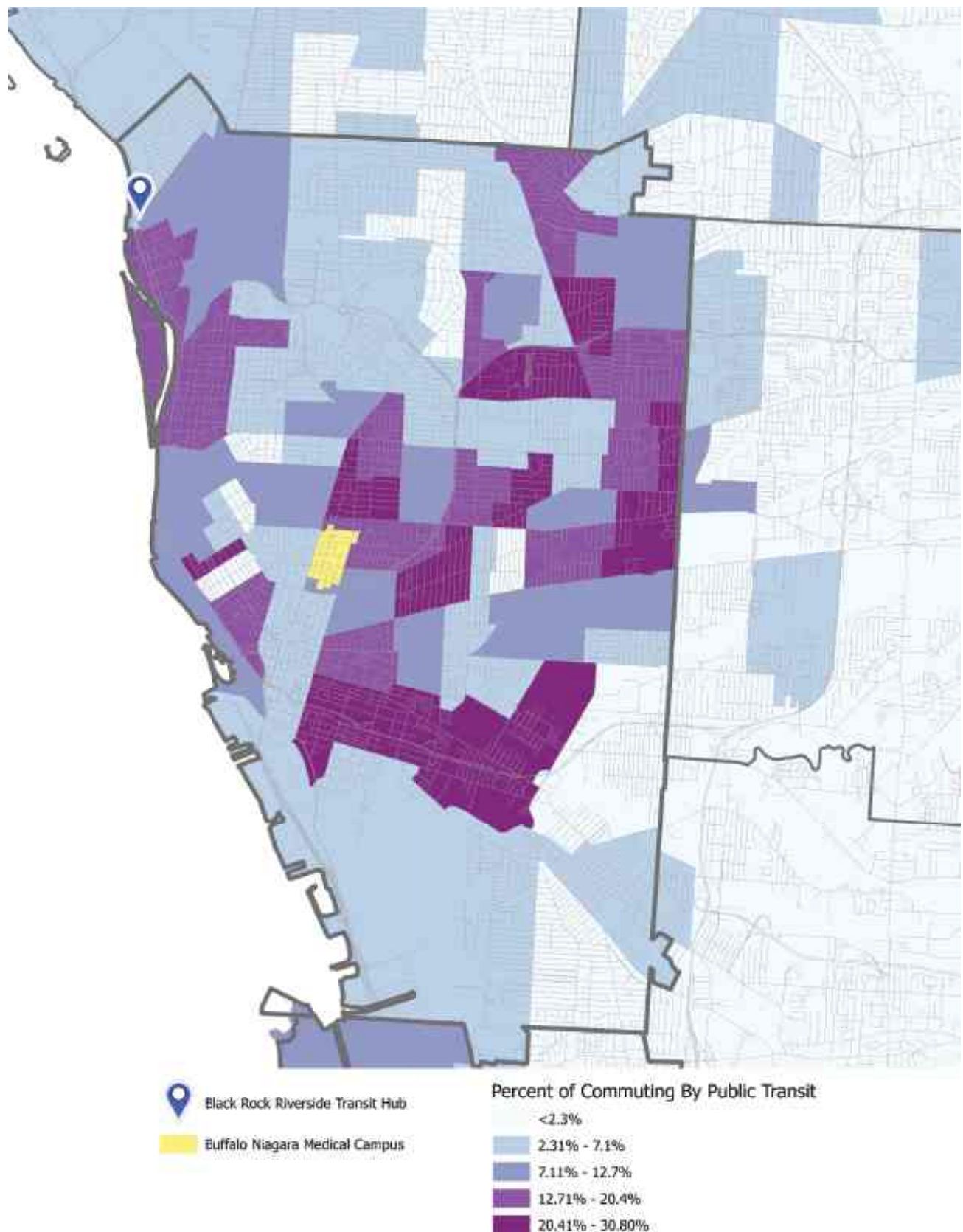


Figure 10: Percent of Commuting by Public Transit



Bike commuting rates are low in the City of Buffalo, averaging just 1.3%. This trend is also true in the tracts in and around the BNMC, with no tracts reaching above the citywide average, and some tracts observing no commuting by bike. Conversely, the Tract 57, which encompasses the BRRTH, sees 3.5% of commuting by bike, despite there being no existing Reddy Bikeshare hubs in the tract. This presents a substantial opportunity to serve the site with additional bike-based mobility options. Figure 11 represents the rates of bike commuting by local census tracts. This presents an opportunity to improve bike-based transportation programs to offer low-cost, on-demand transportation solutions for local residents.

Location	Census Tract	DAC	Percentage of Commuters by Bike
BNMC East of Main Street	Tract 25.02	Yes	0%
	Tract 31	Yes	0%
	Tract 168.01	Yes	1.3%
West of Main Street Adjacent to BNMC	Tract 67.02	No	1%
	Tract 68.01	No	1.3%
Black Rock Riverside Transit Hub	Tract 57	Yes	3.5%
	Tract 58.02	Yes	0%
Buffalo Average			1.3%

Table 3: Percent of commuters by bike

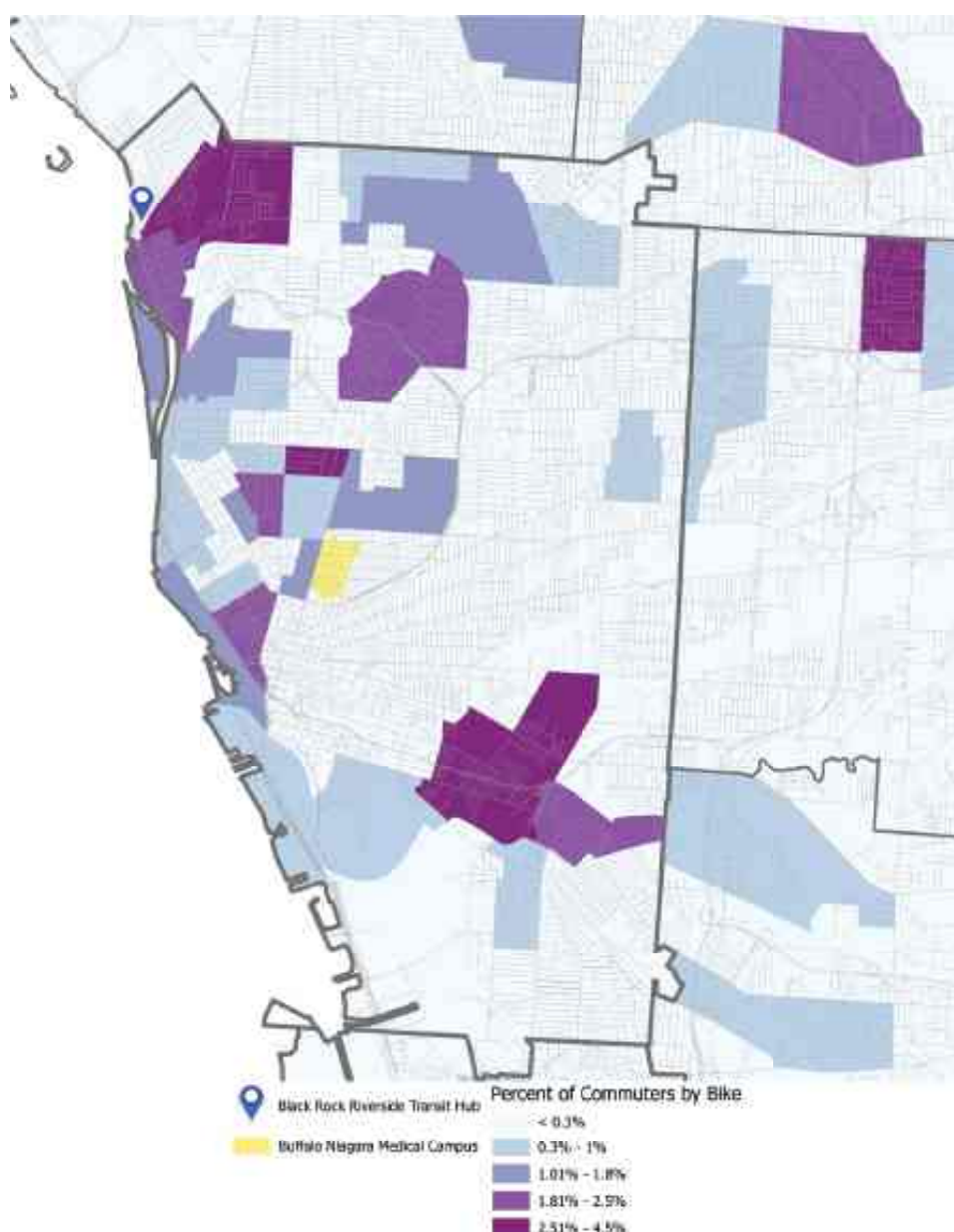


Figure 11: Rates of bike commuting by local census tracts

Mobility Hub Locations

The implementation of the proposed mobility hubs is structured in two phases to reflect varying levels of site readiness, infrastructure availability, and implementation feasibility. Figure 12 represents the location for proposed Mobility Hub integrations in relation to existing mobility-focused projects occurring across Buffalo. This phased approach prioritizes near term higher impact elements, rather than pursuing all of the mobility hub elements explored in this plan at once. The specific elements for each proposed location are based on a mix of community and partner feedback, combined with technical analysis of the capabilities of these sites (discussed further in the technical section).



Figure 12: Proposed Mobility Hub sites and existing mobility projects in Buffalo

- **Phase 1** focuses on locations positioned for near-term deployment, supported by existing site ownership, strong transit connectivity, and alignment with immediate community mobility needs.
 - Electric Mobility Charging depot at 821 Washington Street will include charging infrastructure for micromobility, electric micromobility lockers and a dedicated EV car sharing maintenance area equipped with fleet charging and battery storage capabilities.³ Stakeholder input emphasized the importance of safe and reliable charging near office and campus residential facilities, which informed the inclusion of on-site storage.
 - The Electric Mobility Hub at 941 Washington Street, which is adjacent to NFTA's Allen/Medical Metro Rail Station, will build upon existing interconnectivity and amenities at the site by adding, EV car sharing locations supported by dual-port EV charging stations, electric micromobility lockers and charging infrastructure for micromobility
 - The Electric Mobility Hub at the BRRTH will build upon existing interconnectivity and amenities at the site by expanding bikeshare services and EV charging infrastructure for EV car sharing services
- **Phase 2** includes any aspects of the above sites that may need to be added on later. Factors such as the need for land acquisition, infrastructure upgrades, or coordination with pending development projects contribute to their longer timeline.
 - The Electric Mobility Hub at 941 Washington Street may include additional charging infrastructure of the Buffalo All Access program as part of a Phase 2 of the mobility hub project. Building on Phase 1 improvements, Phase 2 could introduce a bus charging station to support the Buffalo All Access SDS once fully deployed, enhancing the site's role as a multimodal anchor within the BNMC. Since there are some aspects related to land ownership and jurisdiction with the 941 Washington Street site, there may be other aspects currently listed in Phase 1 that might need to be transitioned to Phase 2.

This phased approach allows for early demonstration of clean mobility solutions while planning for scalable, long-term growth that aligns with broader sustainability and equity goals.

Operations

HDS Electric On-Demand Shuttle

Under the current scope of Buffalo All Access, operations for the Buffalo All Access HDS are managed by the NFTA, as an extension of their Paratransit Access Line (PAL). People within the on-demand HDS service area can request curb-to-curb service through the Buffalo All Access App developed by Etch, which will then prompt a PAL vehicle, driven by an NFTA Paratransit Operator, to pick up the passenger and drop them off at their destination, so long as the trip starts and end location are within the 4 square mile service area. The program will be piloted beginning in September of 2025. The program is slated to operate 8 hours a day on weekdays, excluding federal holidays.

All PAL vehicles are designed with accessibility in mind, making it a practical option for people with disabilities and other mobility limitations. The vehicles used in the Buffalo All Access feature a low floor design, a low-angle foldable access ramp, 8 fixed forward-facing seat positions, 6 folding side-facing seat positions, and 3 wheelchair positions. The vehicle is gas powered, with a claimed highway fuel efficiency of 18 miles per gallon and has a base weight of 9,350 pounds. The NFTA estimates the vehicle has 240 miles of range for regular service.

The addition of 1-2 electric shuttle vans to the HDS fleet will allow increased capacity, service area, and the possibility of converting operations to all-electric. As shown through the community engagement, there was interest in expanding the service area outside the existing boundaries to better serve community needs, which a larger electric fleet could help support. While operational funding for the pilot has been secured, additional capital is needed to purchase electric vehicles and expand service beyond the current boundaries. For the near-term program, the gas-powered vehicles have already been purchased, and EVs would be added to the existing fleet rather than replacing them. Staffing for operations will continue to be supported through the Buffalo All Access grant, while CMP funding would be used specifically for EV capital purchases. Ongoing staffing and operations would remain covered by Buffalo All Access and other NFTA funding sources that have already been earmarked for the HDS's continued operations of a 5 year period.

3. In conversations with Mobility Development Operations (Operator of Buffalo CarShare), there is preference for having a maintenance area for carshare vehicles and backup charger at the Electric Charging Depot. For more information see Technical Section below.



SDS Electric Fixed-route Shuttle

As part of the Buffalo All Access program, the SDS service is being deployed on the BNMC through a partnership between ADASTEC Corp. and Vicinity Motor Corp. Operations and deployment oversight are being led by a multidisciplinary team of faculty at the UB with funding support from the U.S. DOT ITS4US Deployment Program. The shuttle is equipped with ADASTEC's automated driving platform, which integrates advanced sensors and AI systems to enable safe navigation in dense urban settings and adverse weather conditions. To comply with New York State autonomous vehicle regulations, the SDS will operate with a human driver on board at all times. The program will be piloted beginning in September of 2025. The program is slated to operate 8 hours a day on weekdays, excluding federal holidays.

The Vicinity Autonomous Lightning EV is a full-sized, fully electric shuttle designed with year-round accessibility in mind. The vehicle will include on-board attendants and is equipped with accessibility features that support the needs of older adults and individuals with disabilities. Service will initially operate on a fixed route within the BNMC campus, with the potential for future route expansion to better serve surrounding DACs.

Charging Infrastructure

The proposed mobility hubs and other shared mobility options are planned to operate 24 hours a day, 7 days a week, year-round ensuring consistent access to transportation options for shift workers, healthcare staff, residents, people in need of healthcare services, and others with non-traditional schedules. Round-the-clock availability is particularly critical for communities surrounding the BNMC and other DACs, where limited off-peak transit service can pose a significant barrier to mobility (residents of these communities are less-likely to work 9-5 weekday jobs).

Ongoing operations will require coordination between Buffalo All Access project partners, Reddy Bikeshare, EV car sharing providers, and micromobility charging infrastructure providers to ensure smooth integration, safety, and optimal user experience. Maintenance schedules, security protocols, and digital support systems will be designed to support continuous year-round 24/7 functionality.

Utilizing an electrified in-hub bikeshare charging will also aid in operations for local bikeshare service. This will reduce the need for manual battery swaps, thereby reducing operational vehicle miles traveled. Furthermore, it will improve uptime of the e-bike fleet.

Outdoor charging infrastructure for personally owned electric micromobility devices will improve access to secure storage and charging of devices, as well as significantly enhance safety protocols across the BNMC. By establishing designated, weather-protected outdoor charging stations, the campus can reduce reliance on indoor charging, which poses a heightened risk of fire. This is particularly important given the potential for lithium-ion battery malfunctions, such as thermal runaway, a dangerous condition in which a battery overheats uncontrollably and may ignite.

Installing purpose-built charging infrastructure outdoors allows for safer energy transfer, often including safeguards such as automated shutoff timers; mitigating risks associated with overcharging, which is a common cause of battery fires. In contrast to improvised charging methods indoors, such as plugging devices into standard outlets without proper oversight, these units are designed to align with fire safety best practices for handling electric mobility equipment. Moreover, outdoor charging stations can be equipped with locking mechanisms, physical containment units, or fire-resistant housing to further enhance risk management. Encouraging staff and campus users to charge devices at these designated areas not only standardizes safe behavior but also reduces the strain on indoor electrical systems and minimizes potential hazards to buildings and occupants. By proactively addressing charging safety, the campus positions itself as a regional and statewide leader in responsible micromobility integration, encouraging safe utilization of electric micromobility devices.

Market Analysis

BNMC is surrounded by several historically underserved neighborhoods, including Fruit Belt, Masten Park and Allentown, where many residents face transportation challenges such as limited access to public transit, low vehicle ownership and poor first and last mile connectivity. Residents of these neighborhoods could stand to greatly benefit from clean mobility hub improvements explored in this plan. Importantly, both the HDS and SDS under Buffalo All Access are free to riders, lowering financial barriers and making them valuable for DACs.

Geography (ACS 2018 tracts)	Percent 0-vehicle households	Percent population 65+	Percent poverty	Percent Black	Percent Hispanic / Latino	Percent limited English ability	Percent income <\$25k	Percent with a disability (18 to 65 yrs. old)	Percent veteran	Percent commute by transit	Total households	Total population
Fruit Belt	47.0%	21.9%	28.0%	77.0%	8.9%	4.2%	39.5%	20.0%	6.7%	16.1%	976	2,435
Allentown	18.4%	6.2%	28.8%	7.2%	6.6%	0.0%	17.4%	8.0%	7.8%	4.8%	1978	3,143
Masten Park	35.0%	18.5%	34.7%	89.7%	3.1%	2.9%	38.9%	15.2%	6.6%	11.7%	1496	3,208
Buffalo MSA	36.6%	12.0%	31.1%	36.6%	11.6%	4.8%	30.7%	9.7%	5.7%	11.5%	110701	255,423

Table 4: Table with demographics of the BNMC's surrounding neighborhoods (poverty and car ownership)

Vehicle Ownership Rates

As discussed in the previous section on Transportation Characteristics, the rate of households without access to a vehicle exceeds the citywide rate both in the tracts encompassing the BNMC east of Main Street, as well as the tracts in and around the BRRTH. These tracts also see a disparity from the percentage of households without vehicle access and the percentage of commuters that utilized public transportation that outpaces the disparity citywide.

In total, of the studied census tracts, 2,588 households do not have access to a vehicle, and 7,096 households have access to one or less vehicles, accounting for 8.3% of all such households in Buffalo. The total number of households for these tracts account for 7.7% of households in the City of Buffalo, meaning car ownership rates are disproportionately lower in these tracts.

Location	Census Tract	DAC	Households without Vehicle Access	Households with access to 1 vehicle	Households with access to one or less vehicles
BNMC East of Main Street	Tract 25.02	Yes	433	448	881
	Tract 31	Yes	473	413	886
	Tract 168.01	Yes	387	552	939
West of Main Street Adjacent to BNMC	Tract 67.02	No	450	1,049	1,499
	Tract 68.01	No	160	409	569
Black Rock Riverside Transit Hub	Tract 57	Yes	288	548	836
	Tract 58.02	Yes	597	889	1,486
Buffalo Total			29,690	55,605	85,295

Table 5: Vehicle ownership disparities in BNMC and BRRTH areas

Shared Mobility and Charging Infrastructure

Micromobility Charging

With over 16,000 employees across 120 acres, the BNMC is one of Western New York's most concentrated employment centers. Home to hospitals, schools, startups, and other major employers, it draws a high volume of daily commuters. As more people use e-bikes and e-scooters, the need for reliable outdoor charging options has grown. Stakeholder feedback highlighted concerns about indoor charging, including fire risks and the difficulty of lifting heavy devices up stairs and therefore investigating the installation of safe, affordable outdoor charging stations is an important next step. Given the concern about indoor charging that was evident through community engagement efforts, it is clear that this service is needed. However the scale of the market for these services is unknown, and will be something that this project will investigate further. The BNMC in collaboration with SMI is currently testing a battery swapping technology unit from Swobbee, and is experiencing positive uptake thus far.

While safe, publicly accessible electric micromobility charging has been a big focus of investment and solution piloting downstate in New York City, there is no one in Upstate and Western New York focussed on developing scalable solutions to this growing area of need. BNMC has long been on the cutting edge of transportation demand management and promoting alternatives to single-occupancy vehicle based commuting. As such, the BNMC is well positioned to pilot and develop charging solutions for personally owned micromobility users.

Reddy Bikeshare

Micromobility in Buffalo was first piloted in partnership with the BNMC in 2012 with the launch of Reddy Bikeshare. Now one of the longest continually running micromobility programs in the country, Reddy has operated continuously for nearly a decade. The system currently includes more than 100 station locations and a fleet of 475 shared bicycles, enabling over 750,000 miles of bikeshare trips to date. In 2023, Reddy expanded its offerings with the introduction of Reddy+, a pedal-assist e-bike option that further enhances accessibility and range. A key mission of Reddy Bikeshare has been to provide affordable access to bikeshare in Buffalo and Western New York made possible by sustaining funding from Independent Health, a local health insurance provider.

Reddy Bikeshare has three bikeshare hub locations in and around the BNMC's campus hosting 25 bikes. These include two bikeshare hubs that correspond with the two NFTA Metro Rail stations on campus and one at the intersection of Virginia and Ellicott streets. There is not currently a Reddy Bikeshare station at the BRTH, nor are there any stations in close proximity.

Reddy Bikeshare provides access to Global Positioning System (GPS) enabled bikes that support the first and last mile connection for employees, students and visitors. As part of its transportation demand management strategy, The GO BNMC program offers free annual Reddy memberships to students and employees across the canopies, encouraging more active, accessible and car-free commuting. The mobility plan proposed to further integrate Reddy Bikeshare into the mobility hub by enhancing bikeshare hub coverage, improving connectivity and addressing infrastructure gaps that limit use in the DAC neighborhoods. Reddy Bikeshare currently charges a \$3 setup fee and \$0.10 per minute under its Pay-As-You-Go plan, or an Annual Pass of \$40 per year with discounted per-minute rates.



Figure 13: Reddy Bikeshare station ⁴

4. Reddy Bikeshare. "Reddy Bikeshare Launches 9th Season Featuring E-Bikes and East Side Discount Pass." Reddy Blogshare, April 27, 2023. <https://www.reddyblogshare.com/blog/reddy-bikeshare-launches-9th-season-featuring-e-bikes-and-east-side-discount-pass>



Bringing Carshare Back to Buffalo

BCS was a nonprofit mobility provider that operated in the City of Buffalo between 2009 and 2015. While the program was a deeply impactful and financially sustainable service, New York State insurance regulations led the program to cease operations. The program launched with four vehicles and expanded to a fleet of 19, providing over 35,000 trips and logging more than one million miles. Its mission focused on serving individuals without access to a private vehicle, including older adults, low-income residents, and people with disabilities.

By 2012, the program had nearly 600 members, 66% of whom did not own a vehicle. Over 80% of members used the service for grocery shopping, and 30% had used it at least once to access a job interview. Member survey data from 2012 also indicated that BCS helped take an estimated 87 private vehicles off the road that year. Although the program is no longer operational, BCS served as an early example of equitable, low-emission transportation in Buffalo. Its innovative model influenced later clean mobility efforts across the city and region. The program was eventually absorbed by Zipcar right before they existed in the region. At this point, no operator has replaced the service.

Recent updates to New York State's Insurance regulations have made community based car sharing programs feasible again. Furthermore the current funding environment for car sharing in Buffalo presents a timely opportunity to reintroduce and expand service, particularly with a focus on electric vehicles and equity. In 2024, the City of Buffalo was awarded \$1.3 million through CMAQ to support the deployment of electric car sharing (and electric bikeshare as well) in downtown municipal lots. However, implementation has been delayed partly due to shifts in the city's political leadership.⁵ In addition, a New York State Department of Environmental Conservation (NYSDEC) Community Impact Grant was awarded in order to support two electric car sharing vehicles on Buffalo's West Side (another DAC). Both the CMAQ and DEC grants are expected to be kicked off some time in 2025, with Mobility Development Operations being named as the operational partner for both proposals.⁶

Separately, Clean Mobility Buffalo is planning to deploy an electric car sharing program on Buffalo's East Side. Although the program has not launched, this funding has catalyzed the growing need of this service. Currently this project is investigating EV charging locations on the East Side with the potential of bringing in a service provider as well. The lack of EV charging infrastructure has been one major reason for delayed deployment.

Together, these past and present efforts exemplify the community and stakeholder interest in bringing back an affordable, community based car sharing program. With multiple funding streams aligned and implementation partners identified, BNMC and other local stakeholders are well positioned to support and amplify these efforts through infrastructure, outreach, or complementary programs. The newly relaunched BCS pilot (August 2025) offers electric vehicles at \$7 per hour.

Annual Household Income

The census tracts surrounding the BNMC east of Main Street, as well as the tracts encompassing the BRRTH fall well below the median household income for the City of Buffalo, with the tracts surrounding the BNMC earning on average less than 65% of the citywide median income. Figure 14 visualizes the median household income distribution across the City of Buffalo and Table 6 highlights the median income for the census tracts compared in this study. This, paired with the existing disparities in household vehicle ownership rates and public transportation usage, indicate a substantial need to establish and reinforce mobility programs that are affordable.

5. Mayor Byron Brown, who was supportive of the CMAQ initiative, stepped down from office. Temporary administration, coupled with a new election has delayed this project.

6. It is unknown contractually where both CMAQ and DEC currently stand



Figure 14: Median Household Income

Location	Census Tract	DAC	Median Household Income
BNMC East of Main Street	Tract 25.02	Yes	\$25,972
	Tract 31	Yes	\$29,494
	Tract 168.01	Yes	\$26,886
West of Main Street Adjacent to BNMC	Tract 67.02	No	\$46,346
	Tract 68.01	No	\$70,617
Black Rock Riverside Transit Hub	Tract 57	Yes	\$42,500
	Tract 58.02	Yes	\$43,802
Buffalo Average			\$48,050

Table 6: Median income disparities near BNMC and BRRTH

Project Partners

University at Buffalo is already a project partner of Buffalo All Access. UB has three sub-entities that relate to this project:

- **Jacobs School Of Medicine And Biomedical Sciences**, serves as a major academic and clinical institution on the BNMC campus, they contributed essential insights into the travel patterns of medical students, faculty and staff. Their participation supports mobility planning around campus accessibility and infrastructure needs for healthcare commuters
- **Parking & Transportation Services**, plays a central role in managing campus mobility patterns, parking infrastructure, and the integration of shuttle services and micromobility options within the existing transportation network.
- **School of Engineering and Applied Sciences**, provides technical expertise in data modeling, system design, and pilot implementation, especially in areas related to electrification, smart mobility, and multimodal planning.

Innovation Center at the BNMC campus houses a mix of startup, nonprofits and co-working spaces with a high level of active transportation use. Stakeholder input emphasised the need for secure e-bike storage, micromobility charging infrastructure and improved wayfinding across the campus

Buffalo Place acts as the downtown business improvement district to oversee mobility and public realm efforts across the main street corridor; their participation helped identify key connection points between the BNMC and downtown transit, retail and employment zones.

Heart of the City Neighborhoods (HOCN) is a nonprofit community development corporation focused on housing stability and neighborhood revitalization across Buffalo's core communities, including the Fruit Belt, Masten Park and Allentown, which directly borders the BNMC. HOCN brings experience in affordable housing, resident engagement and advocacy for equitable access to transportation, healthy communities and environments and infrastructure, their input supports the need and emphasis on accessibility quotient of the mobility plan.

Buffalo Civic Auto Ramps (BCAR) operates the City of Buffalo's parking structures across downtown Buffalo. Their participation supports coordination between shared mobility services and existing parking infrastructure. BCAR's involvement helps identify opportunities to repurpose or co-locate EV charging, car sharing, or micromobility amenities within existing parking assets supporting the mobility hub's integration and long-term operational viability.

Mobility Technology and Industry Partners will play a critical role in vehicle procurement, charging infrastructure and operations. Potential partners include EV shuttle manufacturers (e.g., Endera, Optimal EV), turnkey microtransit operators (e.g., Via, Circuit), and micromobility charging providers (e.g., Bikeep, Swobbee). These partners are not yet confirmed and represent opportunities for BNMC and NFTA.

Technical Feasibility and Recommendations

Electric Shuttle Vehicles

Based on community feedback, one goal identified by the BNMC and NFTA is to explore options for electrifying the HDS vehicle through Buffalo All Access. Since the initiative was funded by the U.S.DOT ITS4US Deployment program, any electric vehicle or associated infrastructure procured through the program will be subject to Buy America requirements.⁷ These federal provisions require that steel, iron and manufactured products used in transportation projects be produced in the United States, with all manufacturing processes and final assembly occurring domestically.

Vehicle options

	Sunset Vans	Endera	Optimal EV	Damera
	 8	 9	 10	 11
Vehicle Name	RP Minibus	All Electric shuttle (B4/B5)	Optimal EV S1	Karsan E-Jest
Vehicle Type	Class2, Low-floor Fully Electric Minibus	Ford E450 Chassis Electric Shuttle	Ford E450 Chassis Electric Shuttle (low floor)	Class 3, Low Floor Electric Minibus
Seating Capacity	8 passengers up to 3 wheelchair seatings	12 to 16 passengers and 1 to 2 wheelchair seatings	9 to 16 passengers and 1 to 3 wheelchair seatings	19 passengers + 1 wheelchair, or 10 + 3 wheelchairs
Buy America Compliance	Yes	Yes	Yes	No (2 years of process time)
ADA Compliant	Yes	Yes	Yes	Yes
Vehicle Delivery Time	2-3 Months	3-6 Months	5-6 Months	2- 3 Months
Estimated Base Cost	\$200,000	range \$290,000 to \$310,000 (pre-tariff)	Range \$300,000 to \$350,000	\$310,000 (including 15% tariff)
Charging Compatibility	Level 2 or DC Fast Charging	Level 2 or DC Fast Charging	Level 2 or DC Fast Charging	Level 2 or DC Fast Charging
Vehicle Range	100 to 125 Miles, 90-100 miles in winter	100 to 135 miles, 20% reduction in winter	135 miles	100 to 130 miles, no significant changes in winter
Energy Features	Regenerative braking and liquid-cooled battery/ motor system	N/A	Battery powered by Proterra	N/A
Potential Cost drivers	Battery size, ramp type, seating layout, branding	seating layout, branding, technical upgrades	seating layouts and tech integrations	seating layouts and tech integrations

Table 7: EV shuttle/van vendor specification and cost estimation

7. Federal Transit Administration. "Buy America." U.S. Department of Transportation. <https://www.transit.dot.gov/buyamerica>

8. Sunset Vans. "Sunset Vans Looks to Revolutionize Mobility Transportation Industry." Sunset Vans, June 9, 2023. <https://www.sunsetvans.com/sunset-vans-looks-to-revolutionize-mobility-transportation-industry/>

9. Endera. 2025 Endera EV Spec Sheet. San Diego: Endera, August 1, 2025. <https://www.enderamotors.com/electric-shuttle-bus>

10. Optimal Electric Vehicles. "S1." Optimal EV. Accessed September 15, 2025. <https://www.optimal-ev.com/s1>

11. Karsan. "e-JEST." Damera Corporation. Accessed September 15, 2025. <https://www.dameracorp.com/ejest/e-jest>



Based on a review of the EV paratransit minibus/shuttle market, there are a few options to consider. The first option is a low floor van conversions, many of which are based on Ford E-Transit or Dodge RAM chassis such as Sunset Vans. These are lower cost than the other options and best match some key features of NFTA's current PAL vehicles such as seating capacity and maintaining low-floor. The second option is an electric minibus such as Endera's B4 or B5 which is not low floor and a bit more expensive. The third option by Optimal EV is also an electric minibus, which has a low-floor design and has a similar price range as Endera. Alternatively, there are other companies like Damera that offer low floor microtransit vehicles, however Damera's manufacturing and procurement operation is not currently Buy American Act compliant.

Per interviews with NFTA, the existing PAL ICE (internal combustion engine) vans have an estimated operational cost of \$100 per hour for 8 hours per weekday (excluding federal holidays) over 250 days, NFTA's projected annual cost using gas powered vans is \$200,000 per vehicle (not including the cost of the vehicle itself). While NFTA's own estimate reflects current expense levels, research on electric vans suggests that operational savings are achievable, but typically more moderate than headline figures. A review of vehicle fleets across Europe found that electric vans are on average 25% cheaper per kilometer than diesel vans on a total cost of ownership basis. Using a more modest 15% reduction, to reflect local operating variability, the annual cost would drop to approximately \$170,000, yielding savings of \$30,000 per year. This estimate aligns with real-world performance expectations while allowing for conservative budgeting.

Per information from UB, the existing estimated operational cost of the SDS is also \$100 per hour for 8 hours per weekday (excluding federal holidays) over 250 days. This ongoing cost is largely due to the need to staff the vehicle with a licensed human driver to comply with New York State regulations. An expanded operating schedule beyond the 8 hours per weekday will likely require additional funding, for example if operations were increased to 12 hours per day, 7 days a week, annual operations would jump from \$200,000 to \$438,000. Currently electric consumption for the SDS can be estimated at 140-210 kWh per day, or 35,000-52,500 kWh annually at the existing 8 hours per weekday schedule.¹²

Private Electric Microtransit Companies

Another option for the HDS may be to consider partnership with a turnkey provider of electric microtransit. Via delivers human-operated, data-driven microtransit that typically replaces inefficient routes in less dense service areas such as rural and suburban areas; and Circuit uses small, low-speed EVs to offer hyperlocal, publicly sponsored rides in compact zones. Below are cost estimations based on interviews and research.

Company	# of Vehicles	Total Monthly Cost (Leased)	Total Monthly Cost (Purchased)	Annual Cost (Leased) 12 Months	Annual Cost (Purchased) 12 Months	Upfront Costs
Circuit	3	\$33K-\$45K	\$24K-\$30K	\$396K-\$540K	\$288K-\$360K	-
Via	3	-	\$24K-\$45K	-	\$288K-\$540K	20K

Table 8: Estimated costs for electric microtransit services from Circuit and Via

Circuit offers an ADA configurable van service that utilizes Ford E-Transit vans. These vans have an estimated range between 143 and 156 miles, and a charge time between 8 - 12 hours from empty to full charge on a level 2 charger. The van can hold 8 passengers, including 2 wheelchair users. Additionally, Circuit requires that a minimum of 4 vans be used in the system for Circuit to enter the regional market. Circuit does not currently operate in the region, meaning adaptation to the Buffalo All Access would require utilization of 4 vans. Turnkey operations would cost an estimated \$55 per vehicle hour of operation.

Circuit also allows for several different ownership models. Circuit can own and operate the vehicles, or the program funder can purchase and own vehicles, which can be retrofitted with Circuit fleet technology. This allows for greater flexibility in choosing the vehicles that best suit the needs of the service and comes at a lower upfront cost.

12. According to UB, the energy consumption rate of the SDS is 2.5 kWh/mile. For the existing SDS route which is 2 miles, it is anticipated that this route will take 10-15 minutes on average to make the full loop. With 8 hours of operating time per day (minus 1 hour for driver breaks), there will be 28-42 shuttle loops per day, totalling 56-84 miles per day, or 140-210 kWh per day.

Electric Shuttle Charging Infrastructure

In evaluating the potential for either NFTA or a private turnkey operator to provide on-demand microtransit service to the BNMC, it is important to factor in charging infrastructure placement and capacity. According to NFTA representatives, the current charging infrastructure at their bus facilities is operating at maximum capacity. However, if the selected vehicles are smaller electric vans, such as those described in the previous section, the space, infrastructure and power demands are significantly more manageable, in comparison to an electric bus. This opens up more feasible options for locating chargers either on the BNMC campus, such as at the proposed Electric Mobility Charging Depot at 821 Washington Street, or at the NFTA Frontier Bus Garage. Below are the preliminary cost estimates for installing charging infrastructure to support this scale of service.

Charger Model	Hardware + Software	Install Estimate	Total	Annual Electricity	Annual Software
CT 4000 (Dual-Port)	\$8,750.00	\$3,000–\$7,000	\$5,300 – \$9,300	\$2,200–3,200 ¹³	\$250–350

Table 9: Preliminary cost estimates for dual-port electric shuttle chargers

Prior to final charger selection and sizing, coordination with the local utility provider i.e. National Grid will be required to confirm available capacity, interconnection pathways, and any necessary make-ready work. With the Buffalo All Access on-demand shuttle service scheduled to launch in September, operational data, especially as it relates to electrification, is not yet available. Key metrics such as daily vehicle utilization, route variability, and charging frequency (e.g., charge cycles per day) remain undetermined until real-world operations begin. As a result, operational planning must remain flexible and account for multiple scenarios.

Two potential approaches are under consideration for vehicle charging, maintenance, and staging, each with distinct opportunities and limitations:

Scenario 1: Centralized Charging and Support at Charge Depot

The Electric Mobility Charging Depot at 821 Washington Street will offer a centralized option for charging and vehicle cleaning during off-peak hours or overnight. This site could also serve as a base of operations for drivers and support staff, offering access to restrooms, break areas, and basic amenities.

For private turnkey providers, this model aligns well with standard practice. Many of these companies operate through public-private site agreements, where a shared facility supports day-to-day operations. Such arrangements are critical for ensuring reliability and efficient fleet turnaround.

However, for NFTA, leveraging a non-NFTA property may pose unique administrative and legal hurdles. Operational oversight, insurance, labor rules, and equipment liability are often subject to strict agency protocols.¹⁴ Operating vehicles that are not domiciled on NFTA-owned property may require new inter-agency agreements or special use policies to ensure compliance with state and federal regulations.

Scenario 2: Expansion of Charging Capacity at NFTA Frontier Bus Garage

Alternatively, adding charging infrastructure at NFTA's Frontier Bus Garage could offer a more integrated operational model for NFTA-run services. This approach benefits from existing workforce familiarity, security procedures, and centralized oversight. Charging of the electric HDS vehicles could be accommodated in a parking lot setting, if electric charging infrastructure was added.

This scenario also introduces the need for new internal protocols related to:

13. Assuming 40,000 miles per year with 0.347 kWh/mile at estimated Buffalo electric rates for a Dodge Ram

14. Interview with NFTA

- **Scheduling and dispatch coordination for dynamic, on-demand service**
NFTA will be operating an on demand scheduling and dispatch system for its gas powered PAL vans through the, which could serve as a foundation for the new service. However, adapting that system to accommodate electric vehicles, with considerations like limited range, charging windows, and slower turnaround times, would require significant adjustments. These modifications may include, real-time battery monitoring, and integration with fleet management tools suited to EV-specific constraints.
- **Fleet redundancy and service reliability**
The existing gas powered PAL vans benefit from a large vehicle pool, which allows NFTA to maintain service continuity even if a van is taken out of service due to maintenance, accidents, or operational issues. In contrast, the proposed electrified microtransit service would begin with a much smaller fleet, making it more vulnerable to disruptions. NFTA would need to assess and prepare for this reduced margin of redundancy by developing contingency plans, such as rapid charging protocols, strategic vehicle placement, or agreements with turnkey providers. It remains unclear what the minimum viable fleet size is to maintain acceptable service reliability for this new model.
- **Maintenance**
Maintenance protocols for these smaller electric on-demand vans may differ from traditional bus maintenance and other fleets. NFTA will need to ensure staff are trained on EV-specific procedures and that preventive maintenance schedules are adapted to the unique wear patterns and service profiles of smaller electric vehicles.

General Recommendations: Electric On-demand Vehicles

- Based on feedback from NFTA on operational practices and security considerations, the EV shuttle vehicle may need to be charged at NFTA's Frontier Bus Garage and not at one of the electric mobility hubs. However the option of having charging stations for mid-route/driver break at the Electric Mobility Charging Depot could boost operational efficiencies.
- There are limited options for electric shuttles that are ADA and Buy America compliant. NFTA/BNMC should choose a shuttle based on the information provided in Table 9 that meets the anticipated needed vehicle capacity for the HDS service. Vendors noted that tariffs could cause prices to fluctuate, likely leading to increased costs.
- Evaluate turnkey operators carefully: Turnkey operators may offer streamlined implementation, but given the 5-year commitment between NFTA and BNMC through the Buffalo All Access Program, long-term outsourcing could complicate governance and accountability structures.
- Gradual integration of EVs as HDS: Electric vans should be gradually integrated into the Buffalo All Access launching in September, using gas-powered vans and electric vehicles together to assure reliability of service.
- Leverage grant timelines for strategic planning and learning: Buffalo All Access grant window (2024–2029) and the NYSEDA Clean Mobility Program funding schedule (Q3/Q4 2026–Q3/Q4 2028) offer a strategic runway for both funding and piloting. Lessons learned during these periods will be critical to the success of electrified deployments and system-wide adaptation. The DOT and NYSEDA funding streams offer BNMC and its partners strong startup capital to launch on-demand microtransit services, with the potential to incorporate electrification from the outset. While for-profit microtransit models may appear more affordable for annual operations, they still require public-sector involvement to ensure coverage, reliability, especially in smaller markets.
- Charging infrastructure for the SDS should be considered in Phase 2 due to current site control and land ownership dynamics.
- In conjunction with Phase 2 addition of charging infrastructure of the SDS, UB, BNMC and its partners should consider extending the fixed route to connect more directly to NFTA transit lines and major destinations that serve DACs.
- Explore continuation of SDS service beyond the Buffalo All Access grant window (2024–2029), including potential funding, partnerships, and operational models to sustain the service. Considering the SDS aspects as a Phase 2 of this plan would allow more time to prove the operational readiness and need for this service.

Micromobility Charging

This section examines the technical aspects of charging solutions for micromobility. These solutions include infrastructure designed for personally owned micromobility devices, infrastructure designed for fleets such as delivery work e-bike fleets or e-bikeshare, and infrastructure that is designed for both personally owned and fleet micromobility. While demand for charging solutions for personally owned devices is high, most infrastructure vendors currently focus on specific use cases, such as delivery services, which may not match the needs of a campus like BNMC. The Project Team has conducted research, interviews, and limited testing with several technology providers that could be a good fit for this setting.

Bikeep (charging for personal devices)

Bikeep is a leading provider of secure bike parking and micromobility charging solutions, offering infrastructure that supports both safety and convenience in urban and institutional settings. With a strong international presence, Bikeep's technology is designed to promote active transportation by reducing theft and addressing the growing demand for safe personal e-mobility charging.

Bikeep's product line includes:

- **Bikeep Smart Locker (co-branded with Dero in the U.S.):** A fully enclosed, secure locker system that provides personal bike parking with integrated e-bike charging. These lockers are ideal for high security areas such as campuses, transit hubs, and workplaces, and work with most micromobility devices.¹⁵



Figure 15: Bikeep Smart locker

Bikeep Smart Rack: A robust U-lock style vertical arm rack that allows users to secure their personal e-bike or scooter while also plugging into built-in charging ports. This product supports both short and long term parking and integrates with mobile payment and access systems.¹⁶



Figure 16: Bikeep SMART Rack

15. Bikeep. "The Station: Bikeep in the US." Bikeep. Accessed September 15, 2025. <https://bikeep.com/the-station-bikeep-in-the-us/>

16. Dero. "Bikeep Smart Bike Station." Dero. Accessed September 15, 2025. <https://www.dero.com/product/bikeep-smart-bike-station/>

Both solutions support user authentication, remote monitoring, electronic payment processes and data analytics, making Bikeep a comprehensive tool for cities and institutions looking to expand safe and sustainable micromobility options.¹⁷

Bikeep has deployed smart micromobility charging infrastructure in over 30 cities globally, including major sites in North America, Europe, and Oceania. Notable U.S. installations include Jersey City, Ronald Reagan National Airport, and the San Francisco Bay Area, with others in cities like Vancouver, London, and Reykjavik. These systems support both secure parking and e-bike and e-scooter charging, often backed by partnerships with transit agencies, airports, and corporate sponsors. Table 10 represents the approximate costs related.

Company	Type of Unit	Unit Cost	IOT Yearly	Electricity Yearly	Notes
Bikeep	Electric Bike Locker	\$5,000	\$500	\$23	\$1-\$10 per month of revenue per member
	Smart Charging Hub	\$18,000	\$10,000	\$115	5 bike hub, 1-\$10 per month of revenue per member

Table 10: Estimated costs for Bikeep electric bike lockers and smart rack

PopWheels/Swobbee/Others (battery cabinets, swapping technology)

Battery swapping infrastructure offers a fast alternative to plug-in charging, especially for gig workers and micromobility fleets. Swobbee, based in Berlin, focuses on modular stations for e-bikes and scooters, and is currently being piloted in New York City for use by delivery workers looking for a safe and secure means of charging their e-bike batteries. It requires specific battery types and is best suited for fleet use with standardized equipment. Swobbee indicated that adjustments to their technology for shared micromobility services is possible.

PopWheels, a New York City based company, provides charging solutions for delivery workers using e-bikes through a monthly subscription, supporting about 90% of popular delivery e-bikes. While both Swobbee and PopWheels systems reduce fire risks and downtime, their limited battery compatibility makes them less ideal for public, all user applications. Compared to solutions like Bikeep which are compatible with all types of e-bikes, Swobbee and PopWheels are likely not the best solution to use in the context of this project, serving workplaces or residential uses. Swobbee and PopWheels may be an option for fleet use for shared micromobility vendors, however the exact costs associated, are not known given their current financial model centered around delivery workers.¹⁸



Figure 17: Swobbee unit being tested on the Buffalo Niagara Medical Campus

17. Both Bikeep solutions require the user to bring their charger with them

18. Based on information reported through interviews with Swobbee, adjustments to their battery locker for private fleet maintenance use may be feasible. Total costs for a 12 battery charging system is around \$15,000.

re:Charge / KNOT / Swiftmile (semi-public and shared system micromobility charging)

KNOT, re:Charge, and Swiftmile provide publicly accessible infrastructure for charging micromobility devices, but each comes with limitations. KNOT and re:Charge rely on proprietary hardware that must be retrofitted to a personal device before charging is possible. Swiftmile, while technically universal for specific types of privately purchased bikes (not all), is primarily deployed through fleet partnerships and city programs, making it less compatible with personal devices. While all three aim to support public or semi-public use, their systems are best suited for shared services (bikeshare/scooter share), fleet operators, or controlled access environments. Determination of costs associated with these three products is a little more complicated due to the need to integrate with specific bikes.

Shared Micromobility Services

Electric Bikeshare

Reddy Bikeshare, Buffalo's micromobility service, does not currently charge e-bike batteries through on-street/outdoor charging infrastructure. Instead, batteries are currently charged at a central maintenance facility and then distributed to bikes with low charge levels through a set of swappable batteries. In 2023, Reddy completed a test of re:Charge's charging station technology at one location on the BNMC which yielded positive, but limited results because of the size of the deployment.

If electric infrastructure is desired, costs associated with upgrading the existing fleet of e-bikes need to be considered in order to be compatible with new charging technologies. Table 11 represents this estimated cost.

Company	Bike Upgrade	Total bikes	Total Bike Cost	Total Electric Racks	Rack Cost	Install	Upgrades/ Construction	Total Electric Racks	Grand Total (Racks and Bikes)
re:Charge-e	\$765	150	\$114,750	100	\$290,000	\$25,000	\$15,000	\$330,000	\$444,750

Table 11: Estimated costs for upgrading Reddy Bikeshare fleet with re:Charge-e infrastructure

Assuming a utility rate of \$0.15 per kWh, the estimated annual electricity per rack will be approximately \$25.00.

Shared Scooters

At present, there are no shared scooter services operating in Buffalo. Ongoing controversy surrounding scooters has contributed to the City's hesitation in moving forward with implementation, pending the development of a viable and well managed operational model. Key concerns have included sidewalk trip hazards, helmet use, and overall rider safety. These issues have been reinforced by several recent news reports highlighting injuries related to personal scooter use. The City of Buffalo is currently in the process of evaluating legislation that would regulate personal scooters and potentially create a framework for permitting a shared scooter provider in the future.

General Recommendations - Micromobility

- Bikeep currently appears to offer the most comprehensive e-bike charging solution for personal e-bike on the market. However, issuing a Request for Proposal (RFP) may increase awareness of BNMC's mobility goals, attract additional vendors, and surface emerging technologies in this constantly changing industry.
- Pilot one or both of Bikeep's charging solutions at the 821 Washington Street site. This site offers a visible and accessible location for evaluating user experience, performance, and maintenance. If successful, these solutions can be replicated at other sites on the campus (941 Washington Street, Phase 2 of this proposal) and replicated in other private developments around the city and region.
- Surveys and stakeholder input did not identify an immediate use case for public micromobility charging at the BRRTH.



However, monitoring the BNMC micromobility charging infrastructure pilot may provide useful insights and influence future perceptions or interest.

- re:Charge's successful pilot with Reddy Bikeshare in 2023 presents a valuable opportunity to further innovation at the BNMC, while also supporting equitable access to clean mobility for low-income individuals.
- Swobbee/PopWheels technologies have the potential of performing battery swapping for fleets of micromobility vehicles. With product adjustments, these may be utilized by shared systems. PopWheels, as of July 2025, is piloting personal charging lockers in New York City.
- Universal charging plugs for micromobility is not a common standard at this point, however industry wide development is currently underway to create this standard for personal charging stations.

Electric Carshare

Since the closing of BCS, there has not been a similar service serving Buffalo with affordable access to car sharing. This gap contrasts with trends in peer cities in New York. Both Rochester and Albany currently offer car sharing programs that include options tailored to disadvantaged populations, often supported by public dollars. EV car sharing, in particular, presents a valuable opportunity to meet the transportation needs of underserved communities while advancing sustainability goals on the BNMC campus and citywide.

The reintroduction of car sharing in Buffalo, especially through an electric vehicle model, could fill a critical mobility gap and align with BNMC's commitment to innovation, equity, and climate-conscious solutions. Strategic partnerships, supportive infrastructure, and alignment with existing transportation services will be key to exploring feasibility and long term success. Carshare also relates to NFTA's commitment to provide public transportation services and they, like CDTA, might explore car sharing as another option for customers that do not have access to a vehicle of their own.

Current Providers

The national landscape for electric car sharing remains limited, particularly for smaller or mid-sized markets like Buffalo. As part of the Clean Mobility Buffalo Project, an extensive scan of potential operators identified only a few/in any viable providers.

Zipcar, once active in Buffalo, has since exited the region and, more broadly, has shifted away from expanding into smaller markets. Enterprise CarSharing, similarly to Zipcar, has limited deployments in small markets and mostly focused on university campuses. Mobility Development Partners¹⁹, currently leading electric car share efforts in Upstate New York cities of Rochester and Albany has strong local roots—its founder previously operated BCS. However, projects in Buffalo have faced delays and are not yet active (CMAQ/DEC).²⁰

Smaller, emerging providers such as Zero Emission Vehicle Cooperative (ZEV Co-op), a Seattle based cooperative focused on electric car sharing, may present future opportunities. However, their operations remain localized, with minimal deployments outside their current region, they have no ties to the region, they have limited experience and they may not be able to be insured in New York.²¹

Finally, Turo, a peer-to-peer car sharing platform, represents a different model from traditional fleet based vehicle sharing services. While it may offer some value in expanding access, electrifying Turo's model poses challenges. Deploying an electric vehicle in a focused Turo initiative in Buffalo would likely require additional exploration if even feasible.

19. According to Mobility Development Partners, turnkey costs for car share car sharing is 20-30K, not including electric charging infrastructure costs.

20. Mobility Development was not selected for Clean Mobility Buffalo's carshare operator.

21. Smaller carshare entities may have issues securing needed insurances in New York State.

EV Charging Infrastructure

Publicly available EV charging infrastructure on the BNMC campus is currently provided by ChargePoint. While additional charging stations for electric car sharing will serve a dedicated function, using the same technology platform will simplify maintenance, streamline vendor coordination, and reduce administrative burden. The NFTA has not expressed a specific preference for charging equipment at this time. As shown in Table 12 the CT4000 is ChargePoint's most widely used Level 2 public charging model, featuring dual ports, user-friendly functionality, and compatibility with BNMC's existing systems. While BNMC currently leases equipment from ChargePoint, the costs outlined below represent potential purchase options for both BNMC and NFTA as lease agreements vary in cost due to many factors.

Charger Model	Hardware + Software	Install Estimate	Total	Annual Electricity ²²	Annual Software
CT4000 (Dual-Port) Level 2 ²³	\$8,750	\$3,000–\$9,000	\$11,750 – \$15,750	\$1200-\$2000	\$400-600

Table 12: Estimated purchase and installation costs for dual-port chargers

The team also investigated energy storage solutions that could help support Level 3 charging, talking with local energy storage company Viridi. While this may be a potential option down the road, Viridi's current technology is not able to support Level 3 charging given the potential for battery degradation and malfunction if used for this purpose.

General Recommendations - Car sharing

- Engage with the City of Buffalo's new administration to confirm updated timelines for the deployment of the CMAQ funded electric car sharing program. This downtown mobility hub project is strategically positioned to connect with existing and planned hubs on the BNMC campus and at the BRRTH and is a big asset to provide charging infrastructure for future car sharing programs.
- Continue tracking progress and learning experiences of the Clean Mobility Buffalo initiative, which has spurred more interest in electric car sharing on the East Side.
- Although smaller in scale, the DEC grant dedicated to the West Side of Buffalo offers a valuable opportunity for partnership and shared learning of car sharing services in a DAC in Buffalo. Collaboration will help inform potential grant applications.
- While options are currently limited, continue tracking smaller or cooperative based models like ZEV Co-op as the market matures. RFP procedures may be an opportunity to understand different models
- Encourage new city leadership in 2026 and beyond to prioritize public EV charging infrastructure in the right-of-way (ROW), as expanded access would benefit both community members and support the successful implementation of electric car share and related mobility programs across the region.
- Enterprise Carshare could be a potential partner through collaboration between the UB and City of Buffalo projects. In smaller markets, attracting for profit providers often requires bundling efforts and support from a major institution like UB to ensure economic viability.
- EV infrastructure management may be more effective if handled by the car sharing vendor, since the ports are exclusively for their use and critical to daily operations—a point raised by both BNMC and potential vendors during SMI's interviewing process.

22. Assuming 20,000 miles per year with, 0.347 kWh/mile at .15 cents per mile.

23. Fast charging was initially considered, but existing National Grid infrastructure cannot currently support it at the locations.

Site Implementation

PHASE 1

Phase 1 focuses on locations positioned for near-term deployment, supported by existing site ownership, strong transit connectivity, and alignment with immediate community mobility needs:

- The Electric Mobility Charging Depot at 821 Washington Street will serve as a comprehensive charging facility for electric mobility, supporting micromobility devices, e-micromobility lockers, car sharing maintenance and EV HDS Shuttle fleet charging, and battery swapping infrastructure.
- The Electric Mobility Hub at 941 Washington Street will enhance existing interconnectivity by introducing electric micromobility charging lockers, e-bike charging infrastructure, and car sharing operations to serve the high volume of students, healthcare workers, nearby residents, and others coming to the BNMC.
- The Electric Mobility Hub at the BRRTH will build upon existing amenities by expanding bikeshare services and adding EV charging infrastructure to support car sharing operations.

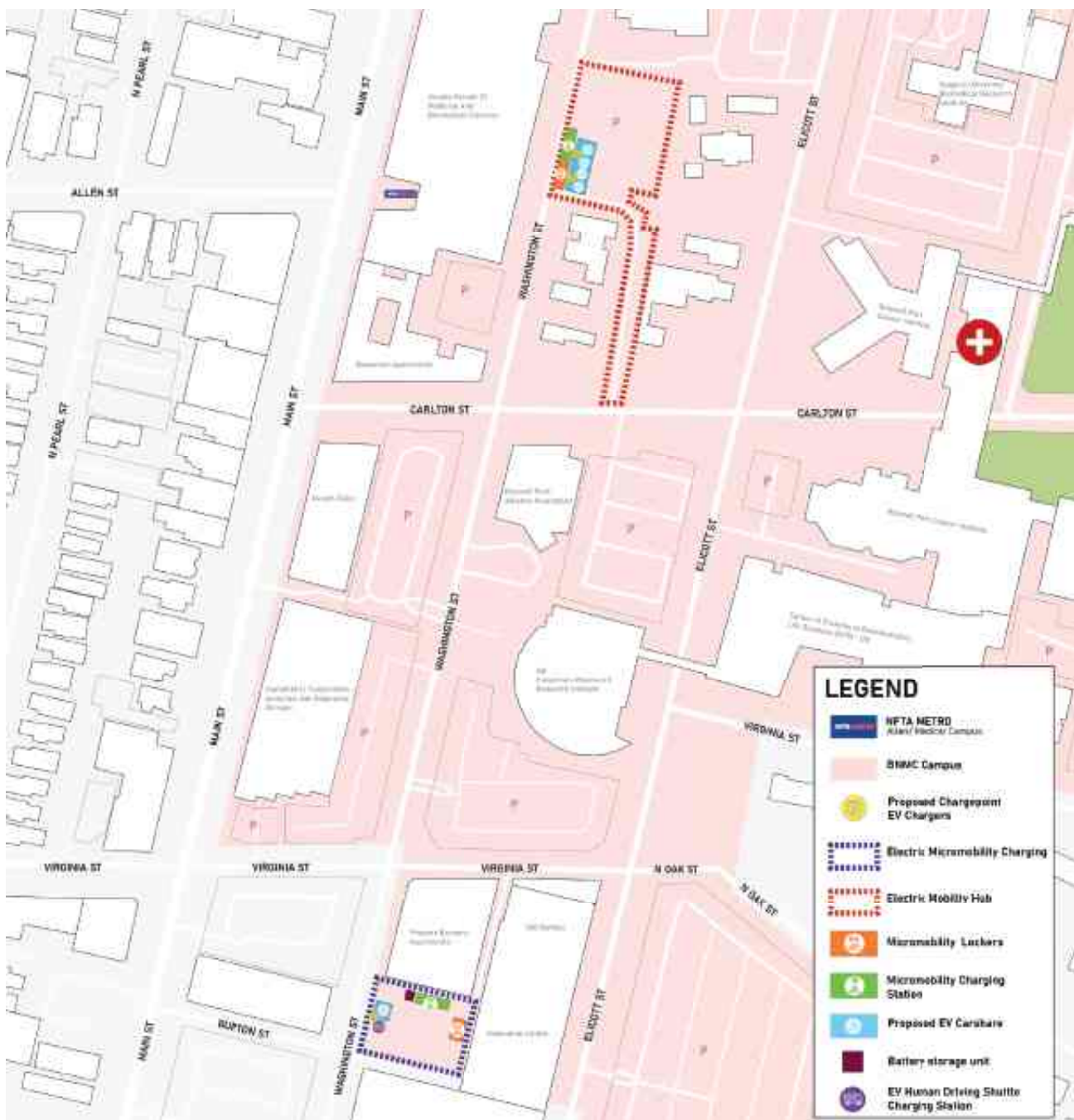


Figure 18: Proposed locations at BNMC

Electric Mobility Charging Depot- 821 Washington Street

The proposed Electric Mobility Charging Depot at 821 Washington Street is currently a BNMC owned parking lot. It is in close proximity to a number of offices and residential buildings. The site was chosen for its ability to provide a secure, fire-safe environment for micromobility charging, helping to mitigate the risks associated with e-bike battery storage in indoor workspaces and residences.

This Charging Depot will include 12 bikeshare docks capable of charging e-bikes. To further enhance safety and convenience, seven Dero electric bike lockers (23' x 7') will be installed, offering tamper-resistant storage and integrated charging for personal e-bikes and scooters. This setup enables employees of nearby offices and nearby residents to securely leave devices outdoors without bringing them into office buildings, which may pose a fire safety risk.

The site may also function as a vital support hub for car sharing operations. While active car sharing vehicles will serve customers at the Electric Mobility Hub at 941 Washington Street, 821 Washington will house one dedicated car sharing space designed for fleet charging and routine maintenance activities. A dual-port EV charger will serve car sharing related vehicles and potential charging of the electric HDS shuttle at this site.

In addition, the installation of a battery cabinet system such as PopWheels or Swobbee will allow for secure battery storage and convenient battery swapping. This infrastructure supports both fleet operators and private electric micromobility users seeking fast, on-demand power solutions. Wayfinding and site signage improvements will guide users to key services, seamlessly integrating the depot into the surrounding urban fabric.

Figure 19 shows the placement of all the above mentioned charging infrastructure, which is recommended to be arranged along the perimeter of the parking lot. This arrangement will allow the bulk of the parking lot to retain much of its existing capacity for periodic maintenance vehicles and deliveries to 640 Ellicott Street. While the plan had initially considered this site to be a charging and storage location for the SDS, the existing parking needs and narrow alleyway that provides access was deemed to be incompatible with the turning radius and overall length of the SDS.



Figure 19: Electric Mobility Charging Depot at 821 Washington Street



Electric Mobility Hub at 941 Washington Street (Phase 1)



Figure 20: Electric mobility Hub at 941 Washington Street

The proposed Electric Mobility Hub at 941 Washington Street is located in a site that is currently a BNMC owned parking lot directly behind the Jacobs School of Medicine at UB and adjacent to the NFTA Metro Rail Allen/Medical Campus Station which also serves 3 NFTA bus routes. This location supports a significant volume of students, daily commuters to the BNMC, and DAC residents. The site's proximity to major hospitals also makes it an ideal location for patients, wage workers, and medical staff seeking reliable first/last mile connections.

The proposed site plan includes 12 bikeshare docks capable of charging e-bikes and personal micromobility devices, along with 10 Dero electric bike lockers (32' x 7') providing tamper-resistant storage and integrated charging for privately owned devices. Four designated car sharing spaces and two dual-port EV chargers will enhance access to shared EVs for residents, workers, and visitors alike. Carshare at this location will complement the other ongoing car sharing initiatives in other areas of the city mentioned in previous sections.

As shown in Figure 20 and Figure 21, the e-bike charging docks and bike lockers will be arranged along the sidewalk in the space between the existing retaining wall on the edge of the parking lot and the sidewalk along Washington Street. The 2 dual-port chargers will be installed directly behind the bike facilities and replace the existing dual port charger that has been non-operational for years. While this site is owned by BNMC, UB and a nearby residential complex has rights to most of the parking spaces. Implementation of the EV charging/car sharing portion of this site may require an adjustment to the University's existing parking agreement for this site.



Figure 21: Conceptual rendering of the Electric Mobility Hub at 941 Washington Street

Electric Mobility Hub at BRRTH

The BRRTH is a key transfer point within NFTA's bus network, located at the intersection of Ontario and Niagara Streets and served by 6 NFTA Bus routes. Positioned within DACs in Buffalo's Riverside neighborhood along active commercial corridors, the site plays a vital role in providing transit access for residents. The site is owned by NFTA and includes a bus loop, a sheltered waiting area and a park-and-ride facility.

The proposed mobility zone will include 6 bikeshare docks equipped with e-bike charging capabilities and two EV car sharing spaces supported by a dual-port EV charging unit. These features will expand low-emission mobility options for transit riders, local residents, students and workers in the surrounding area. These improvements aim to close first/last mile gaps for nearby residents, many of whom lack access to private vehicles and depend on public transit to reach employment, healthcare, and other essential destinations.

As shown in Figures 22 and 23 the bikeshare docks will be placed next to the parking lot and the EV car sharing charger will be placed in the existing park-and-ride lot in the parking spaces that are closest to the entrance to the parking lot. Both of these pieces of charging infrastructure will require a new underground electric conduit coming off the existing bus shelter building, which is in close proximity.



Figure 22: Electric Mobility Hub at the BRRTH



Figure 23: Conceptual rendering of the Electric Mobility Hub at the BRRTH

PHASE 2

Electric Mobility Hub at 941 Washington Street (Phase 2)

While some improvements at 941 Washington Street are deemed more feasible in the short-term due to existing ownership and land jurisdiction, some aspects of the Electric Mobility Hub at this site may be added on later. Mainly, Phase 2 for this site would involve the addition of electric bus charging infrastructure capable of charging the SDS that will be piloted through Buffalo All Access. As shown in Figure 24, the bus charging dock would be situated in the driveway running south from 941 Washington Street behind 937 Washington Street. This is deemed a Phase 2 addition to the site due to unknown site needs for 937 Washington Street as this property is slated for redevelopment into a daycare facility. Additionally, due to delays in the roll out of Buffalo All Access, the pilot SDS program has not launched yet and its long-term feasibility is unknown at this time.



Figure 24: EV Bus charger at the proposed Electric Mobility Hub- Phase 2



Sustainability

Ongoing sustainability for this initiative can be viewed through two distinct lenses: service operations and physical infrastructure. Each shared transportation system—HDS shuttle, micromobility and car sharing—has its own sustainability model rooted in the nature of its service.

Private Microtransit: Notable Successes and Vulnerabilities

Private microtransit companies often rely on a mix of fare revenue and public subsidies to succeed. For example, Via's partnership with Wilson, NC resulted in soaring ridership in a small city context when fixed routes were replaced with on-demand vans. Similarly, Circuit's all-electric shuttle service in Washington, D.C.'s Southwest Mobility Innovation District provides fare-free, short-distance transit supported through public and business improvement district partnerships. Despite these successes, many services falter: GoGastonia in North Carolina scaled back operations once profitability dipped, and high-profile startups like Bridj and Chariot exited the market entirely when fare revenues couldn't meet expectations. These outcomes suggest that for-profit microtransit sustainability depends heavily on dense local demand, strong and ongoing public subsidies, or integration into established public transit systems.

SDS Expansion

SDS technology is a relatively recent phenomenon and there are few nationwide existing precedents to look at when understanding the long-term sustainability of the service. That being said, UB's role as the overseer of SDS operations provides an excellent pathway towards longer term integration of SDS technology into both UB's transportation services connecting its three main campuses and its engineering school research as well as educational components. Long term sustainability of the service may be further bolstered through the identification of a viable charging and storage location in conjunction with Phase 2 of this plan's proposed electric charging hubs.

Transit-Operated On-Demand Shuttles: Resilient Public Service

By contrast, on-demand shuttle services run directly by transit agencies often prove more durable, given that farebox profit is not the primary viability metric. Transit agencies commonly operate below 100% cost recovery, with sustainability measured by service equity, network integration, and rider outcomes. For instance, Norwalk Transit District's Wheels2U has delivered over 50,000 rides and remains supported by consistent public funding and strong ridership growth. Similarly, King County Metro's Metro Flex in Seattle has extended microtransit as a complement to fixed-line buses, reinforcing coverage in less dense or underserved areas. While agency-run programs sometimes wind down due to shifting budgets or changing local policies, they typically persist as long as they support broader mobility goals and community mandates of the transit operator rather than commercial returns.

The Buffalo All Access HDS shuttle has a strong foundation towards sustainability given the current DOT grant funding to cover operational funding for the first 5 years of the program. If the fleet is electrified through a capital investment from the Clean Mobility Program or other funding sources, this could improve operational efficiencies and help the service to expand.

Shared Mobility Services

Reddy Bikeshare maintains long term viability through a mix of public, private, and sponsorship funding, successfully operating for about a decade. This model is further strengthened by ongoing partnerships with the public sector. The planned introduction of supporting infrastructure, such as charging or operational assets, does not disrupt this existing sustainability. In fact, if these assets prove successful, they may enhance the efficiency and resilience of the program. Other shared micromobility services, specifically e-scooters, must have buy-in from city governments, as well as sustainable operational models internally.



Car sharing operates under a separate cost structure, but follows a similar principle. While there is historical data from earlier car sharing models in Buffalo, launching a new electric car sharing program requires time to reach full financial sustainability. ‘Pseudo’ start-up funding, such as grants from NYSERDA and other sources noted earlier in this report, offers the necessary foundation for the program to scale and stabilize over time.

In both cases, the growth and sustainability of electric transportation services depend significantly on municipal engagement. In the past, city leadership was less supportive of electric infrastructure expansion. However, this trend appears to be shifting with the emergence of newly funded programs, evolving policy priorities, and a change in city administration. These developments signal a more favorable environment for investment in sustainable transportation infrastructure.

The Buffalo All Access initiative also requires a clear sustainability framework. Programs funded under this initiative such as the SDS pilot and other emerging mobility services, face unique challenges in long term sustainability. Due to delays in implementation and the current lack of ridership data, it is too early to accurately assess the long term sustainability of these services. However, the core objective of the DOT funding is to support pilot programs while simultaneously developing strategies to ensure that successful services can continue after the federal funding period ends in 2027. If the pilot programs demonstrate value, the BNMC, in collaboration with anchor institutions and the NFTA, will work to establish financial feasibility of these programs. Additional funding opportunities, such as the CMAQ program and other similar grants, may be leveraged to expand or extend these services. This would depend on alignment with agency priorities, particularly if the pilots can demonstrate measurable reductions in greenhouse gas emissions and other environmental benefits.²⁴

Electric Charging Infrastructure Programs

Ensuring the financial viability of electric infrastructure on all the mobility hubs requires clear planning around ownership, operations, and cost recovery. This is especially important on properties owned or managed by BNMC and NFTA, where existing electric charging infrastructure serves the public, and the proposed EV infrastructure will serve exclusively a car sharing vendor.²⁵

On BNMC and NFTA land, dedicated charging hubs exclusively for shared mobility programs create an opportunity for lease agreements that help offset ongoing costs. During the grant period, electricity and operational management may be highly subsidized, providing a financial foundation for future parking arrangements. While such agreements are common in sharing programs, some property owners may choose to absorb ongoing expenses in exchange for offering valuable services on-site and providing discounted memberships to their communities.

Ultimately, sustainable operation of these assets will require tailored agreements that reflect the infrastructure type, usage model, and the future interests of both property owners and the sharing service sharing vendor.²⁶

Micromobility Charging Infrastructure - Personal Devices

Vendors like Bikeep have noted that in most markets, infrastructure and installation costs are typically funded through grants, while ongoing maintenance and electricity expenses are sustained through public use and user fees. This model supports long term viability without placing the full burden on the host site.

²⁴.CMAQ has funded vanpooling and other similar programs across the country in the past.

²⁵.Operational success requires dedicated carshare spaces that are restricted from public use.

²⁶.Annual electricity and software is estimated to cost \$1600-\$2600 for car sharing (not including lease terms) and \$25 per rack micromobility.



Policy and Impact

Legal Analysis

The electrical upgrades and installation of electric charging infrastructure at the three may require an electrical permit from the City of Buffalo and consultation with National Grid. A licensed electrician who is certified to install Level 2 EV chargers will need to be hired to install the dual port EV chargers and new outdoor electric lines for the e-bikeshare charging racks and the charging infrastructure for personally owned micromobility devices. The EV charger installation must be compliant with the 2017 National Electrical Code (NEC) per New York State regulations.

When it comes to laws governing the use of e-bikes, e-bikes are defined in New York Vehicle & Traffic Law § 102-c as “electric bicycles” with three distinct classes, two of which are legal in upstate NY. These are Class 1 e-bikes which are pedal assist only and go up to 20 miles per hour as well as class 2 e-bikes that are throttle controlled and go up to 20 miles per hour. New York State also permits e-scooters to be operated at a maximum of 15 miles per hour. Operators of Class 1 & 2 e-bikes and e-scooters must be at least 16 years of age in New York State. The City of Buffalo may further regulate the use of these forms of electric micromobility however at this time the city has not implemented any localized ordinance in this area. Furthermore as of 2024 with the passage of Legislation S.154F/A.4938-D, New York State has been a nationwide leader in mandating that all e-bikes sold in the state comply with Underwriter Laboratories (UL) certification or equivalent safety standards.

The electric microtransit service (if NFTA goes with an outside vendor such as Circuit) will need to comply with New York State Department of Transportation (NYSDOT) regulations. Under New York State Transportation Law, the service provider may need to obtain “Operating Authority” from NYSDOT in order to operate as a commercial service. The service’s vehicles must be inspected by NYSDOT prior to being registered with the Department of Motor Vehicles (DMV).

For the SDS shuttle, it is important to consider New York State’s regulations on autonomous vehicles. . Such technology is only permissible on public roadways in New York State under a demonstration status. Service providers must apply for a testing permit from the NY DMV and autonomous vehicles can only be operated with a licensed human operator in the driver’s seat. Additionally, unless a waiver is granted, autonomous vehicles such as the Buffalo All Access SDS would be required to have a State Police escort at all times. Luckily, UB and the Buffalo All Access team have been granted a waiver to operate the SDS without State Police escort, but they must maintain having a licensed human operator in the driver’s seat. Since this plan investigates an expansion of the existing service, this plan does not anticipate regulatory barriers and associated delays as a barrier to operating this service.

Car sharing service providers operating in New York State must comply with a range of regulations designed to protect consumers, ensure safety, and maintain fair market practices. These include state-level requirements such as maintaining adequate insurance coverage for both personal injury and property damage, adherence to vehicle safety and inspection standards, and compliance with the New York Vehicle and Traffic Law, which governs registration and licensing. A major development in 2024 was the passage of legislation that clarified insurance requirements for car sharing, making it easier for nonprofit operators to obtain affordable coverage. Under this updated framework, nonprofits can access specialized group policies that recognize the unique structure of shared fleets, reducing barriers that previously prevented smaller or mission-driven organizations from offering carsharing programs.

Impacts Assessment

This plan envisions transportation infrastructure and mobility programs that offer numerous positive impacts. These impacts include improved transportation options both from the standpoint of convenience and affordability, particularly for disadvantaged residents. Additionally, these programs will result in positive environmental impacts including significant reductions in projected greenhouse gas emissions. From a citywide/regional perspective, this plan is exploring electric mobility hub improvements that may lay the basis for replication at NFTA’s future mobility hubs, such as its future mobility hubs along its Bailey BRT corridor. Additionally, the charging infrastructure for personal devices may be replicated by affordable housing developers and other larger real estate projects in order to expand access to safe electric micromobility charging infrastructure for residents/tenants.

By making it easier and more convenient for people to choose zero-emission mobility for their everyday trips, this project will reduce greenhouse gas emissions from the transportation sector, which is one of New York State's largest sources of climate pollution. This kind of shift is exactly what's needed to help New York meet the ambitious targets laid out in the CLCPA, including cutting statewide emissions 40% by 2030 and achieving at least an 85% reduction by 2050. Expanding access to clean, shared mobility options not only provides individuals with affordable, practical alternatives to car ownership, it also builds the foundation for the broader systems change required to meet the state's climate goals.

To understand the GHG reduction implications of this project we can look at these impacts on a per vehicle basis. For the conversion of the Buffalo All Access HDS shuttle from an ICE vehicle to an EV, we anticipate a significant reduction in GHG emissions. Under the existing Buffalo All Access program, NFTA plans to operate one of their Paratransit Aces Line (PAL) vehicles as the HDS. This vehicle is a New England Wheels "FrontRunner" paratransit conversion based on a Ram 3500 ProMaster chassis. With a daily anticipated mileage of 100 miles, annual mileage is estimated at 25,500 miles per year. Using an estimated 1.11 kg/mile of CO₂ emissions based on EPA projections for these types of vehicles, we anticipate the total annual emissions of the ICE HDS at 28,305 kg or 62,402 pounds of CO₂. If replaced with an EV shuttle, these emissions would be reduced 100%. Similarly, the emission reduction due to the SDS service can be estimated by making the same comparison between the PAL conventional ICE bus and it being replaced by an EV bus with 0 tailpipe GHG emissions.²⁷

For bikeshare, we know that on a per bike basis, each new bike added to the Reddy Bikeshare system through the addition of these new charging station parking spots will result in 117 pounds of CO₂ redacted annually. This is based on 30% of bikeshare trips replacing car trips. For this project, with all the new charging racks introduced across the three electric mobility hub sites, this will yield 30 new e-bikes. For new car sharing vehicles added, each new vehicle added to the system will result in 12,702 pounds of CO₂ redacted annually.

	Annual mileage per vehicle	Percent of trips that replace personal automobiles	Actual total of Annual Personal auto miles reduced	Car emissions per mile in grams (EPA)	Grams of CO ₂ Reduced	Pounds of CO ₂ Reduced
Bikeshare	500	30%	129.3	411	53142	117
Carshare	20000	70%	14000	411	5754000	12702

Table 13: Bikeshare/car sharing GHG emissions reductions

Table 13 shows the projected reductions in GHG per bikeshare and car sharing vehicle added. The annual mileage per vehicle is based on annual averages from Reddy Bikeshare and for car sharing, data from another comparable car sharing program in upstate NY, CDTA Drive! car sharing. The percent of those trips that are replacing car trips is based on survey data from these programs. The pounds of CO₂ redacted per year is then calculated based on the Environmental Protection Agency (EPA's) per mile car emissions figure.

	Annual mileage per vehicle	Percent reduction in mileage due to bikes charging on-site	Actual total of Redistribution Vehicle annual miles with e-bike charging stations	Light Duty emissions per mile in grams (EPA)	Grams of CO ₂ Reduced	Pounds of CO ₂ Reduced
Reddy Bikeshare Redistribution Vehicle	5200	50%	2600	523	1359800	3002

Table 14: projected reductions in GHG per bikeshare and car sharing vehicle added

27. For the Buffalo All Access SDS service, comparing this EV bus to an ICE bus is the best comparison for understanding how this shuttle service will reduce GHG emissions. While the SDS is not replacing an existing ICE shuttle service, research on shuttle service GHG emissions reductions finds shuttle services operating in similar downtown or near downtown areas like the BNMC typically are supplementing or directly replacing other modes of public transportation.



As shown in Table 14, there is also the emissions reduction due to the introduction of charging stations for e-bikeshare. With the reduced need to transport charged batteries due to the bikeshare charging stations, there is anticipated to be an emission reduction of 3,002 pounds of CO₂. This is based on an average daily mileage of 20 miles per day during the Reddy Bikeshare season which lasts 260 days. Based on projections from e-bike charging provider re:Charge, 50% of operations vehicle trips will be reduced when e-bikes are charging at bikeshare stations.

As far as the personally owned micromobility storage solutions proposed here, there is emerging evidence that adding in secure bike parking at rail stations can drastically increase the number of people who travel to/from a rail station by bicycle. In the Netherlands, Dutch Railways has reported that their efforts to add in secure bike parking at rail stations has resulted in people being over twice as likely to bike to/from their train connection.²⁸ Closer to home in Washington DC from 2009-2019 there was a secure bike storage solution that accommodated 150 bikes right outside of Union Station. A third of users of the DC bike storage facility report that before the facility existed they used to drive to the station.²⁹ There is little research on the mode shift/greenhouse gas emissions reductions of installing bike storage facilities specifically designed to serve e-bikes and other electric micromobility – this will be a key item monitored and researched through this project if a pilot of these charging infrastructure technologies is implemented.

Conclusion

The BNMC Clean Mobility Plan lays the groundwork for a transformative shift in how people move to, from, and within the BNMC and its surrounding neighborhoods, while also extending benefits to other parts of the city. By focusing on three strategically selected sites including two on the BNMC campus and one at the NFTA's BRRT in Buffalo's Riverside neighborhood, the plan recommends a coordinated set of infrastructure improvements, shuttle route expansions, shared mobility services, and charging solutions tailored to the unique needs of each location. Given the site ownership complications for the Electric Charging Hub on the BNMC that could house SDS charging and the fact that the SDS has not started operations, this plan recommends holding SDS aspects for a Phase 2 implementation of this plan. While all the mobility solutions discussed in this plan are expected to better serve DAC communities in Buffalo, this plan recommends that the BNMC, NFTA and other project partners assess these options to determine the team's priority solutions. All the mobility solutions explored in this plan are eligible for supported by the NYSDA Clean Mobility Program, as long as the solution is an expansion of an existing service. This includes capital costs (purchase of vehicles, infrastructure) and ongoing operations costs.

Through robust community engagement, data-driven analysis, and a collaborative planning process, this plan reflects the voices and priorities of those most affected by transportation barriers. It recognizes that clean mobility is not only a climate strategy, but also a vehicle for equity, health, and economic inclusion, particularly in underserved DACs like the Fruit Belt, Masten Park, and Riverside.

As implementation progresses, the BNMC Clean Mobility Plan offers a plan for bolstering Buffalo All Access shuttle electrification and puts forth a replicable framework for building electric mobility hubs for other campuses, transit agencies, institutions, and neighborhoods across New York State. By aligning with state climate goals and the Moving Forward 2050 Metropolitan Transportation Plan, and by investing in multimodal, people-centered infrastructure, this plan charts a path toward a cleaner, more connected, and more just transportation future for all of Buffalo.

28. Eshe Nelson, "How the Dutch Investment in Bike Parking Paid Off," Bloomberg, April 20, 2023. <https://www.bloomberg.com/news/articles/2023-04-20/how-the-dutch-investment-in-bike-parking-paid-off>.

29. NPR. "Morning Edition: How Transit Agencies Are Adapting to Post-Pandemic Realities." NPR, September 8, 2009. <https://www.npr.org/transcripts/112449158?>

Appendix A

Community Engagement Report

TO: Rachel Fishman, Program Manager, NYSEDA
FROM: Tyler Madell, Program Director, Shared Mobility, Inc.
DATE: 06/12/2025
RE: Community Engagement Summary, BNMC Clean Mobility Planning Project

This memo outlines key insights and reflections from community engagement conducted as part of the Buffalo Niagara Medical Campus (BNMC) Clean Mobility Planning Project, supported by NYSEDA's Clean Mobility Planning initiative. The engagement process was designed to capture both qualitative and quantitative feedback from a broad spectrum of stakeholders and community members, with the goal of shaping a cleaner, more accessible, and multimodal transportation ecosystem centered around the BNMC.

Our engagement efforts were focussed primarily on understanding how the proposed electric mobility hubs could best serve underserved populations. Additionally, engagement efforts examined how the Buffalo All Access Shuttle program that BNMC has been leading could be expanded and improved upon through the electric mobility hub plan. The Buffalo All Access Shuttle includes a human driven shuttle (HDS) operated by the Niagara Frontier Transportation Authority (NFTA) and a self driven shuttle (SDS) managed by the University at Buffalo (UB).

Engagement efforts included an online public survey, in-person community conversation on the campus, and targeted stakeholder meetings with key partners across Buffalo's mobility and public space ecosystem. These partners included UB, the NFTA, the Greater Buffalo-Niagara Regional Transportation Council (GBNRTC), Buffalo Place, Heart of the City Neighborhoods (HOCN), and the Buffalo Civic Auto Ramps (BCAR). Across these conversations, many participants emphasized the importance of solutions that reflect the full range of BNMC users not only patients, students, and clinicians, but also the essential workforce that supports the campus each day. For many of these lower-wage employees, such as janitorial staff and food service workers, commuting from Disadvantaged Communities (DACs) adds an additional layer of mobility challenge. Their experiences offer crucial insight into where transportation gaps persist and who is most affected by them.

1. Online Public Survey

To gather on-the-ground insights from individuals who live, work, and study on or near the BNMC, a digital survey was distributed throughout campus channels and in collaboration with key partner institutions identified by the BNMC for this survey. These included University at Buffalo's Jacobs School of Medicine, the Innovation Center, and the Trico Apartments. The BNMC recommended these partners for survey distribution so that we could maximize our ability to reach the target population. The survey was shared with employees, employers, students, and residents capturing a range of user experiences and expectations tied to daily mobility across the campus and surrounding neighborhoods.

The BNMC sits within a New York State-designated DAC, and many of the adjacent areas such as Fruit Belt and Masten Park face similar historic transportation and infrastructure gaps. The survey received responses from participants representing a diverse mix of travel habits, personal access to transportation, and familiarity with micromobility options. The survey provided valuable insights into how people within the BNMC move around and what infrastructure improvements could better support them.

- Car access remained widespread and a clear majority 92% of respondents reported owning or having regular access to a personal vehicle even if it is a high cost burden. However, 8% stated they have no access to a car at all highlighting a small but significant group that could benefit from expanded micromobility, shuttle, or car sharing services.
- There are low rates of public transit for people to access the BNMC overall. While a small group uses it daily or weekly, nearly two-thirds of respondents never use it indicating service gaps, low frequency, or limited awareness.

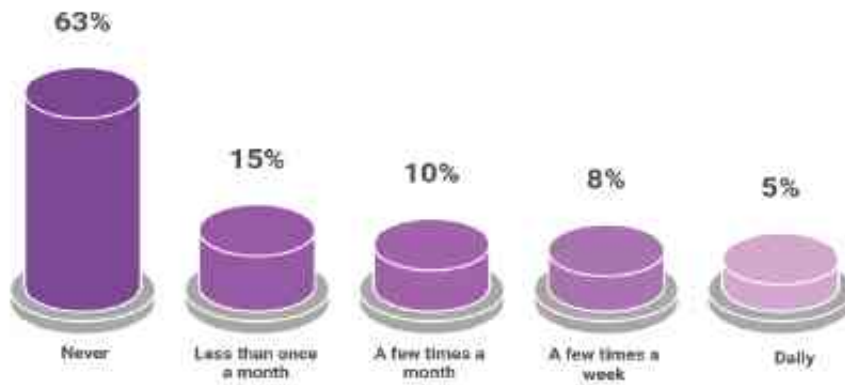


Figure 25: Public Transit Use Frequency

- Survey respondents also offered a range of suggestions for upcoming Buffalo All Access shuttle service locations beyond the Fruit Belt and Masten DAC neighborhoods. Elmwood Village was the most frequently mentioned area, highlighted for its grocery stores, medical offices, and everyday amenities. Allentown, Delaware Park, Larkin Square, and the Lower West Side were also suggested as valuable extensions to improve access to commercial areas and transit connections. Respondents emphasized the need for the shuttle to circulate around park-and-ride locations, reduce reliance on personal vehicles, and serve communities facing mobility challenges. These responses reflect interest in a shuttle system that connects locations along the planned HDS route through the East Side with nearby locations in other neighborhoods of the city.
- Respondents consistently prioritized expanded bikeshare access, secure e-bike storage, EV charging, and clearer wayfinding pointing to a growing demand for safe, electric, and easy-to-navigate mobility options on and around campus.

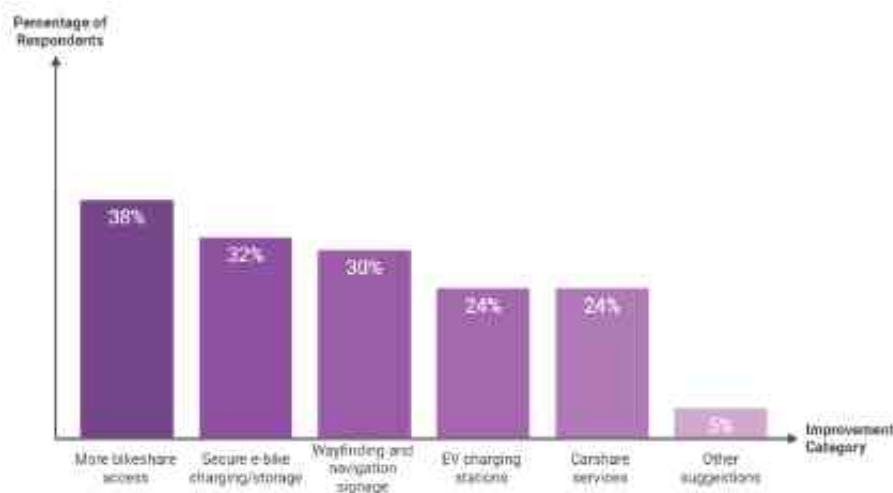


Figure 26: Most Requested Transportation Amenities at BNMC

These responses make clear that while BNMC is well-positioned as a multimodal anchor, gaps remain in infrastructure, visibility, and ease-of-use. Strategic investments in intuitive signage, secure micromobility infrastructure, and real-time service information can play a critical role in bridging these gaps especially for users who do not rely on personal vehicles or who seek to shift toward lower-emission modes.

2. Community Conversations

To complement the online survey, we conducted in-person community conversations across the campus, speaking directly with individuals who live, work, pass through, or visit the BNMC daily. These conversations, held near shuttle stops, medical buildings, and common areas, offered a closer look at the daily transportation experiences of those who may not typically respond to formal surveys.

A recurring theme in these conversations was the importance of providing mobility options that reflect the realities of low-wage workers, many of whom live in nearby neighborhoods classified as DACs. One campus worker who lives in the nearby DAC neighborhood shared,



“I walk to work most days, but if there was a bike I could use, that would make things a lot easier—especially in winter or when I’m late.”

Others commute longer distances and rely on transit systems that do not always align well with their schedules or locations. A security staff member explained,

“I live far from here, I share a car with my partner, so I don’t have regular access to it. Most days I end up taking the bus. It takes forever.”

These stories point to an opportunity to expand flexible and affordable transportation choices. Carshare services, if placed strategically near residential areas or major transit corridors, could offer a meaningful option for individuals without consistent vehicle access complementing existing systems and helping reduce travel time for longer commutes.

In addition to transit and bikeshare needs, the conversations highlighted interest in expanded EV infrastructure. An employee, who drives an electric vehicle to work, expressed frustration about limited charging access on campus:

“I drive electric and would love to charge here, especially since other hospitals offer it for free. There should be more chargers near where we actually work, not just near the front entrances.”

These conversations helped surface perspectives to provide more detail to the survey response. Furthermore, these conversations helped us to understand more from commuters belonging to DACs who are often missed in traditional planning processes, voices that are vital to shaping an equitable clean mobility strategy. By elevating lived experiences and identifying clear opportunities for improvement, the BNMC Clean Mobility Plan can better reflect the needs of those most reliant on accessible, affordable, and efficient transportation.

3. Stakeholder Groups Meeting Summaries

3.1 University at Buffalo (UB), Niagara Frontier Transportation Authority (NFTA) and Greater Buffalo-Niagara Regional Transportation Council (GBNRTC)

On Thursday, April 3rd, 2025, we met with Adel Sadek (Professor in School of Engineering and Applied Sciences at the University at Buffalo), Robert Jones (Deputy Director of Public Transit at the Niagara Frontier Transportation Authority), and Kelly Dixon (Principal Planner at the Greater Buffalo-Niagara Regional Transportation Council) to explore potential coordination around clean mobility infrastructure, operational sustainability, and system-level planning integration. The conversation focused on aligning BNMC’s proposed electric mobility hub model with broader regional mobility initiatives.

NFTA shared feedback on key mobility priorities, including the need for micromobility integration at major shuttle corridors and at Bailey Avenue BRT nodes. Services such as Reddy Bikeshare, and EV car sharing options were identified as valuable additions. The Black Rock Riverside Transit Hub, which already includes bike parking and a fix-it station, was identified as a potential mobility hub location. More broadly, mobility hubs placed near end-of-line zones were seen as potential assets, especially if designed with supportive infrastructure like EV charging stations and storage for micromobility, and flexible curb access to accommodate evolving transportation needs.

NFTA also discussed the HDS that they are operating as part of the Buffalo All Access program which currently has 5 years of funding for operations. The HDS is currently using a converted paratransit bus and there is interest in pursuing an electric bus alternative down the road. NFTA is interested in knowing more about options for this. As far as charging of an electric bus used as the HDS for Buffalo All Access, charging would likely occur at one of NFTA’s existing facilities.

UB shared updates on the development of its autonomous Buffalo All Access shuttle program, which is currently preparing for a demonstration with the U.S. Department of Transportation in mid to late 2025. The discussion highlighted how the BNMC



campus could play a strategic role in supporting this initiative by offering a potential site for midday charging, overnight storage, and coordination support. Identifying a long-term, secure location near the shuttle's service area aligns with broader BNMC goals around clean, shared mobility infrastructure. As the shuttle program advances, collaboration with BNMC presents an opportunity to integrate emerging autonomous technologies into a larger network of low-emission transportation solutions. UB and the Buffalo All Access team are also evaluating long-term funding to sustain the SDS program after its initial grant period.

GBNRTC encouraged the group to think about how lessons learned from this project could be applied regionally. They emphasized the value of testing scalable solutions, particularly related to shared micromobility charging and cross-agency data coordination. Potential site locations at NFTA metro rail Summer Best Station, was mentioned as areas that could be re-evaluated depending on infrastructure needs and long-term siting opportunities.

This joint session underscored the importance of aligning BNMC's clean mobility goals with ongoing institutional, regional, and operational planning efforts. The perspectives shared by NFTA, UB, and GBNRTC offered clear pathways for collaboration whether through shared infrastructure, charging coordination, or long-term planning for emerging technologies like autonomous shuttles. Their input reinforces the opportunity for BNMC to serve as both a testbed and a connector for scalable clean mobility strategies that respond to community needs while advancing broader regional transportation and climate goals.

3.2 Heart of the City Neighborhood (HOCN)

On Thursday May 22nd, 2025 we met with Stephanie Simeon (Executive Director at HOCN), Charnice McMillion-Martin (Community Engagement Specialist at HOCN), along with Jamie Hamann-Burney (Chief Strategy Officer at BNMC) and Shania Julia Anunciacion (Planning and Program Manager at BNMC) to discuss mobility barriers and opportunities for community-led transportation planning in and around Buffalo Niagara Medical Campus (BNMC). HOCN works at the intersection of faith-based organizing, housing development, and small business support, and emphasizes the importance of ensuring mobility solutions align with the needs of long-time residents and neighborhood stakeholders.

A recurring theme in the conversation was the lack of outdoor wayfinding and last-mile connectivity. HOCN noted that many residents in Buffalo's DACs must walk long distances to reach any form of transit, particularly because current bus routes do not directly serve their housing sites or community centers. Churches and small businesses, in particular, were described as highly car-dependent, with few viable alternatives for those without vehicles. Charnice also shared that several small business owners remain skeptical of shared mobility unless it brings direct economic or service benefits to their communities.

When discussing new and emerging transportation options, HOCN identified both opportunities and uncertainties. One example is Erie County's Going Places Transportation Program, a curb-to-curb van service that supports older adults aged 60 and over who are unable to use conventional transit. While the program is active across several parts of the county, HOCN saw potential for deeper community engagement and learning particularly around how the service is managed, maintained, and whether its fleet could be transitioned to electric vehicles. There was strong interest in supporting such a transition, especially among younger family members who are more likely to engage with clean mobility options and EV technology.

There was limited awareness of fire safety concerns related to e-bike batteries, though developers involved in new housing projects are beginning to consider charging infrastructure. HOCN acknowledged that while e-bike or EV adoption could grow, maintenance of charging stations remains an open question, particularly amongst DAC populations in Buffalo that HOCN works with. HOCN told us that they see a huge opportunity through this project's focus on safe charging solutions of personally owned electric micromobility, to be beneficial to affordable housing developers in the community down the road. This project has the opportunity to help create a replicability blueprint that could be used by other property owners interested in developing safe on-site electric micromobility charging infrastructure. HOCN may have funds to help East Side property owners deploy charging infrastructure on their property.

3.3 Buffalo Place Inc.

On Thursday, May 22nd, 2025, we met with Debra Chernoff (Manager of Planning at Buffalo Place Inc), along with Jamie Hamann-Burney (Chief Strategy Officer at BNMC) and Shania Julia Anunciacion (Planning and Program Manager at BNMC) to discuss shared priorities and past learnings related to downtown mobility, transit coordination, and multimodal connectivity. Buffalo Place plays a key role in overseeing transportation access, public realm improvements, and placemaking efforts along Main Street in downtown Buffalo, making them a critical partner in shaping clean and efficient mobility solutions between the Buffalo Niagara Medical Campus (BNMC) and the city's commercial core. With Debra's years of experience doing this work in downtown Buffalo, she is deeply attuned to how transportation determines economic outcomes for underserved communities in and around downtown Buffalo.

During the meeting, BNMC provided background information on the Buffalo All Access Shuttle, including plans to introduce an autonomous-ready route designed to support first/last-mile connectivity between BNMC, downtown, and surrounding neighborhoods. While the shuttle is not yet operational, the discussion focused on how the route could serve high-priority corridors like Main Street, which Debra identified as central to ongoing mobility needs due to its linkage with downtown businesses, entertainment venues, and transit nodes.

Debra noted that over the past few years there has been a marked increase in users of electric micromobility for transportation downtown, such as e-scooters and e-bikes. She noted that there is no existing plan for building out charging infrastructure and safety guidelines for building owners in the downtown Buffalo area and that this project's electric mobility charging hubs would help show an example for the city. The high cost of car ownership has increasingly caused people to look to these other, cheaper electric micromobility options.

Debra also shared reflections on previous park-and-ride shuttle services. While it initially served a commuter base into downtown, its long-term sustainability was challenged by incremental fare increases, ultimately impacting ridership and resulting in service termination. This experience underscores the importance of maintaining affordability and reliability when designing downtown-focused mobility programs.

The group also discussed the NFTA Metro Rail service frequency, which in earlier years operated as frequently as every five minutes. Debra noted this level of reliability set a high standard for user experience and expressed interest in how future shuttle or microtransit services could replicate this level of consistency to better serve downtown commuters and visitors.

Overall, Buffalo Place emphasized the need for well-integrated, visible, and affordable transportation options that can enhance access to downtown jobs and services. As efforts like the Buffalo All Access Shuttle and new micromobility infrastructure take shape, their on-the-ground experience offers valuable guidance for planning solutions that are both practical and people-centered.

3.4 Buffalo Civic Auto Ramps (BCAR)

On Wednesday June 11th, 2025, we met with Patrick Kilcullen who serves as a longtime board member of Buffalo Civic Auto Ramps (BCAR), to discuss potential collaborations around integrated charging hubs, TDM, and strategic site planning for future mobility infrastructure at the BNMC. The discussion emphasized building on existing assets rather than duplicating efforts, highlighting BCAR's expanding role beyond parking management into broader mobility planning for the City of Buffalo.

A key topic of interest was the development of mobility hubs that serve multiple functions supporting shuttles, EV car sharing, bikeshare, and private micromobility vehicles. Three primary locations were discussed:

1. 821 Washington St: Potential for micromobility charging lockers and bikeshare integration.
2. Black Rock Riverside Transit Hub: Identified for expansion of e-bikeshare services and EV car charging stations.
3. 941 Washington St: Feasibility for car sharing charging, bikeshare docking, and EV charging infrastructure for shuttle services

Pat also outlined the governance and operational structure surrounding the City's parking system. While the parking ramps are owned by the City of Buffalo, they are operated by the Parking Authority, which has contracted BCAR to manage them. This



arrangement enables BCAR to oversee daily operations and lead broader TDM efforts that extend into residential neighborhoods. As part of this expanded role, BCAR also manages Residential Area Permit (RAP) lots small, permit-based parking areas throughout the city. A key goal of BCAR's TDM efforts is increasing access to affordable electric mobility options. BCAR is currently working with the City of Buffalo to expand bikeshare and car sharing to its ramps. These mobility programs will help serve underserved populations that are commuting in and around downtown, and the BNMC's mobility hub could help guide these initiatives.

BCAR has already expanded EV charging infrastructure across several ramps. Current charging utilization stands at approximately 60–65%, though performance varies by location. BCAR is interested in learning from the BNMC's project on electric mobility charging hubs to incorporate aspects of this work into BCAR's TDM initiatives. Pat noted that BCAR is open to exploring the possibility of incorporating bike storage within parking ramps, although doing so may require review and approval from the City of Buffalo's legal department. Having BCAR as a stakeholder on BNMC's project will help to build out the City of Buffalo's electric charging and electric mobility services collaboratively across both entities.

Conclusion

The community engagement process for the BNMC Clean Mobility Planning Project generated valuable insights from survey participants, daily commuters, and institutional stakeholders. Through a combination of online surveys, in-person conversations, and stakeholder group meetings, individuals shared their lived transportation experiences and identified opportunities to enhance mobility across the campus and surrounding neighborhoods. Feedback consistently emphasized the importance of affordable transportation choices, better transit reliability, expanded access to micromobility and car sharing services, and improved wayfinding across key campus entry points.

For many campus users, especially those commuting from nearby DACs or working in essential service roles, gaps in transit frequency and limited access to shared mobility options remain barriers to a smooth and equitable commute. At the same time, there is clear interest in sustainable solutions already being considered, such as expanded access to electric micromobility charging, EV charging near workplaces, and commuter-oriented shuttle routes. These findings reinforce the importance of aligning infrastructure improvements with the daily realities of those who rely on BNMC for work, care, and study.

As planning efforts continue, this engagement provides a strong foundation to guide implementation. Centering user voices ensures that future investments in mobility infrastructure are both impactful and inclusive, supporting BNMC's role as a convener of electric mobility innovation that is sustainable and affordable for residents of Buffalo.

Survey Questionnaire

The following is the full set of survey questions that were used during community engagement efforts to gather input from BNMC

BNMC Clean Mobility Survey

The Buffalo Niagara Medical Campus (BNMC), in partnership with Shared Mobility Inc., Niagara Frontier Transportation Authority (NFTA), and the University at Buffalo (UB) is working on a Clean Mobility Plan to improve how people move around the campus and nearby neighborhoods. As part of this effort, we're asking community members, employees, students, and transit riders to share their everyday transportation habits and preferences.

Your input will help us understand how people currently travel to and from BNMC and inform future planning for improved transportation options such as e-bikes, electric shuttles, and expanded bikeshare infrastructure. This survey takes only a few minutes, and your responses will support efforts to create more convenient, sustainable ways to get around BNMC

Thank you for participating!

1. Please enter the ZIP code where you live
2. Which of the following best describes your access to a car or personal vehicle?
 - a. Yes, I own or have regular access to a vehicle
 - b. Sometimes / Shared access (I share with someone or have access only occasionally)
 - c. No, I do not have access to a vehicle
3. How do you usually get to or from BNMC? (Select all that apply)
 - a. Walk
 - b. Personal Bike
 - c. Personal E-Bike
 - d. Personal car
 - e. Rideshare (Uber/Lyft)
 - f. NFTA Metro
 - g. NFTA Bus
 - h. Reddy Bikeshare
 - i. Carpool
 - j. Other
4. How often do you use public transportation for commuting or daily travel?
 - a. Daily
 - b. A few times a week
 - c. A few times a month
 - f. Less than once a month
 - e. Never
 - f. Other
5. What is your typical travel time from BNMC to your destination?
 - a. Less than 10 minutes
 - b. 10 minutes- 20 minutes
 - c. 20 minutes- 30 minutes
 - d. 30 minutes- 45 minutes
 - e. 45 minutes- 60 minutes
 - f. More than 60 minutes
 - g. Other
6. How familiar are you with e-bikes (electric bicycles)?
 - a. I own an e-bike
 - b. I've used an e-bike through a bikeshare (eg: Reddy Bikeshare)
 - c. I've heard of e-bikes but never used one
 - d. I've never heard of e-bikes
 - e. Other
7. How much would you consider paying for an e-bike out of pocket? (in \$)
8. What additional transportation related amenities/services would you find useful at BNMC (Select all that apply)
 - a. Wayfinding and navigation signage
 - b. More access to bikeshare
 - c. Carshare services
 - d. Secure e-bike charging/storage
 - e. Additional EV charging station
 - f. Other
9. BNMC is working with the NFTA and other partners to bring a shuttle service in and around the campus including the Fruit Belt and Masten neighborhoods. What additional locations, neighborhoods, medical facilities, or workplaces would you like this on-demand shuttle to serve and why?



Appendix B

Engineering Site Feasibility Reports



C&S Companies
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212
p: (315) 455-2000
f: (315) 455-9667
www.cscos.com

SHARED MOBILITY ELECTRIFICATION FEASIBILITY NARRATIVE

PROJECT: SHARED MOBILITY ELECTRIFICATION FEASIBILITY

SPECIFIC PROJECT SITE: 2259 NIAGARA ST

C&S PROJECT NO.: BE4001001

SITE ADDRESS: 2259 NIAGARA ST, BUFFALO, NY 14207

SITE VISIT DATE: 06/30/2025

PREPARED BY: D.W.BARLEY

SITE CONDITIONS DURING VISIT: CLEAR, 80° - 90°

1. **Project Intent:** The focus of this analysis is to investigate the feasibility of adding charging for e-bikes and a Level 2 Electric Vehicle (EV) charger at the 2259 Niagara St. Bus Depot in Buffalo, NY.
2. **Executive Summary:** A field visit was conducted on June 30th to examine the proposed e-bike charger and EV charger locations and to locate/identify the existing electrical infrastructure. During the review, it was determined the bus stop depot building has an existing panelboard with sufficient physical space and available power.
3. **Existing Conditions:** The existing electrical panelboard is located in the bus depot building and has available space in order to add circuit breakers.
4. **Recommended Scope of Work:** The intent is to install chargers for bikeshare e-bikes and a Level 2 EV charger at 2259 Niagara St in Buffalo, NY. It has been confirmed there is an existing panelboard that is available to use for the e-bike charger. Upgrades required in order to implement the charger would consist of a new 20A/1-Pole circuit breaker, trenching and #12 AWG in an underground conduit from the existing panelboard to the e-bike charger site. Additionally, infrastructure is available for a new 40A/3-Pole breaker, trenching and #8 AWG in an underground conduit from the existing panelboard to the EV charger site.
5. **Key Issues and Items to Be Resolved:** Exact location for charger and underground conduit feeding charger would need to be confirmed with bus stop owner.
6. **Appendix:**
 - a. Appendix A – Site Map & Photos
 - b. Appendix B – Construction Cost Estimate

Appendix A



Site Map



SHARED MOBILITY ELECTRIFICATION FEASIBILITY NARRATIVE

Page 4



Bus stop, bike charger and EV charger locations

Appendix B



Shared Mobility
2259 Niagara St, Buffalo, NY 14207
Construction Cost Estimate

Date: 30-Jul-25
By: D.W.BARLEY
Rev:

Description	Material Cost	Labor Cost	Total Cost
Demolition and Removal			
Misc. Electrical Demolition and Removal		\$ 1,500	\$ 1,500
Section Total	\$ -	\$ 1,500	\$ 1,500
Electrical Installation			
E Bike Charger feeders (conduit and wiring)	\$ 200	\$ 1,000	\$ 1,200
E Bike Charger 20A-1P breaker	\$ 125	\$ 250	\$ 375
EV Charger feeders (conduit and wiring)	\$ 500	\$ 1,000	\$ 1,500
EV Charger 40A-2P breaker	\$ 200	\$ 175	\$ 375
Electrical Connections	\$ 150	\$ 1,500	\$ 1,650
Trenching and Backfill	\$ 1,750	\$ 1,000	\$ 2,750
E Bike Charger (5 bikes)	\$ 16,000	\$ 5,000	\$ 21,000
EV Charger (1 charger)	\$ 10,000	\$ 5,000	\$ 15,000
Grounding	\$ 1,000	\$ 2,000	\$ 3,000
Section Total	\$ 29,925	\$ 16,925	\$ 46,850
Misc.			
General Expenses		\$ 2,500	\$ 2,500
Section Total	\$ -	\$ 2,500	\$ 2,500
Subtotal	\$ 29,925	\$ 20,925	\$ 50,850
Notes:	Construction Indirects (8%)		
1. Hazardous material abatement and disposal costs were not included.	Contractor Markup on Materials (15%)		
2. Cost estimates are subject to changed based on final design and equipment selection.	Contingency (20%)		
	TOTAL		
	\$ 69,577		



C&S Companies
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212
p: (315) 455-2000
f: (315) 455-9667
www.cscos.com

SHARED MOBILITY ELECTRIFICATION FEASIBILITY NARRATIVE

PROJECT: SHARED MOBILITY ELECTRIFICATION FEASIBILITY

SPECIFIC PROJECT SITE: 821 WASHINGTON ST

C&S PROJECT No.: BE4001001

SITE ADDRESS: 821 WASHINGTON ST, BUFFALO, NY 14203

SITE VISIT DATE: 06/30/2025

PREPARED BY: D.W.BARLEY

SITE CONDITIONS DURING VISIT: CLEAR, 80° - 90°

1. **Project Intent:** The focus of this analysis is to investigate the feasibility of adding charging for a Level 2 Electric vehicle (EV) charger, battery charger, e-bike charger and e-bike lockers at the 821 Washington St. parking lot in Buffalo, NY.
2. **Executive Summary:** A field visit was conducted on June 30th to examine the proposed EV, battery charger, e-bike charger and e-bike locker locations and to locate/identify the existing electrical infrastructure. During the review, it was determined the building being served by the parking lot has an existing panelboard with sufficient physical space and available power.
3. **Existing Conditions:** The existing electrical panelboard is located in the main electrical room of the adjacent building and has available space in order to add circuit breakers.
4. **Recommended Scope of Work:** The intent is to install chargers for bikeshare e-bikes, e-bike lockers and a Level 2 EV charger at 821 Washington St. in Buffalo, NY. It has been confirmed there is an existing panelboard that is available to use for the e-bike charger, e-bike locker, battery and EV chargers. Upgrades required in order to implement the chargers would consist of (2) two new 20A/1-Pole circuit breakers, trenching and #12 AWG wire in an underground conduit from the existing panelboard to the e-bike charger and e-bike locker sites. Upgrades required in order to implement the EV charger would consist of a new 40A/2-Pole circuit breaker, trenching and #8AWG wire in an underground conduit from the existing panelboard to the EV charger. Upgrades required in order to implement the battery charger would consist of a new 30A/2-Pole circuit breaker, trenching and #10AWG wire in an underground conduit from the existing panelboard to the EV charger.
5. **Key Issues and Items to Be Resolved:** Exact location for charger and underground conduit feeding charger would need to be confirmed with BNMC. The parking lot was recently paved and owner is hesitant to excavate it. There is potential to run surface mount on the building exterior and only have to excavate a small portion of the new pavement.
6. **Appendix:**
 - a. Appendix A – Site Map and Photos
 - b. Appendix B – Construction Cost Estimate

F:\Project\BE4 - Shared Mobility\BE4001001 - Electrical Analysis Various Sites\Planning-Study\Reports

Appendix A



Site Map



SHARED MOBILITY ELECTRIFICATION FEASIBILITY NARRATIVE

Page 4



Main Electric Room and E-Bike Locker location

SHARED MOBILITY ELECTRIFICATION FEASIBILITY NARRATIVE

Page 5



E-Bike Charger location



SHARED MOBILITY ELECTRIFICATION FEASIBILITY NARRATIVE

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Existing Electrical Panel LV-SB-PP in Main Electrical Room

Appendix B

Shared Mobility
821 Washington St, Buffalo, NY 14207
Construction Cost Estimate

Date: 30-Jul-25
 By: D.W.BARLEY
 Rev:

Description	Material Cost	Labor Cost	Total Cost
Demolition and Removal			
Misc. Electrical Demolition and Removal	\$	1,500 \$	1,500 \$
Section Total	\$	1,500 \$	1,500 \$
Electrical Installation			
E Bike Charger feeders (conduit and wiring)	\$	1,250 \$	1,700 \$
E Bike Charger 20A-1P breaker	\$	250 \$	375 \$
E Bike Locker feeders (conduit and wiring)	\$	500 \$	650 \$
E Bike Locker 20A-1P breaker	\$	250 \$	375 \$
EV feeders (conduit and wiring)	\$	1,500 \$	2,500 \$
EV 40A-2p breaker	\$	250 \$	400 \$
Battery charger feeders (conduit and wiring)	\$	1,500 \$	2,500 \$
Battery charger 30A-1P breaker	\$	250 \$	390 \$
Electrical Connections	\$	1,500 \$	1,650 \$
Trenching and Backfill	\$	1,750 \$	5,000 \$
E Bike Charger (10 bikes)	\$	5,000 \$	31,000 \$
E Bike Locker (10 lockers)	\$	2,500 \$	12,500 \$
Battery Charger (1 charger)	\$	2,500 \$	12,500 \$
EV Charger (1 charger)	\$	5,000 \$	15,000 \$
Grounding	\$	2,000 \$	3,000 \$
Section Total	\$	26,000 \$	89,540 \$
Misc.			
General Expenses	\$	2,500 \$	2,500 \$
Section Total	\$	2,500 \$	2,500 \$
Subtotal	\$	30,000 \$	93,540 \$
Notes:			
1. Hazardous material abatement and disposal costs were not included.			
2. Cost estimates are subject to changed based on final design and equipment selection.			
Construction Indirects (8%)			7,483 \$
Contractor Markup on Materials (15%)			9,531 \$
Contingency (20%)			18,708 \$
TOTAL			129,262 \$



C&S Companies
499 Col. Eileen Collins Blvd.
Syracuse, NY 13212
p: (315) 455-2000
f: (315) 455-9667
www.cscos.com

SHARED MOBILITY ELECTRIFICATION FEASIBILITY NARRATIVE

PROJECT: SHARED MOBILITY ELECTRIFICATION FEASIBILITY

SPECIFIC PROJECT SITE: 941 WASHINGTON ST

C&S PROJECT No.: BE4001001

SITE ADDRESS: 941 WASHINGTON ST, BUFFALO, NY 14203

SITE VISIT DATE: 06/30/2025

PREPARED BY: D.W.BARLEY

SITE CONDITIONS DURING VISIT: CLEAR, 80° - 90°

1. **Project Intent:** The focus of this analysis is to investigate the feasibility of adding charging for e-bikes, e-bike lockers and Level 2 Electric Vehicle (EV) chargers at the 941 Washington St. parking lot in Buffalo, NY.
2. **Executive Summary:** A field visit was conducted on June 30th to examine the proposed e-bike charger, e-bike locker and EV charger locations and to locate/identify the existing electrical infrastructure. During the review, it was determined the parking lot does not have available power, due to the existing electrical infrastructure coming from now condemned buildings.
3. **Existing Conditions:** The buildings adjacent to the parking lot are condemned and it is not possible to utilize their existing power without performing significant upgrades. There is an existing, but non-operational EV charger with an abandoned electrical service at the parking lot.
4. **Recommended Scope of Work:** The intent is to install chargers for bikeshare e-bikes, e-bike lockers and three Level 2 EV chargers at 941 Washington St in Buffalo, NY. It is expected a new electrical service will be required, along with a new panelboard installed at the parking lot for new 20A/1-Pole circuit breakers, trenching and #12 AWG in an underground conduit from the new service to the e-bike charger and e-bike locker sites. Additionally, new 40A/2-Pole circuit breakers, trenching and #8 AWG in an underground conduit would be needed from the new service to the EV charger sites.
5. **Key Issues and Items to Be Resolved:** Exact location for charger and underground conduit feeding charger would need to be confirmed with BNMC. A new electrical service would be required.
6. **Appendix:**
 - a. Appendix A – Site Map & Photos
 - b. Appendix B – Construction Cost Estimate

Appendix A



Site Map



Abandoned electrical service and proposed service location



Non-functional EV charger and proposed EV, e-bike charger and locker location



Shared Mobility
941 Washington St, Buffalo, NY 14203
Construction Cost Estimate

Date: 30-Jul-25
By: D.W.Barley
Rev:

SHARED MOBILITY ELECTRIFICATION FEASIBILITY NARRATIVE

Page 6

Appendix B

Description	Material Cost	Labor Cost	Total Cost
Demolition and Removal			
Existing EV Charger Removal		\$ 2,000	\$ 2,000
Misc. Electrical Demolition and Removal		\$ 1,500	\$ 1,500
			\$ -
Section Total	\$ -	\$ 3,500	\$ 3,500
Electrical Installation			
Incoming Service Feeders (conduit and wiring)	\$ 1,000	\$ 750	\$ 1,750
Panelboard (208V/120V)	\$ 2,250	\$ 1,950	\$ 4,200
45kVA Transformer, 480-208/120V, Copper	\$ 3,250	\$ 2,500	\$ 5,750
100A Disconnect	\$ 1,500	\$ 750	\$ 2,250
E Bike Charger feeders (conduit and wiring)	\$ 500	\$ 1,500	\$ 2,000
E Bike Charger 20A-1P breaker	\$ 100	\$ 125	\$ 225
E Bike Locker feeders (conduit and wiring)	\$ 500	\$ 1,500	\$ 2,000
E Bike Locker 20A-1P breaker	\$ 100	\$ 125	\$ 225
EV Charger Feeders (conduit and wiring)	\$ 3,750	\$ 6,000	\$ 9,750
EV Charger 40A-2P breaker (3 breakers)	\$ 450	\$ 600	\$ 1,050
Terminations	\$ 500	\$ 1,000	\$ 1,500
E Bike Charger (10 chargers)	\$ 26,000	\$ 5,000	\$ 31,000
E Bike Locker (10 lockers)	\$ 10,000	\$ 2,500	\$ 12,500
EV Charger (3 chargers)	\$ 30,000	\$ 15,000	\$ 45,000
Grounding	\$ 500	\$ 1,000	\$ 1,500
Section Total	\$ 80,400	\$ 40,300	\$ 120,700
Misc.			
Mobilization		\$ 2,000	\$ 2,000
Investigation & Labeling		\$ 500	\$ 500
Testing and Commissioning		\$ 1,500	\$ 1,500
General Expenses		\$ 2,500	\$ 2,500
Section Total	\$ -	\$ 6,500	\$ 6,500
Subtotal	\$ 80,400	\$ 50,300	\$ 130,700
		Construction Indirects (8%)	\$ 10,456
		Contractor Markup on Materials (15%)	\$ 12,060
		Contingency (20%)	\$ 26,140
		TOTAL	\$ 179,356

Notes:
1. Hazardous material abatement and disposal costs were not included.
2. Cost estimates are subject to changed based on final design and equipment selection.

