WEBER STATE
UNIVERSITY

Transportation Plan

Documentation

2023

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INTRODUCTION & BACKGROUND

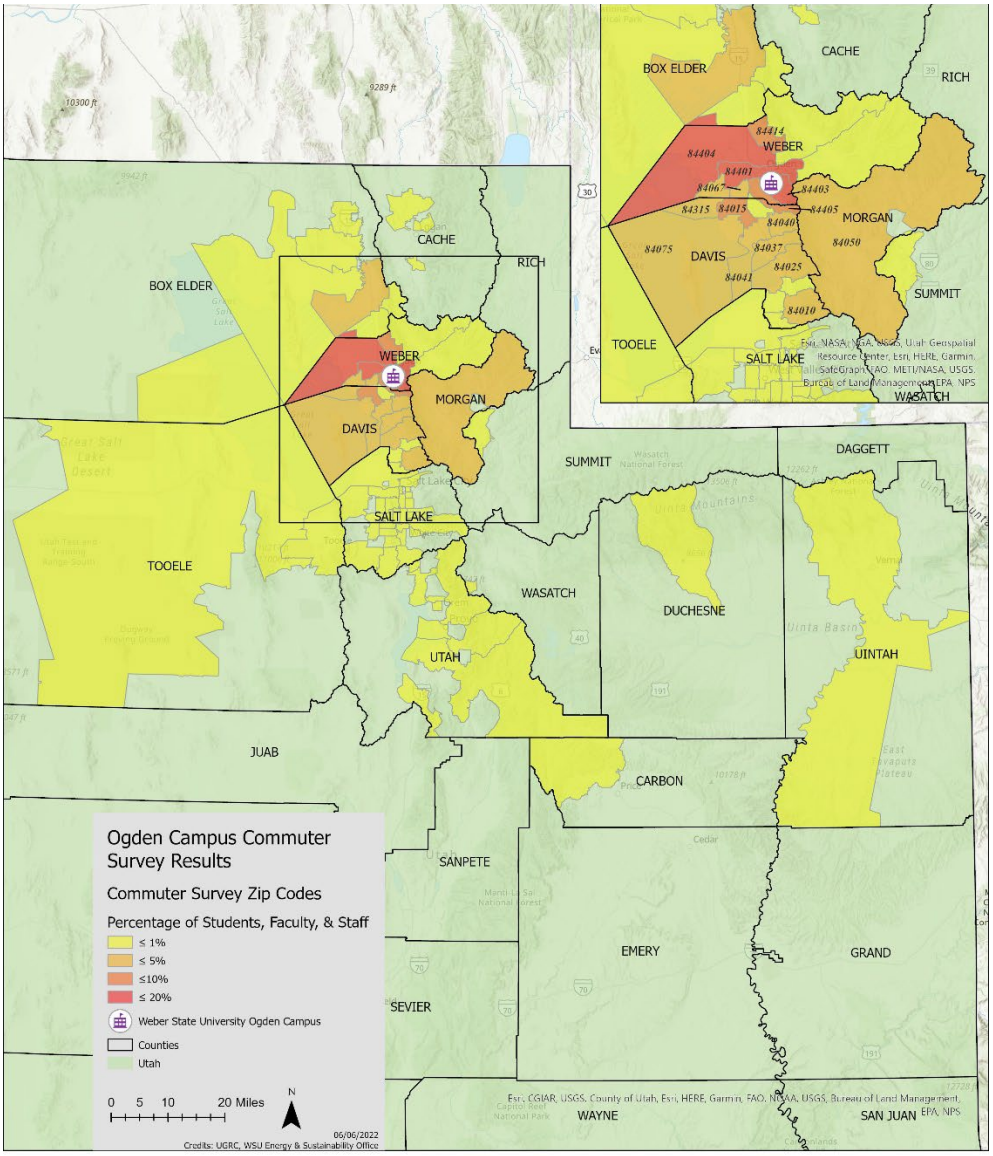
Weber State University ("WSU") is predominately a commuter campus with less than 1,000 students living on campus. The average commute for students, faculty, and staff is approximately 15 miles, and the vast majority of people utilize traditionally gas-powered single-occupancy vehicles to commute to campus. Over the past several years, WSU has installed bike racks, electric vehicle charging stations, and has partnered with Ogden City and the Utah Transit Authority to construct a bus rapid transit system (OGX) that will connect the Ogden campus with town and the Frontrunner Station.

This report summarizes the transportation infrastructure and strategies that help Weber State University (WSU) realize its carbon-neutral goal. This document is intended to be incorporated into the existing campus master plan.

Commuter Survey

Early in the study process, Weber State surveyed faculty, staff, students, and administration to gather more information on travel habits. Questions covered topics including frequency, distance, mode, and potential incentives of travel to and from each of WSU's campuses. Several observations worth noting were revealed in this survey, including:

- The average travel distance to the Ogden Campus is just over 13 miles. While most commuters come from Weber, Davis, and Morgan counties, there are some that regularly travel greater distances (See **Figure 1**)**.**
- On average, approximately 82% of Ogden campus commuters commute by driving alone. (See **Figure 2**)
- Approximately 22% of faculty and staff live within 3 miles of campus. Of those that live within 3 miles, approximately two-thirds of faculty and staff drive to campus alone. These trips represent an opportunity to convert trips to walking and bicycling. (See **Figure 4**)
- The top reason for driving alone amongst all respondents was to allow freedom to come and go as needed. Many students have irregular schedules due to jobs, childcare, etc. (See **Table 1**)
- The most popular common response that would encourage more transit, walking, or biking is incentives from the University. This will be discussed in the Travel Demand Management portion of the document. (See **Figure 5** and **Figure 6**)
- Of the existing transportation benefits offered by WSU, the campus population is most aware of the UTA Ed-Pass (53.5% of respondents were aware of this benefit.) That was also the most used benefit, at 18.2%. (See **Table 2**)
- Survey respondents were more likely to use an e-scooter share program than a bike share program. However, most respondents stated they were unlikely to use either program. (See **Figure 7**)



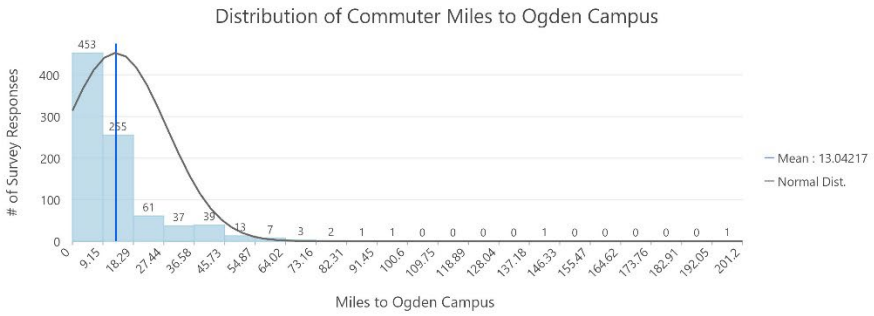


Figure 1. Distribution of WSU commuters to Ogden Campus. Source: WSU Energy & Sustainability Office

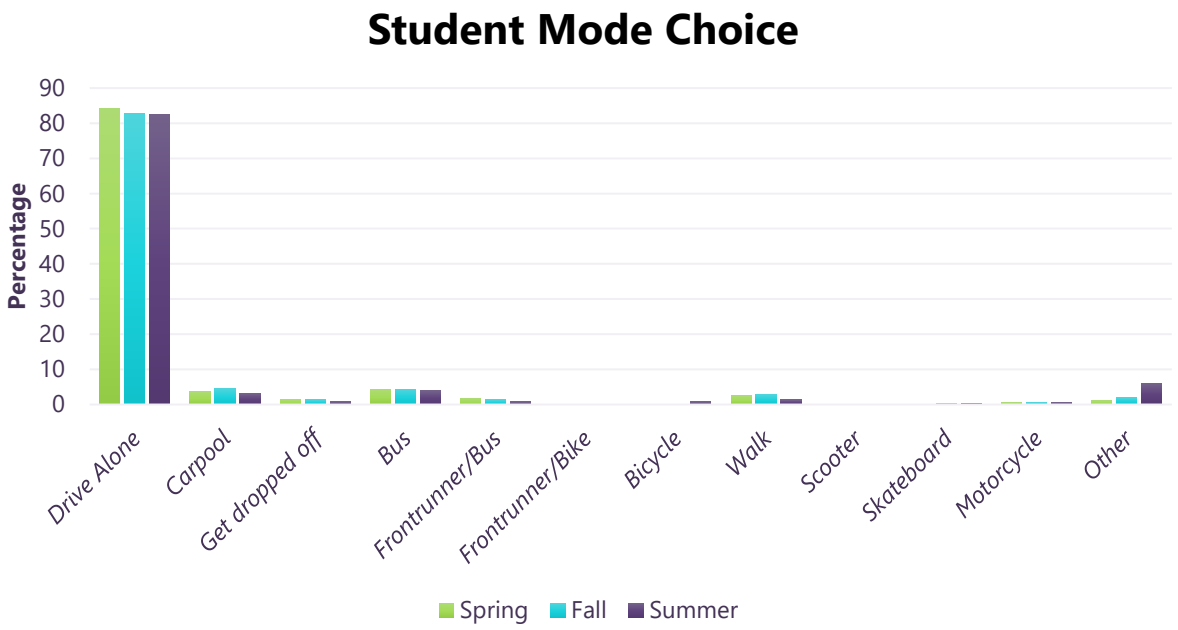


Figure 2. Student mode choice from WSU Commuter survey. Source: WSU Energy & Sustainability Office

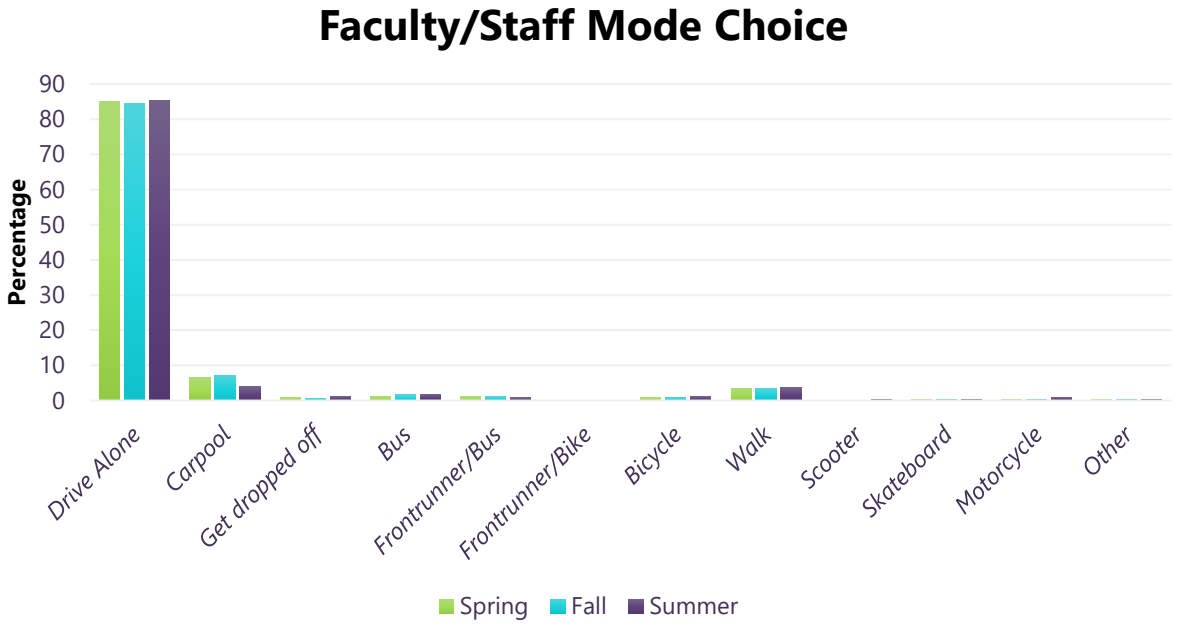


Figure 3. Results from WSU Commuter Survey. The mode by which faculty and staff travel to the Ogden Campus. Source: WSU Energy & Sustainability Office

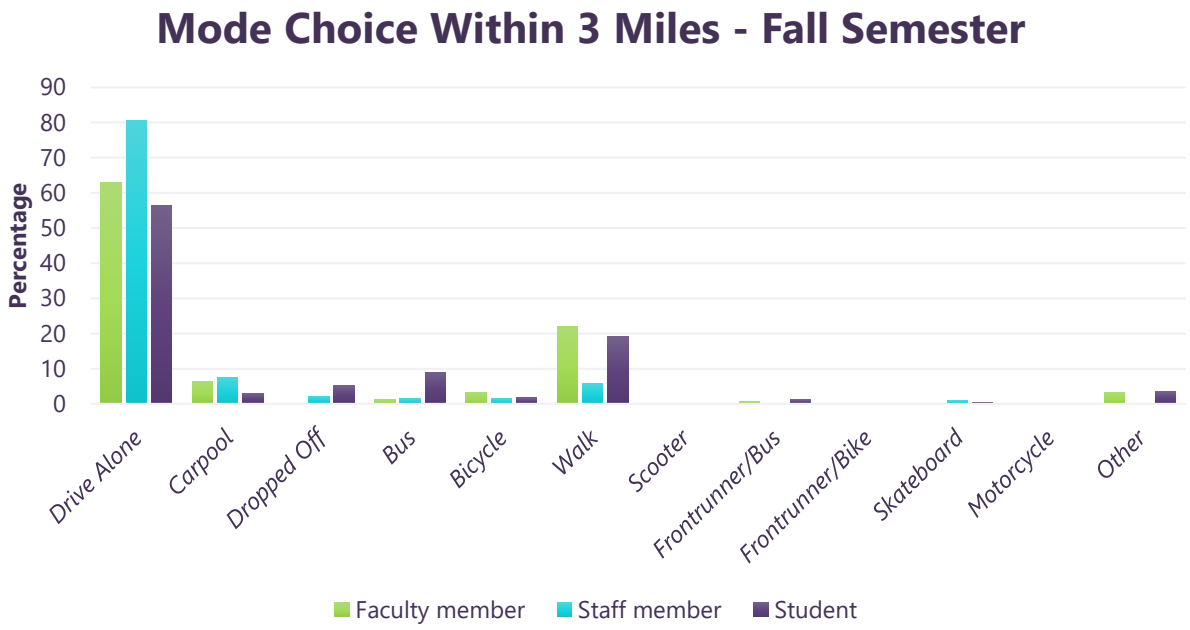


Figure 4. Results from WSU Commuter Survey. The mode by which students, staff, and faculty travel to the Ogden Campus. Source: WSU Energy & Sustainability Office

Table 1. WSU Commuter Survey results

Why Drive Alone: Ogden Campus	Responses
Enables freedom to come and go as needed	269
Saves Time	225
Need to make special trips during or after WSU commitments	167
Too far to walk or bike	166
Irregular schedule	159
No one to carpool with	146
Public transit takes too long	145
Want car for emergencies	115
Public transit does not run frequently enough	79
Prefer alone time	74
Public transit is not available where I live	60
Weather is unpleasant	59
Public transit is unpleasant	49
Other	25

Source: WSU Energy & Sustainability Office

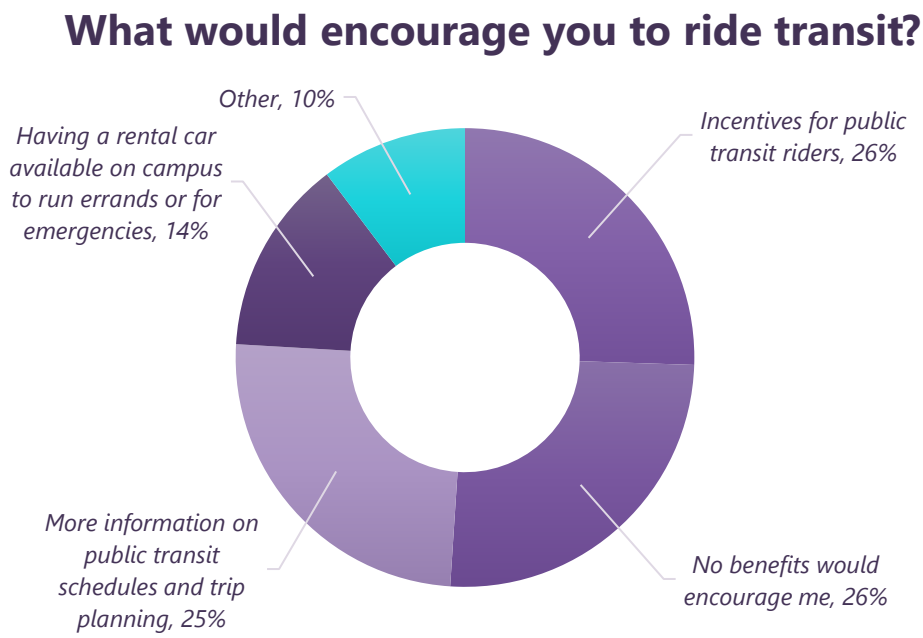


Figure 5. Results from WSU Commuter Survey. Of those who don't currently take transit, what would encourage them to do so. Source: WSU Energy & Sustainability Office

Figure 6. Results from WSU Commuter Survey. Of those who don't currently walk or bike to campus, what would encourage them to do so. Source: WSU

Table 2. Awareness and Usage of existing Transportation Benefits

Benefit Offered	Frequency Aware	Percentage Aware	Frequency Used Past 6 Months	Percentage Used
Bike racks	455	45.5%	22	2.2%
Bike lockers	162	16.2%	13	1.3%
Bike fix-it stations	208	20.8%	9	0.9%
UTA Ed Pass	535	53.5%	182	18.2%
Ogden-Davis campus shuttle	380	38.0%	34	3.4%
Intercampus Lyft service discount	162	16.2%	9	0.9%
Electric vehicle charging stations	431	43.1%	23	2.3%
Green vehicle parking permit rebate	201	20.1%	19	1.9%

Source: WSU Energy & Sustainability Office

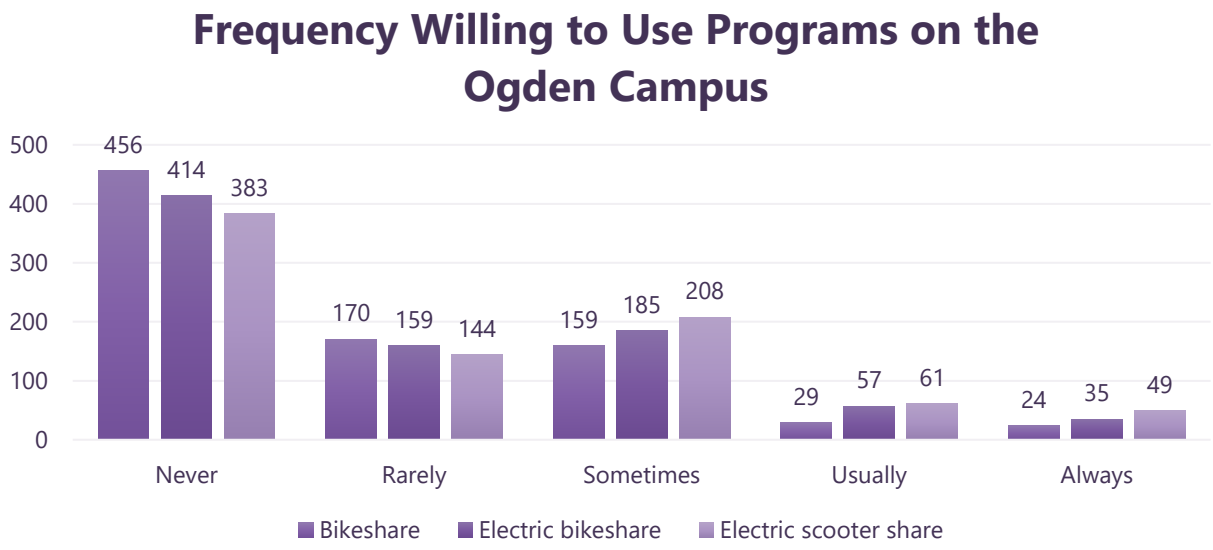


Figure 7. Results from WSU Commuter Survey. The frequency that people are willing to use bike share, electric bike share, and electric scooter share programs. Source: WSU Energy & Sustainability Office

TRANSPORTATION DEMAND MANAGEMENT STRATEGIES

Transportation Demand Management (TDM) is the term for strategies that reduce vehicular travel by providing incentives and infrastructure to encourage other transportation modes and/or reduce overall trips. Many college campuses have effectively employed TDM strategies to manage campus growth without increasing vehicular travel demand (See **Figure 8** and **Figure 9**). Benefits of TDM Strategies include:

- Reduced Green House Gas (GHG) emissions
- Reduced parking needs and costs
- Reduced travel costs for students/employees
- Reduced traffic congestion/delay

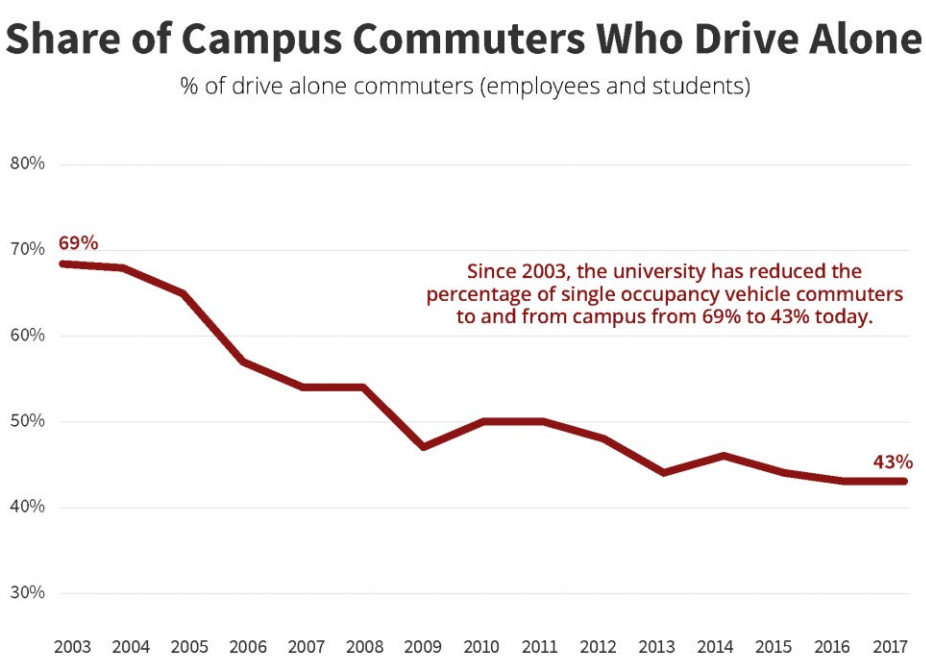


Figure 8. Travel trends at Stanford University since 2003. The share of campus commuters who drive alone. Source: Stanford University.

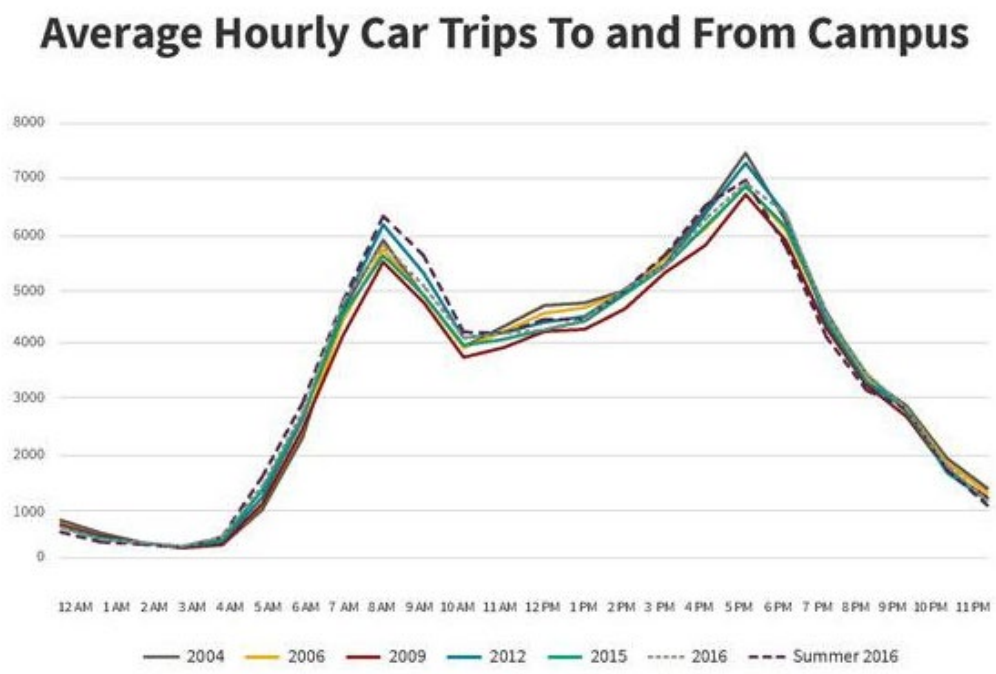


Figure 9. Travel trends at Stanford University since 2003. The average hourly car trips to and from campus. Source: Stanford University.

WSU has several existing TDM strategies, including:

- ✔ Ogden Express (OGX)
- ✔ Intercampus Ogden-Davis shuttle
- ✔ Intercampus Lyft service
- ✔ UTA Ed Pass
- ✔ On-campus bike racks
- ✔ Bike lockers
- ✔ Bike fix-it stations

Figure 10. Weber State University's OGX Wildcat shuttle. Source: www.weber.edu/wsumagazine/fall-2022/wildcat-shuttle.html

If the university is going to meet its sustainability goals, a more comprehensive TDM strategy is required. This section outlines TDM strategies recommended for implementation and quantifies expected benefits.

There is no single transportation improvement project or TDM solution that will fully offset the future traffic growth anticipated due to the growth of the campus. The effectiveness of any individual strategy ranges from minimal (<1 percent) to about four percent. In addition, because some TDM strategies are interrelated, such as vanpool programs and carpool matching, the sum of their effectiveness is not additive because both affect similar groups of people.

To allow for future growth, WSU must adopt a transportation approach that uses multiple strategies to reduce trips through TDM. These approaches must be varied enough and flexible enough to support faculty/staff and students in their academic and personal lives. The shortlist of recommended strategies is summarized in **Table 3**.

Table 3. Proposed TDM Policies

Category	Strategies	Details	Survey Data	Timeline
Other Incentives	**Sustainable Transportation Incentive Program**	Create a "Commute Club" with incentives for faculty/staff and students who commute a certain percentage of their trips by a non-single-occupancy vehicle (transit, carpool, walking, biking, etc.).	#1 response in survey for what would encourage use of public transit more frequently.	Short-term (0-5 years)
Parking	**Carpool Advertising**	Make a concerted effort to promote carpooling, including promoting tools for finding carpool matching (e.g., TravelWise).	~43% said they have no one to carpool with.	Short-term
Active Transportation	**Bike share / Scooter share**	Develop a membership-based bike share or scooter share program to facilitate short trips around campus: tech-enabled options or low-tech options through a staffed bike check-out facility. Facilities for personal micromobility will also be added.	More survey respondents would use a scooter share than a bike share. (37% to 24%)	Short-term
Support & Resources	**Hire a full-time Transportation Coordinator**	A full-time TDM coordinator can help implement programs and projects to reduce dependence on single-occupancy auto trips.		Short-term
Transit	**Vanpools**	Implement vanpools to run from areas with a medium density of campus commuters.		Mid-term (5-10 years)
Other	**Delivery Service Coordination**	Partner with delivery service to coordinate delivery services for on-campus students (ex., Grubhub, grocery). Promote this to incoming freshmen to encourage them to come without a car.		Mid-term
Parking	**Permit Pricing Increase**	Price parking permits to reduce demand for the limited parking supply. This may include charging for Dee Events center parking again. This will need to be monitored over the next few years. Could pay for carbon offsets associated with commuting.	Of those using Alternative Transit, only 29% said that one factor is the cost of parking, while 35% said parking is hard to find.	Mid-term
Electric Vehicle	**EV Incentive Program**	Create a new electric vehicle incentive program. This could include free (or significantly reduced) parking passes for electric vehicle drivers, rebates towards the purchase of a new EV, an EV lease program operated by WSU, etc.		Mid-term
Land Use	**On-Campus Amenities**	Provide additional housing, retail, and services on campus to allow students to meet more of their needs without a car.	<22% of survey respondents live within 3 miles of campus.	Long-term (10-20 years)
Support & Resources	**Collect Data through Surveys**	Systematic and regular data collection on commute and travel patterns can help the TDM coordinator develop and target certain programs for particular groups for maximum effectiveness. For example, including home addresses could allow more-accurate GIS heat mapping of travel patterns.		Short to Long Term

TDM Effectiveness

The options presented in **Table 3** were refined based on feedback from the Steering Committee, application to WSU, and potential benefits. **Table 4** summarizes the TDM strategies for WSU and the potential effectiveness of each based on analysis in Fehr & Peers' TDM+ tool. This tool builds on research compiled in Quantifying Greenhouse Gas Mitigation Measures (California Air Pollution Control Officers Association (CAPCOA), August 2010), which is a resource for local agencies to quantify the benefit, in terms of reduced travel demand, of implementing various transportation management strategies. The TDM+ tool is used to account for overlapping benefits of related strategies to avoid double counting potential trip reductions. Some TDM strategies are interrelated, such as the vanpool program and carpool matching, and the sum of their effectiveness is not additive because both affect similar groups of people.

Table 4. TDM Strategy Effectiveness

Category	WSU Proposed Strategy	Drive Alone Trip Reduction			
		Individual		Grouped	
		Low	High	Low	High
Land Use	Expanded on-campus housing	1.0%	2.2%	1.9%	3.6%
	More on-campus amenities	1.0%	1.5%		
Neighborhood	Pedestrian network improvements	0.5%	1.0%	0.9%	1.5%
	Bike facility improvements	0.5%	1.0%		
	Electric bike share/scooter share programs	0.1%	1.0%		
Transit System Improvements	Completion of the OGX route	0.7%	2.8%	0.7%	2.8%
Commute Trip Reduction	Commute Club and incentives	2.0%	4.0%	3.7%	11.2%
	Carpool promotion	2.0%	4.0%		
	Hire a full-time transportation coordinator	--	--		
	Establish WSU-sponsored vanpools	1.3%	3.3%		
	Increase parking permit prices	2.0%	8.0%		

As shown, the effectiveness of any individual strategy ranges from minimal (<1%) to up to 16%, depending on the level of implementation and adoption. Due to overlapping benefits, the global reductions would not be additive and would amount to a 7.3% to 19.1% reduction in driving alone to campus. Commute trip reduction programs result in the greatest and lowest cost-benefit and a trip reduction benefit of between 3.7% and 11.2%. Increasing the amount of on-campus housing and amenities requires space to accommodate these uses as well as capital to construct, but it also provides substantial benefits in terms of reducing vehicle commute trips by students.

ACTIVE TRANSPORTATION CONNECTIVITY

Figure 11. Students on WSU Ogden Campus. Source: Utah System of Higher Education

Active transportation involves all human-powered forms of traveling from one point to another, such as walking and bicycling, skateboarding, scootering, etc. This section will focus primarily on infrastructure that facilitates walking and bicycling on campus. For more information on scooters and other forms of micromobility, see the **Multimodal & Micromobility Infrastructure (page 22)** section in this document.

Existing Facilities

Weber State University has approximately 11 miles of existing active transportation infrastructure on the Ogden campus. This infrastructure includes approximately half a square mile of sidewalks, 4.6 miles of bike paths, and 6.5 miles of dismount-and-walk zones. In addition, there are 31 marked crosswalks, 21 bike racks, one bike locker, and six bike fix-it stations located throughout campus.

This infrastructure and how the existing campus facilities tie into regional bike lanes and shoulder bikeways are shown in **Figure 12** and **Figure 13**.

Existing Pedestrian Facilities

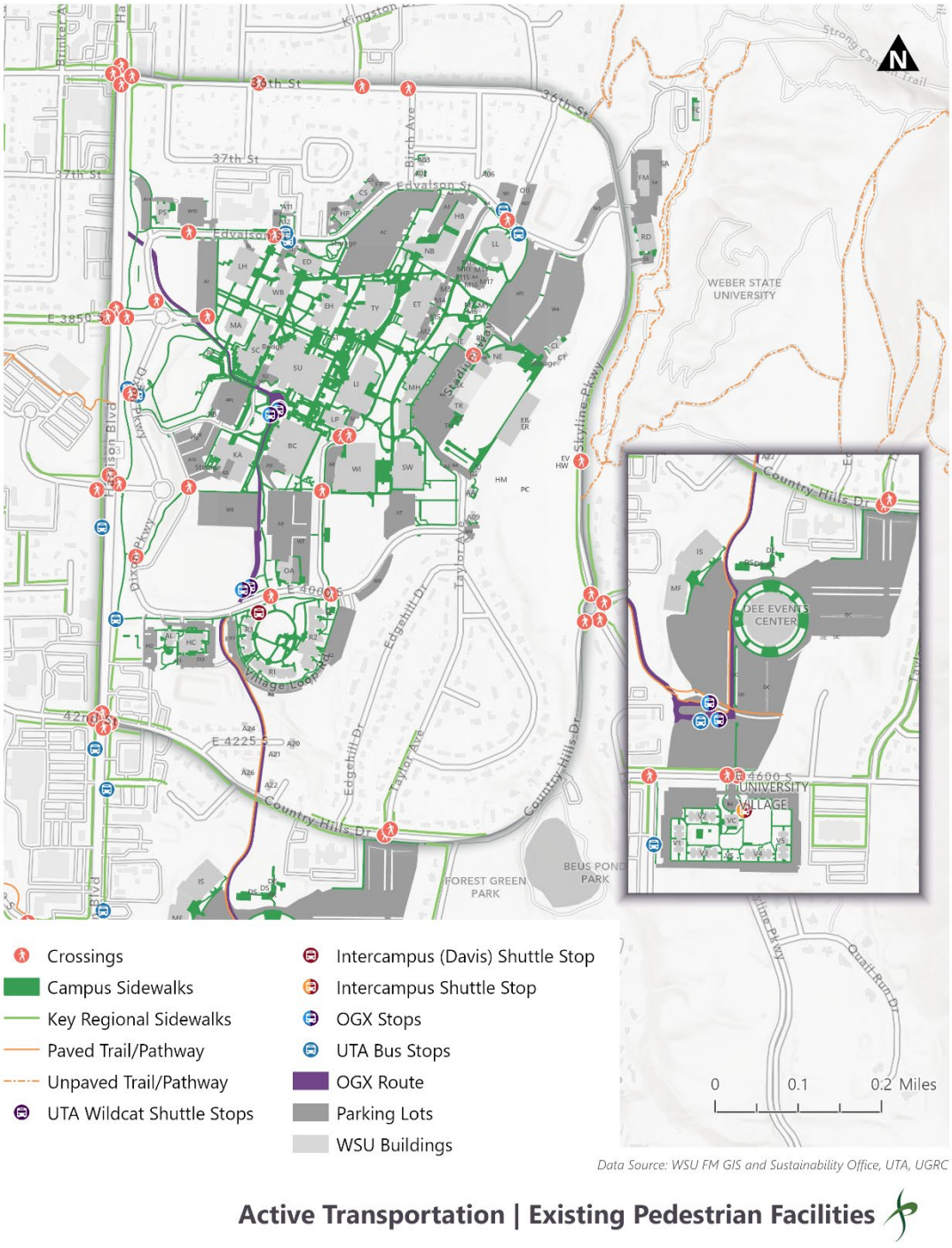


Figure 12. Existing active transportation facilities on WSU's Ogden Campus. Source: WSU FM GIS & Sustainability Office

Existing Bicycle Facilities

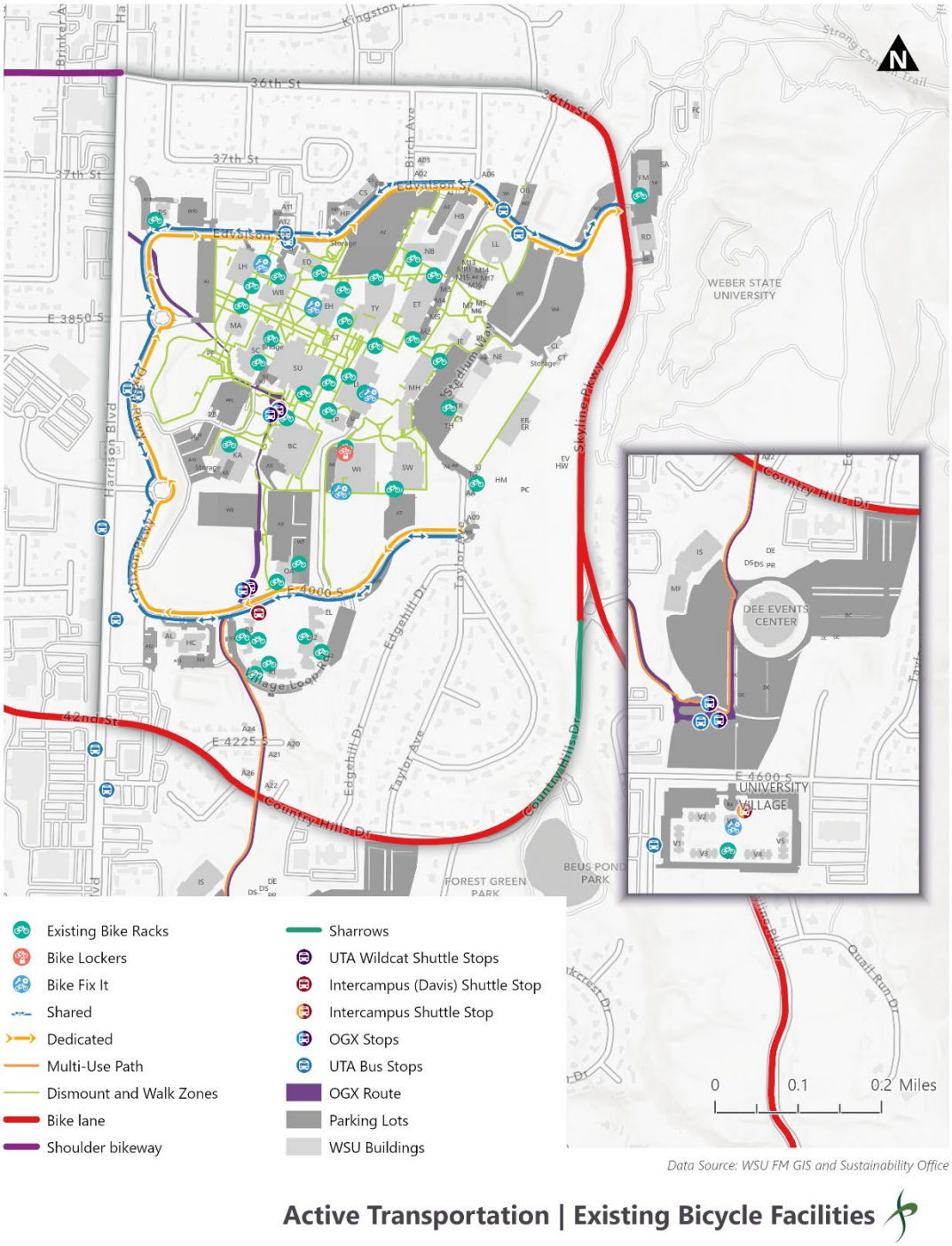


Figure 13. Existing bicycling facilities on WSU's Ogden Campus. Source: WSU FM GIS & Sustainability Office

Future Planned or Proposed Facilities

The planned facilities shown in **Figure 14** and **Figure 15** include ten new bike racks, a trail from Taylor Ave to Skyline Parkway (being funded by a *RAMP grant*), and the suggested multiuse/micromobility route discussed in the **Multimodal & Micromobility Infrastructure** section later in this document. The infrastructure is sourced from the WSU, the Ogden City General Plan, the Ogden Bike Master Plan, and the Morgan County-Ogden Valley Long-Range Regional Transportation Plan.

Proposed Pedestrian Facilities

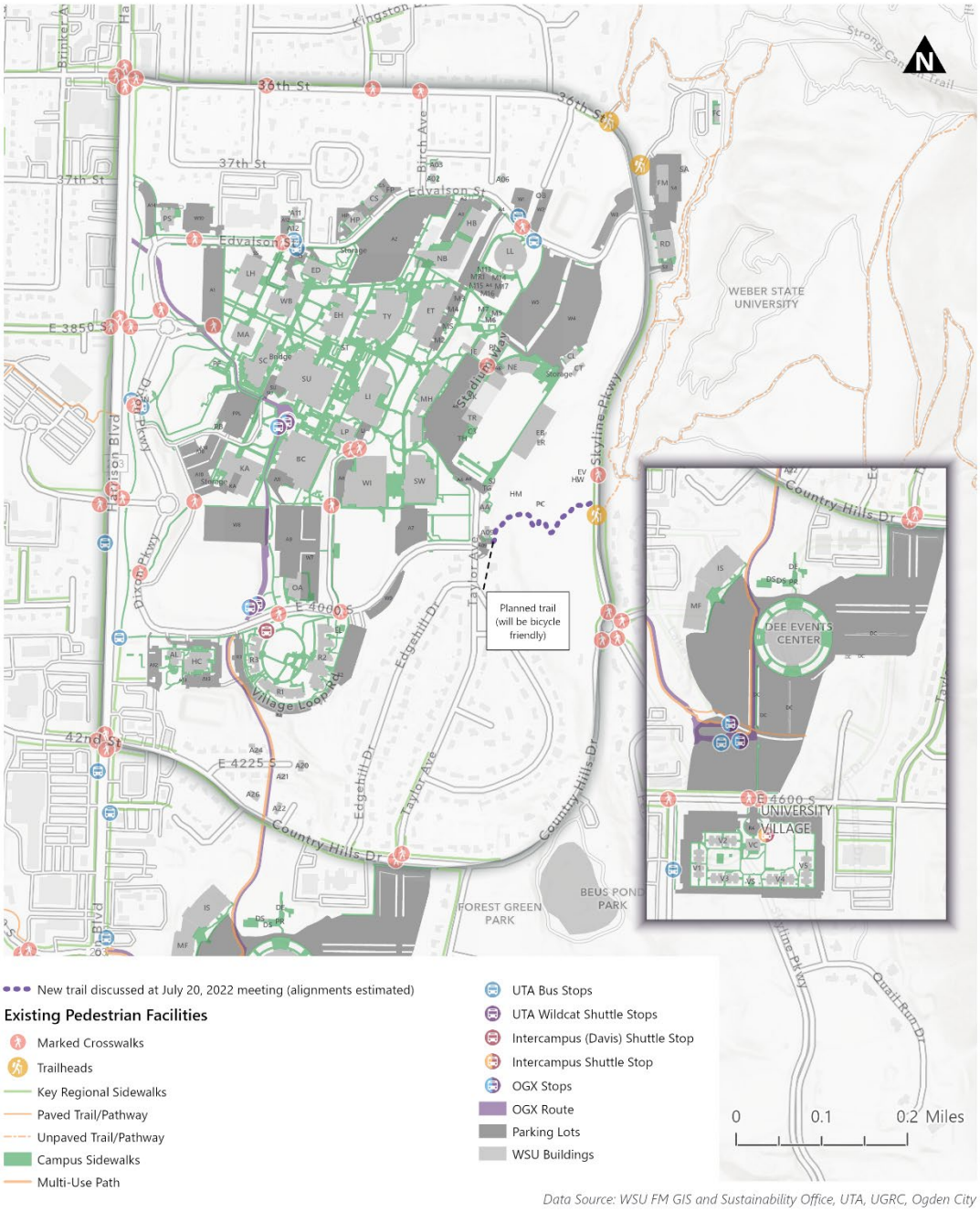


Figure 14. Proposed pedestrian facilities on WSU's Ogden Campus. Source: WSU FM GIS & Sustainability Office

Proposed Bicycle Facilities

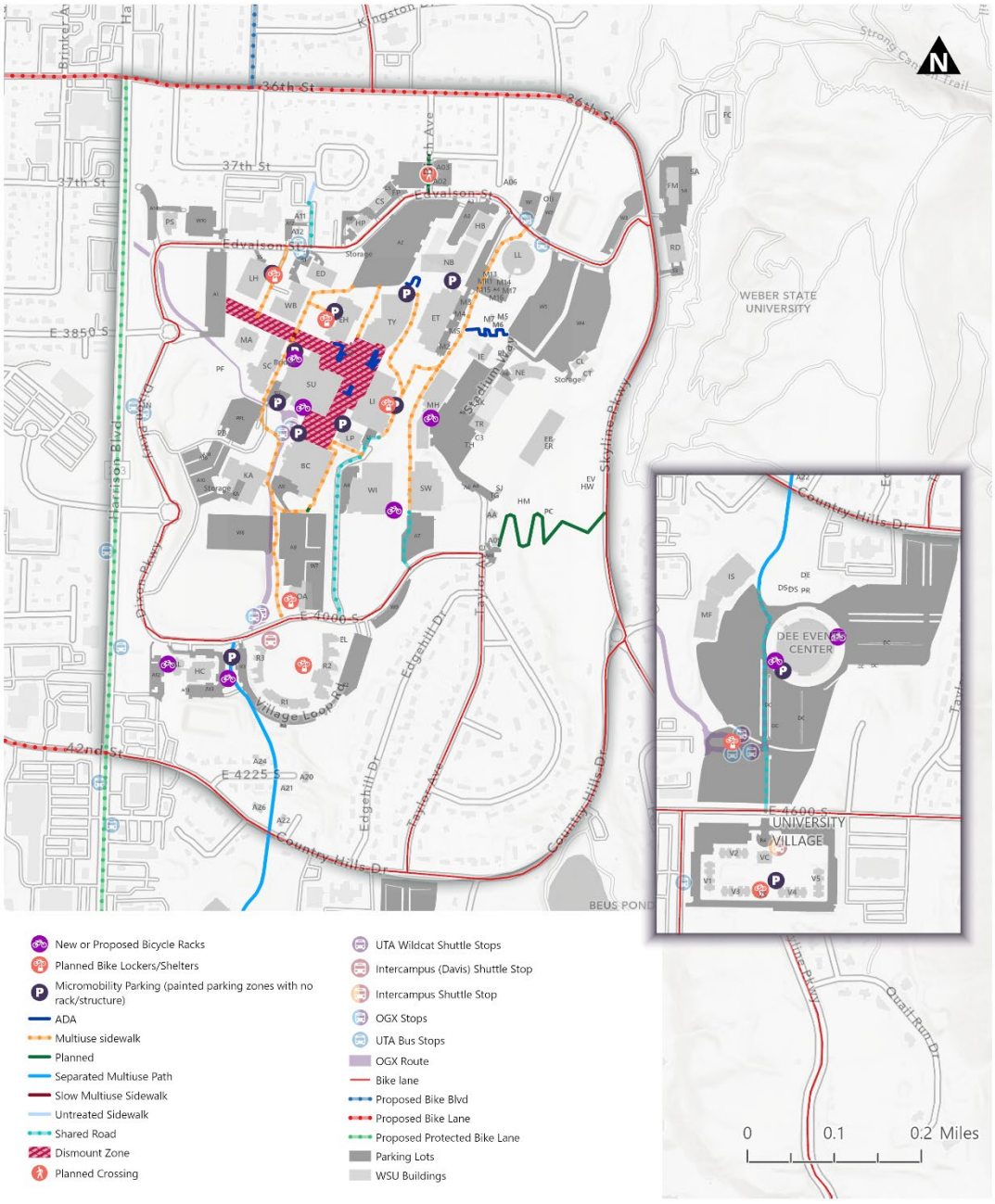


Figure 15. Proposed bike facilities on WSU's Ogden Campus. Source: WSU FM GIS & Sustainability Office

MULTIMODAL & MICROMOBILITY INFRASTRUCTURE

Overview

Micromobility services and devices, such as dockless bike share and e-scooter share, are a relatively new mode of travel first introduced to Utah in 2018. Micromobility services typically offer users app-based rentals of small electric mobility devices that are distributed across a service area by the provider and typically paid by the minute or mile of use. Unlike traditional bike share programs that require devices to be returned to a station or dock at the end of each trip, users can park a device and end a trip in any non-prohibited location, allowing greater flexibility for users to travel directly to their destination.

Micromobility devices can provide convenient non-vehicular travel options to/from and around campus, and work especially well in contexts where vehicular parking is limited, and high demand exists for short to medium-length trips. Micromobility providers currently operate on a number of college and university campuses in and beyond Utah; however, Weber State currently prohibits the usage of shared micromobility devices on campus. WSU administration has expressed interest in realizing the potential benefits of micromobility devices (including reducing vehicular trips in favor of low-emissions trips, and providing more mobility options on campus) while minimizing any negative impacts (such as devices impeding sidewalks/access and safety risks to users and pedestrians).

This plan evaluates the potential advantages and challenges of allowing micromobility devices, reviews relevant providers of dockless e-scooter and e-bike rental, and outlines strategies and recommended policies for effective deployment of these devices on campus.

Micromobility Policies

Micromobility policies were reviewed for peer college campuses, including the University of Utah, Brigham Young University, Utah State University, and Boise State University. The depth of these policies varied widely between universities. Typical micromobility policies include all nonmotorized vehicles and devices and define common devices that are allowed or disallowed on campus (such as traditional bicycles, e-bikes, scooters, skateboards, etc.), as well as define criteria upon which uncommon or potentially novel devices will be allowed or disallowed. Typical policies indicate that all users of these devices are required to yield the right of way to pedestrians at all times and may delineate parts of the campus sidewalk and path network where devices are prohibited. Other items include a campus-wide speed limit (such as 10, 12, or 15 miles per hour) and limitations of these devices to transportation only (i.e., no “trick riding” and no riding indoors). Policies should also reference helmet requirements, adherence to signs and pavement markings, parking requirements, and penalties for infractions (usually modest fines for first offenses or impoundment for further offenses).

Provider Comparison

This plan evaluated several potential micromobility providers for their potential to have productive partnerships with WSU and work with the University's safety and related concerns. Two providers identified as promising include Lime and Spin, both of which currently operate in Utah.

Lime

Lime is a major bike share and scooter share service that operates in various markets throughout the nation. Lime is currently in operation in the Ogden area, so it may have the strongest potential for those on campus to integrate with the surrounding areas and reduce vehicle trips, and provide greater mobility to off-campus locations.

Lime has the ability to designate or 'geofence' areas as:

- "No Parking"
- "Low Speed"
- "No-Go" (currently applies to WSU)

Lime also has the ability to require location-based photo verification of parking to ensure that users park only in approved areas. Information on university partnerships with Lime is not readily available.

Figure 16. Screenshot of Lime's "No Scooter Zone" and "No Locking Zone"

Spin

Spin is a smaller company than Lime that currently partners with peer institutions (Boise State University and the University of Utah) and has a more developed partnership model with universities. Like Lime, Spin has the ability to designate and geofence areas where users cannot ride, must slow down, or cannot park / end a ride. Unlike Lime, Spin appears to focus its business model on partnering with campuses. Spin appears to offer more fine-grained zones than Lime and be more willing to collaborate on education, safety, and deployment. Spin also requires photo verification for parking.

Partnership with Lime would offer key advantages to WSU in terms of connectivity on- and off-campus; however, evaluating and negotiating with multiple vendors through an RFP or similar process that clearly states WSU's goals and concerns around micromobility can provide WSU with the best set of options for introducing micromobility onto campus.

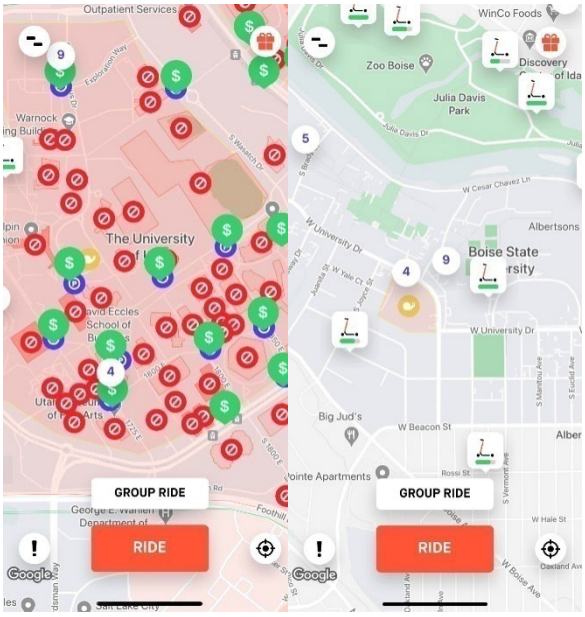


Figure 17. Screenshot of Spin as shown at the University of Utah (left) and Boise State University (right).

Dismount Zones, Preferred Network, and Parking

While micromobility users should yield to pedestrians throughout campus, dismount zones and slow zones are common in high-traffic campus areas to create a safer environment for all users.

Dismount and walk zones are zones where all micromobility users and bicyclists are required to dismount and walk their wheels. This serves to eliminate conflict potential in the areas with the highest numbers of pedestrians and is generally straightforward to enforce. A potential drawback of these zones is that they may discourage using active modes and consequently slow down progress in emissions goals.

Slow or pedestrian priority zones are zones where micromobility users and bicyclists are required to stay within a low speed, usually 8 – 10 miles per hour. As opposed to dismount/walk zones, these zones may encourage the use of bikes, scooters, and other micromobility devices as users can slow down more easily than dismount, though it is difficult for users to gauge their own speed and enforcement can be more ambiguous or discretionary.

As the need for these special zones is somewhat of a recent development, design standards for these zones have not been widely standardized, though some prominent patterns have emerged. The general purpose of these design choices is to limit the impacts on pedestrian mobility as much as possible while providing strong contextual nudges to those riding bicycles, scooters, or other micromobility devices. Bollards with clear signage indicating "Walk Your Wheels" or "Slow Zone" can be used to mark the boundaries of such zones. Bold and obvious pavement/sidewalk markings can be used throughout the entirety of the zones.

Pavement treatments (e.g., highly textured, cobbled) or physical barriers can discourage or slow down riding. For any design choice, consideration should be given to both pedestrians and those riding bicycles, scooters, and other micromobility devices. Bike and scooter parking should be provided at entries to dismount zones.

Figure 18: 'Walk Your Wheels' and 'Slow Zone' signage (Sources: Jersey City, NJ; University of British Columbia)

Micromobility parking locations should be located throughout campus to provide easy and convenient options for users to park devices while avoiding devices being parked in inappropriate locations. Designated parking areas do not require physical infrastructure beyond pavement markings (as shown in **Figure 19**), which makes them inexpensive and easy to install widely. Micromobility providers may not rebalance scooters to all parking locations, but having designated parking areas in many locations across campus will help avoid parked scooters blocking access or posing safety issues.

Additionally, a backbone network of recommended pathways for micromobility users should be designated around campus, providing clarity on which routes are most appropriate for scooters and similar devices (based on the directness of connectivity and adequate width).

Figure 19: Designated Scooter Parking Area in San Diego (Source: Wikimedia)

ELECTRIC VEHICLE CHARGING & PARKING

WSU EV Charging Station Policy

The current WSU EV Policy is as follows:

"Strategy for Assessing and Meeting Future EV Charging Station Needs

Parking Services collects data on the make and model of all vehicles issued permits. From this data we can determine the number of plug-in hybrid and fully electric vehicles on campus.

Per Parking Services, the Ogden and Davis Campuses have 8,868 parking stalls, not including the Dee Events Center. A reasonable approach to EV charging station provision would be to annually request data from Parking Services to determine the total number of EVs on campus and then provide enough stalls to serve up to one-third of this population. Current WSU policy limits EV charging station parking stall time to three hours to allow for 2-3 charging sessions per day. Therefore, providing stalls for at least one-third of the population will ensure that most of the EV population will get some time throughout the day to charge.

To ensure that future demand is being met, FM staff plan to annually request EV data from Parking Services to decide if additional stations are needed. Locations of future stations will be selected based on an analysis that takes into consideration location demand (assessed through the commuter survey), cost, and ease of installation.

While the existing and proposed stations are currently at the recommended number, FM staff recommend that the OPR requires that conduit be installed with all new construction to reduce the costs of future station installation. EV technology is changing rapidly, and it is not difficult to envision a future where a large percentage of the WSU population are driving these vehicles. Having conduits ready at each building will ensure that WSU is future-ready while maintaining the flexibility to only add stations when they are needed.

Scope 3 GHG emissions, which are primarily comprised of emissions from commuting faculty, staff, and students, are the largest source of emissions produced by WSU. Providing EV charging stations is one strategy being used by FM staff to incentivize the adoption of EV technology thereby reducing these emissions. Scope 3 emissions represent the most challenging hurdle to meeting the institution's 2040 carbon-neutral goal due to the fact these emissions result from a multitude of individual decisions outside of the University's direct control. A multipronged approach that includes improvements to public transit (e.g., OGX), improvements to pedestrian and bicycle infrastructure, and incentives to rideshare or adopt alternative fuel vehicles, is currently the best practice approach to meeting this carbon neutral goal while simultaneously improving local air quality."

Projections for future demands of electric vehicle charging infrastructure are always being updated. One recent report estimated approximately 15% of the country's vehicle fleet will be fully electric by 2030.[1] To prepare for this future, many jurisdictions have passed policies regarding the percentage of new parking stalls that must accommodate electric vehicle charging. Table 5 summarizes EV charging policies implemented in applicable agencies. **Figure 20** explains the difference between the levels of requirement in each policy in the table. Policies range from requiring 1% of stalls to be "EV-Ready" to requiring 20% of stalls to have EV chargers installed.

Table 5. EV-related Policies in Applicable Communities

Agency	EV-Related Policy
LEED	5% of all parking spaces must have Level II charging stations installed for LEED credit
Park City, UT	20% EV Installed for first 100 spaces, 5% thereafter
Salt Lake City, UT	4% EV Installed, 20% EV Ready in multi-family residential
St George, UT	1% EV Ready
Boulder, CO	5% EV Installed, 10% EV Ready
Fort Collins, CO	10% EV-Capable
San Jose, CA	10% EV Installed, 40% EV Ready
UC Davis, CA	Goal for 100 New EV Charging spaces every year

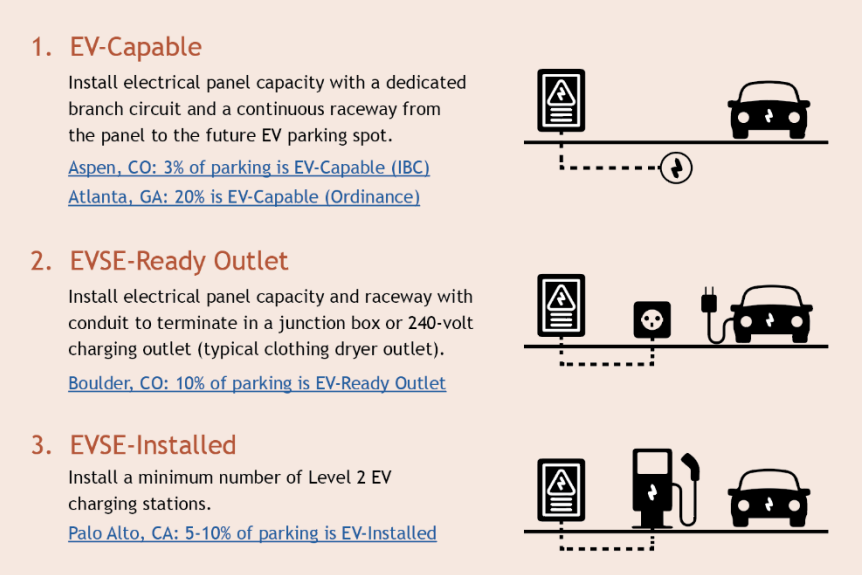
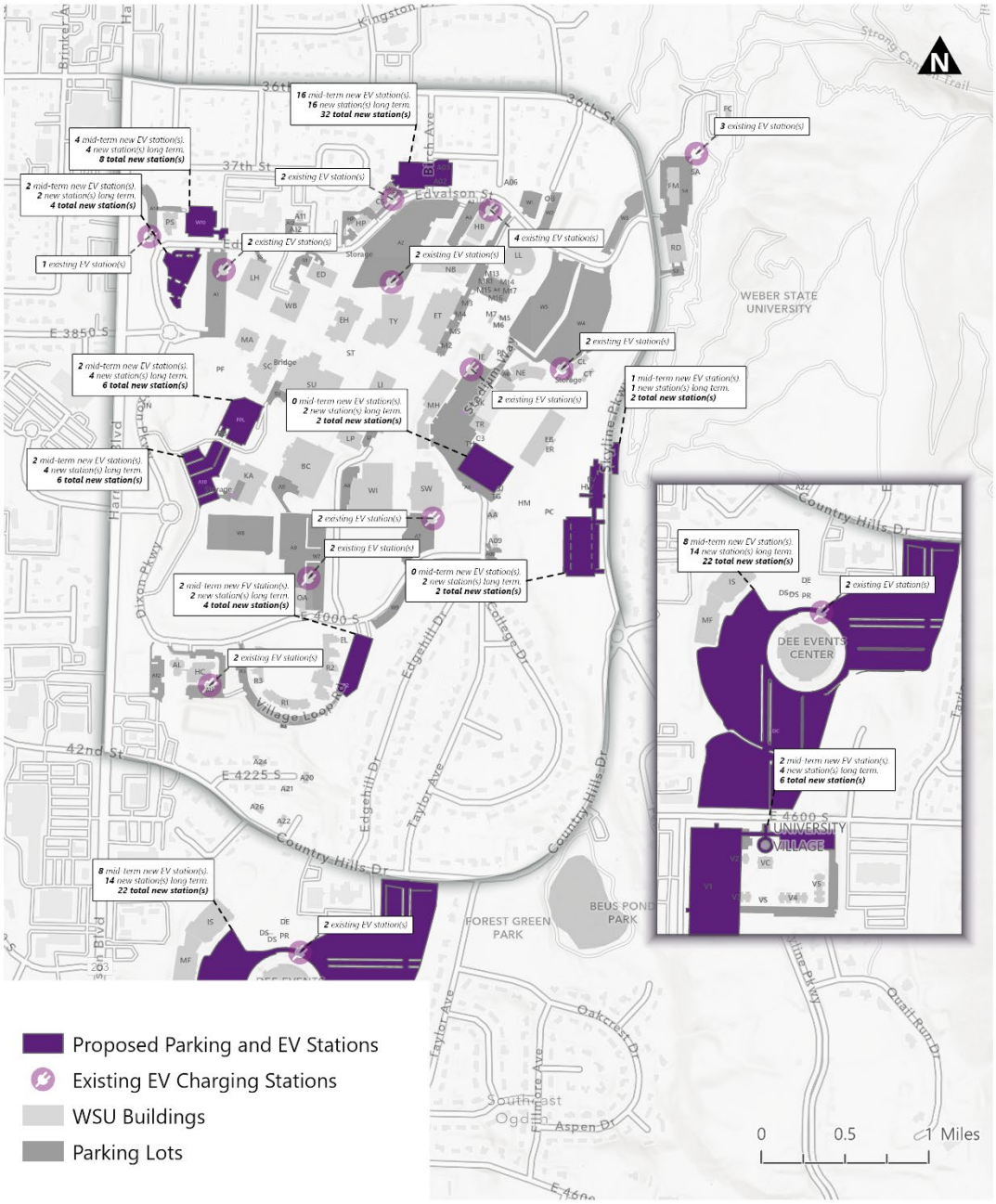


Figure 20. Type of EV parking and charging stations. Source: SWEEP, swenergy.org

WSU currently has 24 charging stalls installed out of 4,269 parking stalls on campus, or approximately 0.6% (excluding Davis and Dee Events Center lots). The currently planned installation of new charging stalls will bring the total stalls to over 50 by 2030, well over 1%. Rather than set a specific target for new stalls, WSU will keep the current policy of monitoring usage data from Parking Services annually to determine when demand calls for the installation of more charging stations. Stations will be installed such that 1/3 of the campus EV population can be accommodated at any given time. As demand rises, stations will be installed, as indicated in the maps shown in **Figure 21.**

[1] *"Building the electric-vehicle charging infrastructure America needs", McKinsey & Company, April 2022.*

Implementation Projection



Data Source: WSU FM GIS and Sustainability Office, UTA, UGRC, Ogden City

Proposed Parking Lots and EV Stations

Figure 21. New or proposed parking lots and EV stations. Source: WSU FM GIS & Sustainability Office

PHASING

The phasing for the recommended transportation elements outlined in the previous chapters were developed for mid-term (5-10 years) and long-term (10+ years). See **Figure 22** for the mid-term phasing and **Figure 23** for the long-term phasing recommendations.

Mid-term: 5-10 years

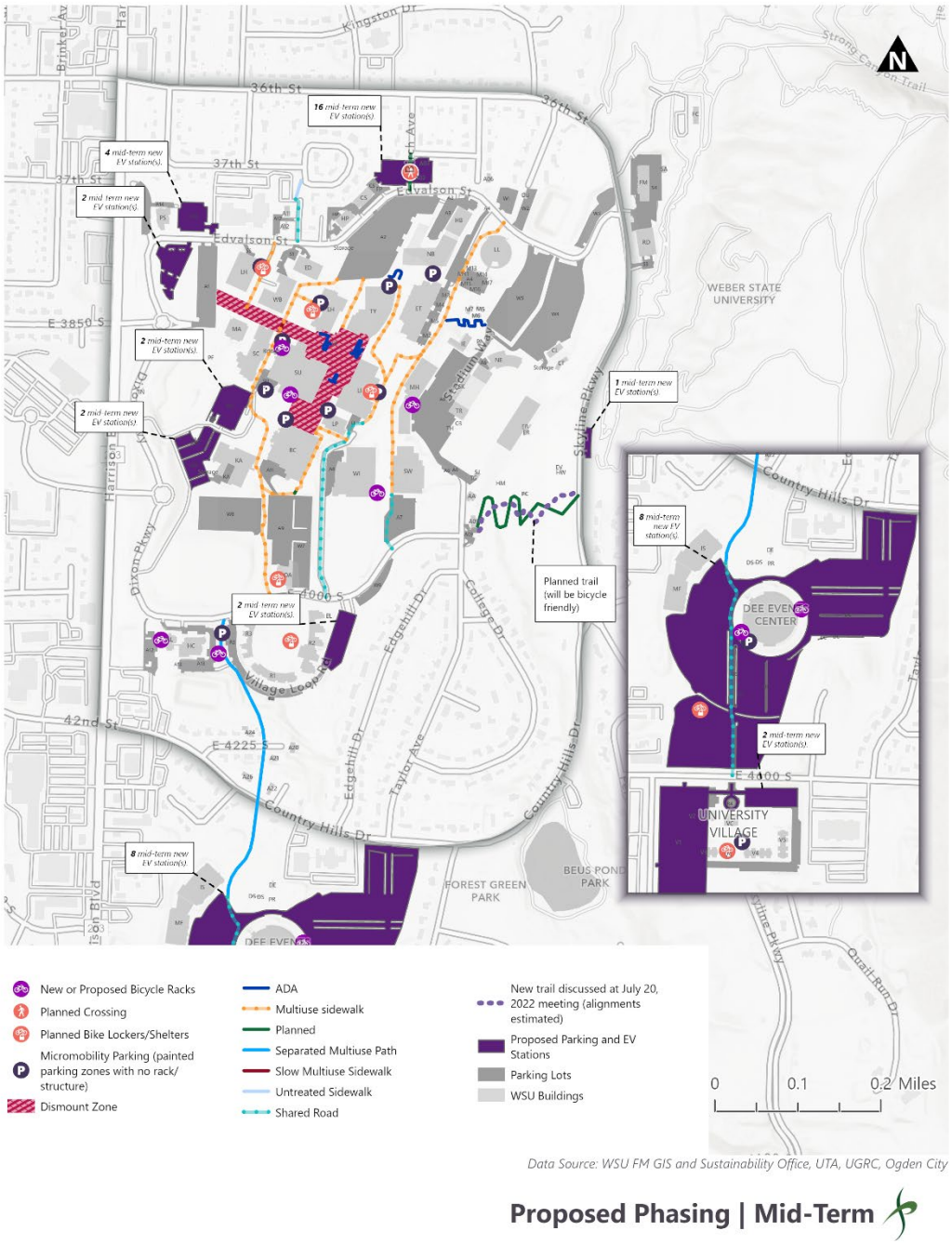


Figure 22. Proposed mid-term phasing for all projects. Source: WSU FM GIS & Sustainability Office

Long-term: 10+ years

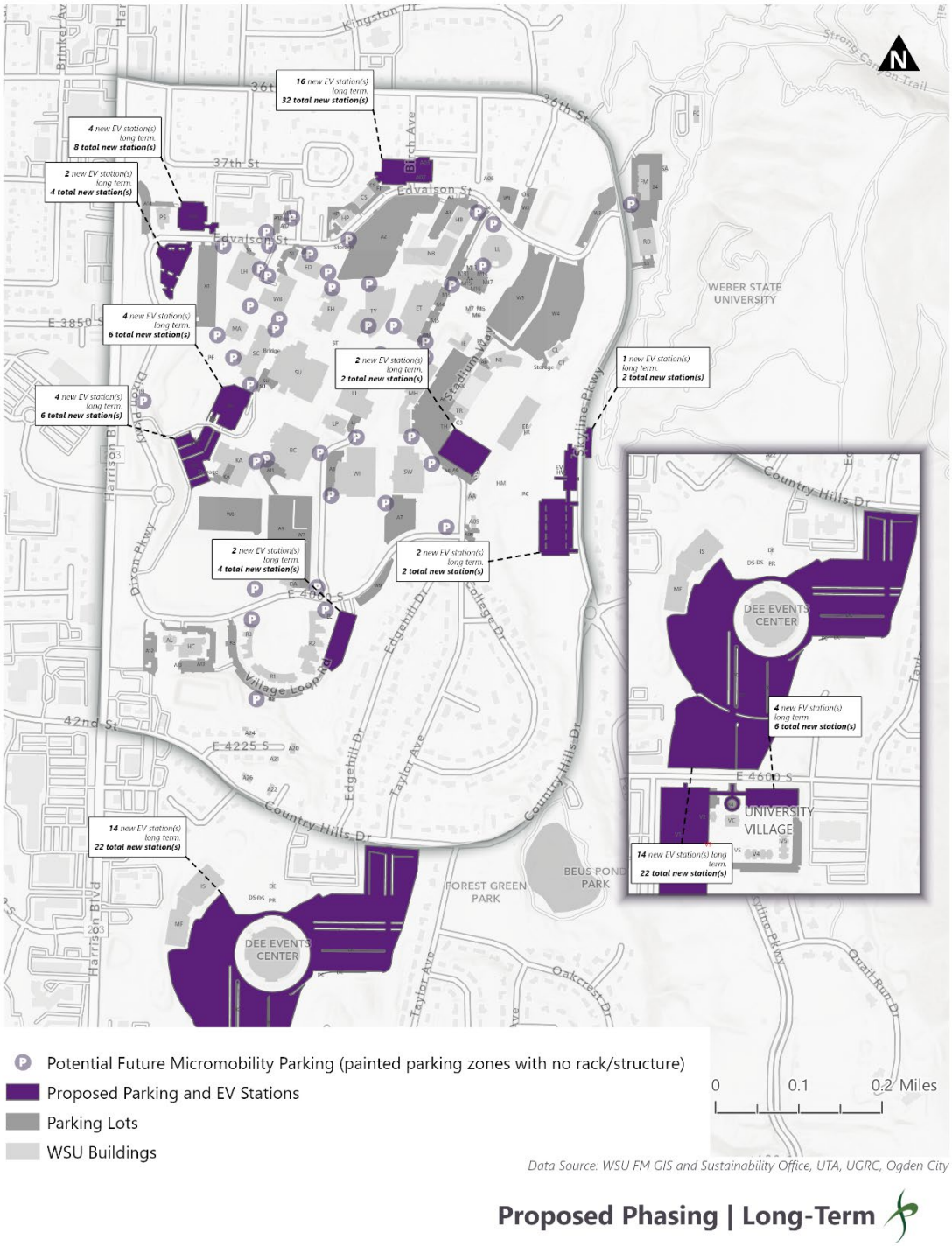


Figure 23. Proposed long-term phasing for all projects