WISCONSIN

UNIVERSITY OF WISCONSIN–MADISON

LONG RANGE TRANSPORTATION PLAN

2015 CAMPUS MASTER PLAN UPDATE

Table of Contents

List of Figures and Tables

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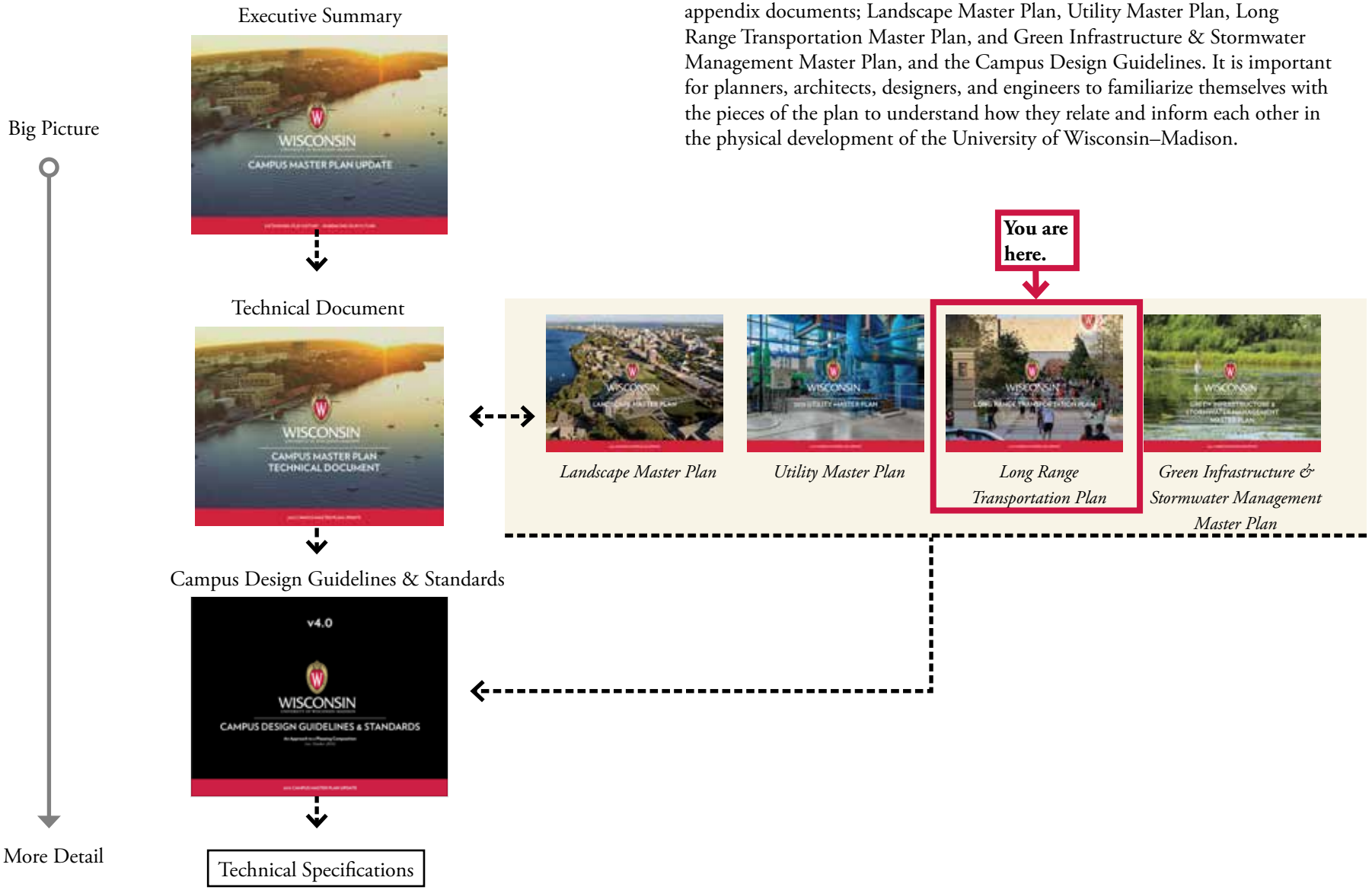
Document Composition

The "2015 Campus Master Plan Update" is comprised of the Executive Summary, the Technical Document, which includes the four (4) supporting appendix documents; Landscape Master Plan, Utility Master Plan, Long Range Transportation Master Plan, and Green Infrastructure & Stormwater Management Master Plan, and the Campus Design Guidelines. It is important for planners, architects, designers, and engineers to familiarize themselves with the pieces of the plan to understand how they relate and inform each other in the physical development of the University of Wisconsin–Madison.



2015 Campus Master Plan Executive Summary

A full color 24-page report that summarizes the major goals and guiding principles for the Master Plan. The document includes the Chancellor's vision and the major goals and initiatives for each of the identified focus topics (appendices to the Technical Document). Welcomes and sets the tone for users and viewers of the master plan document. It is both a marketing piece for future development and a summary of the planning process.

2015 Campus Master Plan Technical Document

The unabridged thought and support behind the goals and guiding principles for the Master Plan. This more than 250-page document presents a roadmap for campus development over the next 30-50 years by referencing what has come previously and embracing what the future holds. Together with the Campus Design Guidelines, the Technical Document strives to give physical form to the university's mission, vision, and programs through the effective use of human, environmental and fiscal resources.

UW–Madison Campus Design Guidelines

The site specific framework that has been established to create the ground rules for a fruitful dialogue between planners, architects, engineers, campus community, and city/state authorities. Divided into nine Campus Design Neighborhoods, the goal of the guidelines is to enhance the university's sense of place by creating well-defined, functional, sustainable, beautiful and coherent campus environments that promote intellectual and social exchange.

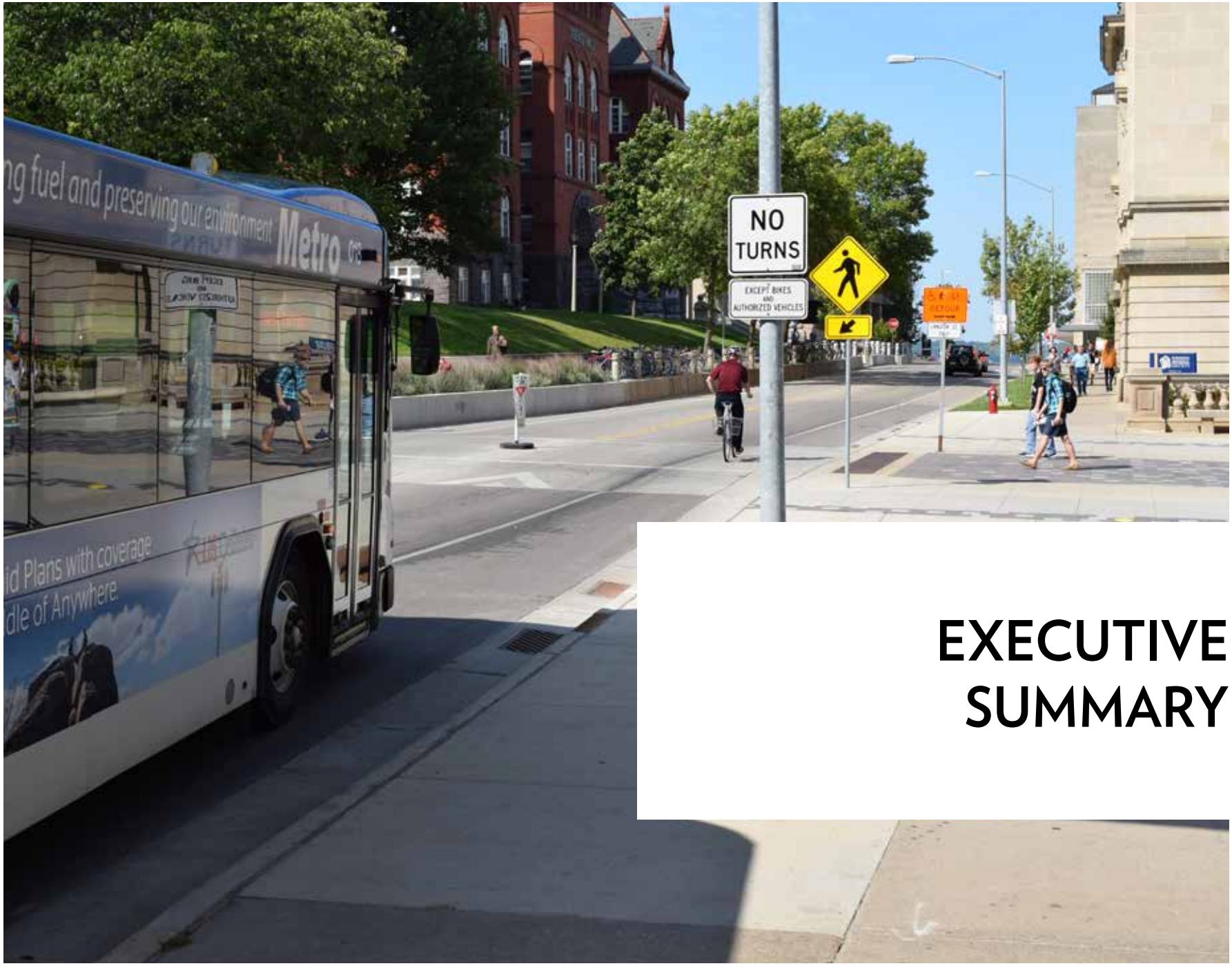
Appendices:

Landscape Master Plan
Establishes a 'sense of place' where phased growth and future development can occur while maintaining a cohesive environment.

Utility Master Plan:
Confirms status of the 2005 recommendations, acknowledges completed projects, and makes recommendations to meet the 2015 plan revisions.

Long Range Transportation Plan: Updated from the previous LRTP, the plan is the university's transportation vision and describes baseline conditions, travel behaviors, and trends all modes.

Green Infrastructure & Stormwater Management Master Plan: A campuswide plan that recommends solutions to meet stormwater management regulations as well as existing campus stormwater policy.



EXECUTIVE SUMMARY

Introduction

A comfortable, efficient, and connected multimodal transportation network is critical to the ongoing vibrancy and success of the University of Wisconsin–Madison (UW–Madison).

The university strives to maintain walking and biking as the primary modes of transportation on campus through maintenance and improvement of pedestrian and bicycle facilities. Projected growth in programmed teaching and research space will alter the demand for campus parking. A connected street network and high-quality transit operations will move students, faculty, staff, and visitors around campus. The university will prioritize the effective balancing of existing and future parking resources to provide an adequate and convenient supply of parking now and into the future.

Ongoing campus sustainability is a guiding principle of this LRTP. The Long Range Transportation Plan (LRTP) recommends practical solutions for addressing the primary transportation challenges of the university, for the benefit of the students, faculty, staff, and daily campus visitors. Recommendations are intended to address known deficiencies, improve connectivity and transportation operations, and complement projected campus development.

Analyzing and evaluating campus travel trends and multimodal use data, as well as existing infrastructure and services provides a basis for understanding current and ongoing needs to be addressed over the life of the LRTP.

Travel Patterns and Behavior

Over 70% of students walk or ride their bike to campus, while more than half of faculty and staff drive alone to campus. Among UW Hospital employees, 70% drive alone to campus. Ongoing university transportation demand management (TDM) efforts are a key reason that the university is able to operate with only 13,000 parking spaces, which is one of the lowest parking ratios of any major university in the United States. Continuing to focus on and expand these strategies is consistent with the university's continued pursuit of campus sustainability, health, and well-being.

UW–Madison is a national leader in providing effective travel demand management and alternative commuting strategies and messaging. Single-occupancy vehicle trip reduction is accomplished through a variety of incentives and the provision of desirable travel alternatives. These include:

- Strong multimodal travel options, including Metro Transit bus and a comfortable walking and biking network
- UW–Madison Employee Bus Pass Program
- Free campus bus routes and subsidized Metro Transit bus passes for students, faculty, and staff
- Paratransit service
- Accessible Circulator Shuttle PILOT
- Carpool/vanpool options
- Emergency ride home
- Limited parking supply and permit parking requirements
- Park-and-ride
- Car sharing
- BCycle bicycle share
- Abundant and convenient bicycle parking

Vehicle Travel/Roadway Capacity

Most of the minor roadways on campus experience little congestion throughout the course of an entire day. Observatory Drive, Linden Drive, N. Mills Street, and N. Randall Avenue are examples of low-volume roadways that see little congestion over an average day but may have short periods of congestion or delay at certain peak periods. The Campus Drive and University Avenue arterials have the highest levels of congestion of roads on the campus network.

Loading and service docks are located across campus serving the movement and delivery of goods. All campus roads can support truck loads. To the extent possible, the university tries to limit truck deliveries on campus to times of the day where pedestrian volumes are low.

Walking and Biking

A network of sidewalks, on-street bike accommodations, welcoming streetscapes, and off-street shared-use trails connect pedestrians and bicyclists around the UW–Madison campus, and to the surrounding City of Madison transportation network. The university is a leader in providing comfortable and connected non-motorized transportation options. UW–Madison has been designated a Gold-Level Bicycle Friendly University by the League of American Bicyclists. A robust non-motorized transportation network is complemented by abundant and convenient bicycle parking and seven campus BCycle bike share stations. Despite numerous assets, several challenges exist:

- Critical gaps in pedestrian and bicycle connectivity exist, most prominently in west campus in the Vet Med area crossing University Avenue and connecting the existing Campus Drive shared use path with Babcock Drive to the east
- Intersections and crossings are an issue in some locations, with modal conflicts and transit delay arising due to heavy pedestrian and bicycle volumes, particularly at class change times
- There is a need for more consistent and standard maintenance of pedestrian and bicycle facilities across university and city-owned streets on campus, more attention paid to improving wayfinding and signage to increase accessibility, and a continued focus on placing bike-supportive features on campus such as abundant and convenient bicycle parking, and other bicycle equipment resources

Critical locations where gaps in walking and bicycle infrastructure reduce campus connectivity are displayed in **Figure E-1**.

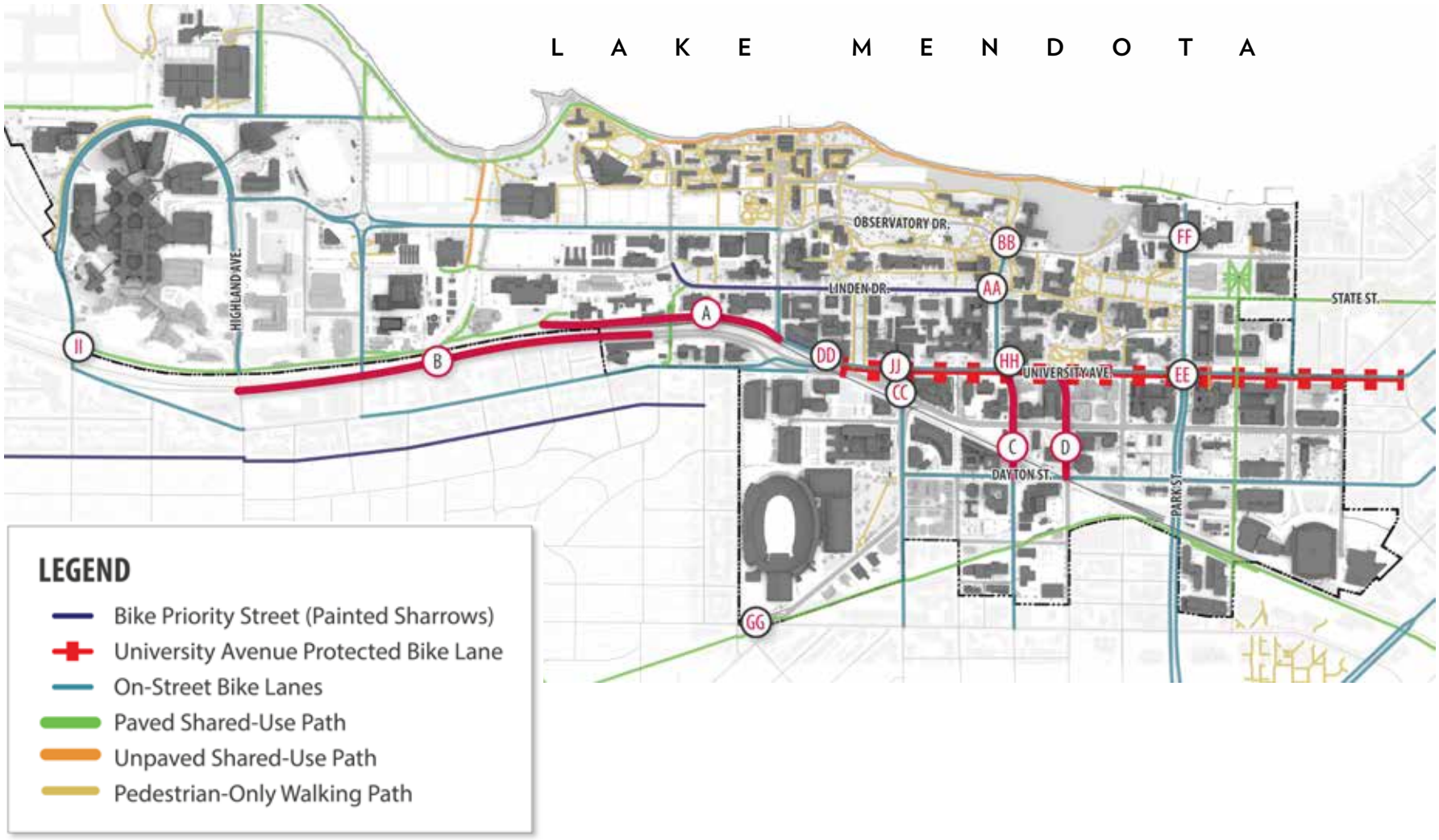


Figure E-1 Existing Walking and Biking Routes and Identified Challenges

Transit Use

The UW–Madison currently contracts with the local transit provider, Metro Transit, to provide transit service to students, faculty, and staff on campus. Metro Transit routes 80, 81, 82, and 84 circulate around the UW–Madison campus and are free to all riders. Routes 2, 11, 27, 28, 38, and 44 provide additional campus circulation. Currently, there is an average of 16,900 boardings on the UW–Madison's campus each weekday during the academic year. According to available Metro Transit data, the busiest stop on campus is at University Avenue and N. Park Street, with an average of 1,460 daily boardings.

Other transit options available to campus students, faculty, and staff include paratransit services, carpool services operated by the Wisconsin Department of Transportation in Verona, DeForest, Sauk City, Northwest Dane County, Middleton, Mount Horeb, and Mazomanie, and vanpools serviced by the Wisconsin State Vanpool Program. Additionally, Zipcar has shared cars at seven campus locations accessible for personal use, and Monona Express offers express bus service to downtown Madison and campus.

Metro Transit serves five area park-and-ride locations throughout the Madison area. The university also has its own park-and-ride locations. These include Lot 200 (served by Routes 6 and 11), Lot 202 (served by a UW–Madison shuttle), and Lot 203 (served by a UW–Madison shuttle). These park-and-rides are serviced by UW–Madison independent of Metro Transit in order to improve commuters' access to campus.

Finally, plans are underway by Madison Metro for a bus rapid transit (BRT) service routes throughout the greater Madison area, including a route between the east and west sides of Madison through the isthmus and along University Avenue through campus. The university and city are planning integration of this service with other campus transit and multi-modal infrastructure.

Several ongoing transit challenges exist:

- Street Network Connectivity: There is a lack of connecting roadways and a significant number of one-way streets so transit routes are required to operate in a circuitous and indirect manner. There is an identified desire to explore allowing transit vehicles to operate through the Observatory Drive switchback.
- Route Structuring: Some routes on campus currently serve competing purposes. This is particularly an issue for the current structure of Route 80. This route is currently structured to serve as a connector between the east and west ends of campus and as a circulator. As a result of these contradictory roles, the route is inhibited from performing well in either one.
- Travel Time and Delay: High volumes of pedestrians and bicyclists moving through intersections, particularly at class change, cause transit delay. For instance, a peak volume of 2,199 pedestrians was recorded at the intersection of N. Charter Street and Linden Drive.
- Capacity Limits: More demand-responsive campus routes should be examined to deal with peak capacity issues, and underutilization during slow times.
- Express Service: Direct, express transit service for area park-and-rides should be explored as a viable option to reducing on-campus vehicle use and parking demands.
- Others: Other transit needs include establishing an intercity bus terminal near campus to eliminate observed queuing of intercity buses on University Avenue, examining placement of stop locations of Route 80 to optimize efficiency, and continue to analyze the benefits and feasibility of articulated buses.

Parking

In total, there are approximately 13,000 parking stalls on the UW–Madison campus. These stalls are located in surface lots or in underground and above-ground structures. The inventory includes approximately 9,400 faculty/staff spaces, 1,600 visitor spaces, and 2,000 service/fleet spaces. These 13,000 parking spaces serve approximately 22,000 faculty and staff, 8,600 UW Hospital Employees, and 43,000 students. This yields a parking ratio of 0.18 parking spaces provided per person. This is the second lowest parking ratio of peer universities in the United States as indicated in **Figure E-2**. With limited physical and financial resources, the university focuses on providing a minimal but efficiently managed parking supply to meet the needs of its faculty, staff, employees, visitors, and select students. Attractive commute options have allowed UW–Madison to maintain low parking ratios and a high quality campus experience with limited space and constrained parking ratios.

Overall, campus parking supply is operating between 85-90 percent full during the peak period—occupancies between 85 percent and 95 percent are considered to be effective capacity maximums. This indicates that current observed parking occupancies on campus are at or very near the overall effective capacity.

Visitor parking is particularly challenging to find, especially in South and Central Campus. The university tightly controls and manages parking supply on a daily basis to allocate available spaces (including visitor parking spaces), depending on events and other situations which drive demand. Transportation Services is challenged with allocating the correct supply of visitor spaces in the correct locations to meet changing demand, while maintaining permit parking supply. Visitor parking allocations fill up daily and requests exceed available supply. Transportation Services indicates a need of approximately 2,000 additional parking spaces to accommodate increasing visitor parking demand, and to provide flexibility and "swing space" (i.e. additional parking needed to accommodate parking phasing during campus construction that results in the loss of existing campus parking spaces.)

Current TDM policies and practices nearly halve the actual amount of parking necessary to serve the land uses and destinations on campus. Additional campus growth and development will require continued focus on TDM strategies to maintain consistently low faculty/staff parking ratios, with limited additions of parking to serve campus visitors and to serve as swing space.

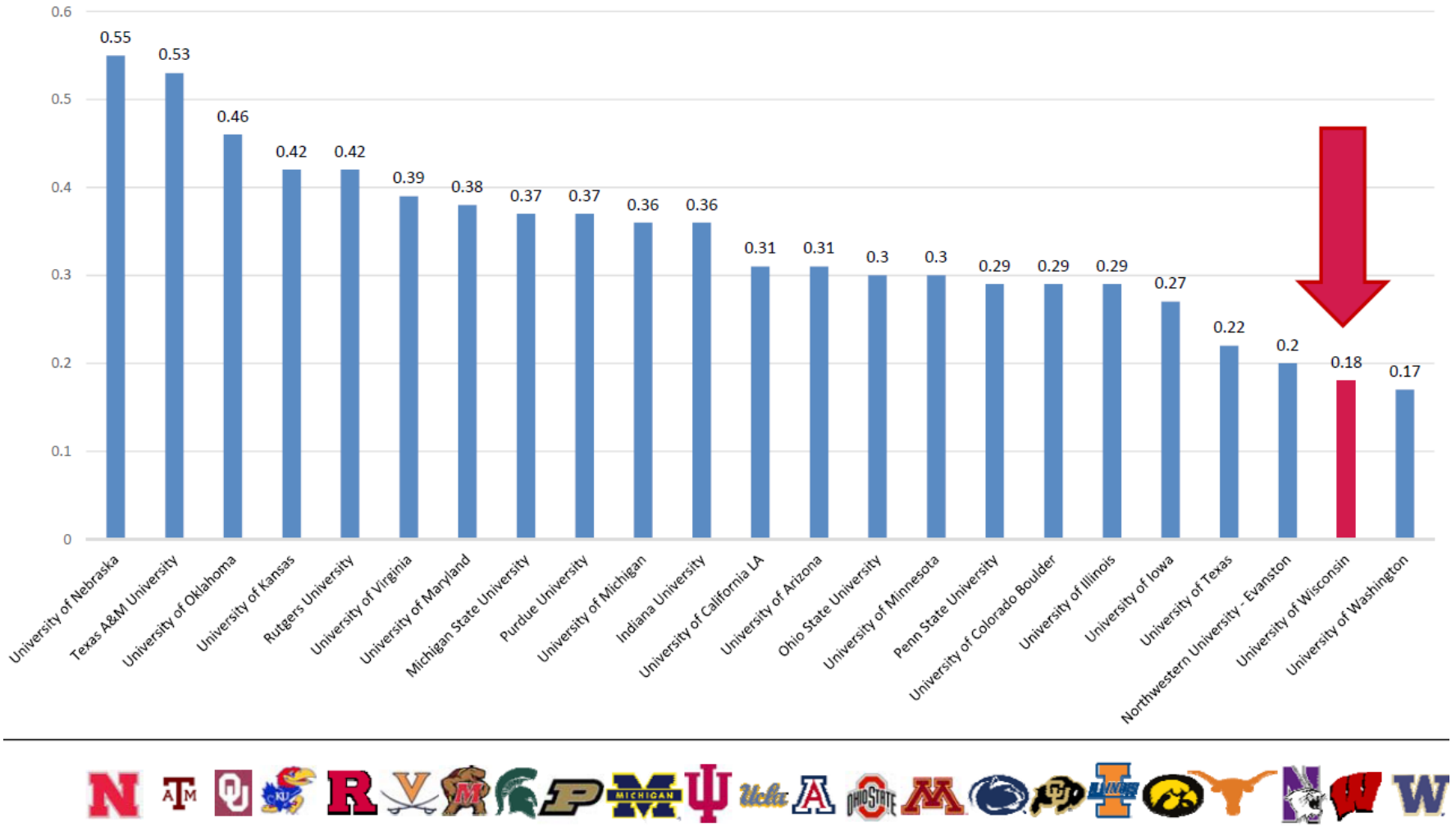


Figure E-2 Parking Spaces per Person (Employees + Students) at Select Peer Universities

Transportation Recommendations

The recommendations presented in this plan are meant to strategically build off of existing transportation assets and address known deficiencies to maximize system efficiency, safety, and operations within the future campus land use scenario.

The university strives to continue to be a national leader in multimodal transportation and commuter solutions, the provision and encouragement of non-motorized transportation and transit use, and the effective and sustainable management and operations of campus parking.

This section includes recommendations for maintaining high quality transportation operations and connectivity for all modes and is separated into the following four recommendations (by mode), described below.

Walking and Biking

The LRTP recommends filling identified walking and biking network gaps, and prioritizing best practice improvements at key network intersections that experience modal conflicts and transit delay. A prominent recommendation is the creation of a pedestrian plaza/bridge over the intersection of N. Charter Street and Linden Drive, depicted in the concept rendering. This separated level would capitalize on existing topography and tie into upper levels of future buildings to be built/redeveloped in this area. This recommendation assumes the removal of a majority of the pedestrians from the street level to reduce intersection transit delay. Motor vehicles, transit users, and bicyclists would travel at the existing street level.

Figure E-3 Concept Rendering of the Proposed Grade Separation at N. Charter Street and Linden Drive, Elevation (Top) And Plan View (Bottom)

Figure E-4 Recommended University Avenue Cross Section where Right-of-Way Allows

Among the route connections recommended in this plan is an extension of the shared-use path along Campus Drive to connect to Babcock Drive, and the re-design of University Avenue that includes a two-way protected cycle track on the south side of the street. Proposed University Avenue cross-section and plan view concept renderings are included below.

Additionally, the plan recommends improvements to the cross-section of W. Dayton Street and N. Charter Street to increase the sidewalk capacity, and pedestrian streetscape experience in South Campus.

Figure E-5 Plan View of Proposed University Avenue Re-Design

Transit

This master plan recommends four priorities for improving transit service ridership, efficiency, and operations:

- Address intersection locations with transit delay: Recommendations for grade separation at N. Charter Street and Linden Drive should be implemented to address critical transit delay at the intersection
- Implement limited stop and/or express bus service to serve campus: To complement planned Bus Rapid Transit, the university should work with Metro Transit to add a limited stop and/or express bus service from area park-and-ride locations to campus. There is a particular opportunity to divert UW Hospital employees from driving single-occupancy vehicles to transit with this premium service
- Improve intra-campus bus connectivity: It is recommended Metro Transit revert back to the previous routing of Route 80 to provide more direct connections between the east and west sides of campus. Additionally, bus stops should continue to be examined closely for possible elimination or consolidation, and where feasible, doubleheaders (two simultaneously arriving buses) are operated on routes with capacity issues during class change time
- Establish a permanent inter-city bus terminal: This plan recommends a permanent inter-city bus terminal in east campus to remove queuing buses from University Avenue and East Campus Mall. The new bus terminal should be in a location that is easily serviceable by transit without adding new routes. Opportunities to integrate Metro Transit connections and mixed-use development into the terminal facility should be evaluated

One potential location for an east campus bus terminal is the current City of Madison Lake Street parking garage which is central to campus destinations and population density. UW–Madison will continue to work with the City of Madison and Metro Transit to locate a site for a new intercity bus terminal.

Road Network

The LRTP recommends the following modifications to the road network to promote access and circulation in light of planned land use changes, depicted in **Figure E-6**:

- Vacate parts of Marsh Drive, Willow Drive, and Walnut Street, and install a new north-south road from Marsh Drive to Observatory Drive to accommodate planned land uses
- Vacate Easterday Lane and add an east-west connection across Willow Creek
- Install new north-south access drive from University Avenue to Linden Drive, west of Charter Street
- Install new east-west parallel access road south of Linden Drive, west of Charter Street
- Install protected left turn phase for N. Charter Street southbound vehicles turning left on to Johnson Street
- Convert Brooks Street into a pedestrian mall/shared emergency drive
- Convert Charter Street from one-way to two-way and add on-street bicycle lanes in each direction from W. Dayton Street to Regent Street

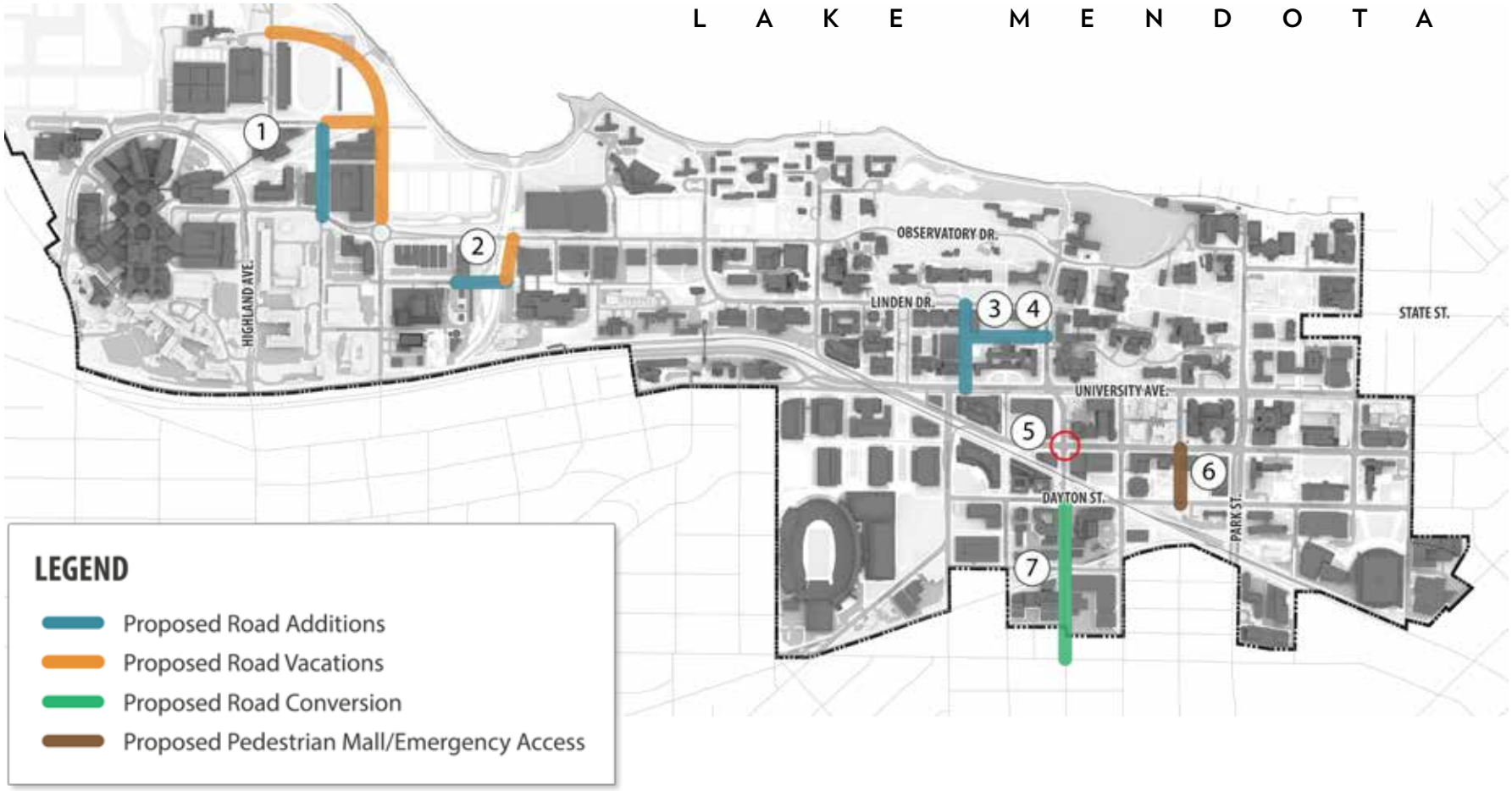


Figure E-6 Proposed Road Additions, Vacations, and Conversions

Parking

This plan presents several recommendations for the university to effectively and efficiently provide and manage parking in conjunction with this Master Plan's proposed campus development and redevelopment.

- Continue to be leaders in transportation demand management (TDM) and alternative commuter solutions
- Maintain current parking ratios for faculty and staff. Work to shift UW Hospital employee and other faculty and staff parking demand off campus through enhanced park-and-ride transit service
- Add 2,000 parking spaces over the next 20-40 years for visitors and provide swing space to accommodate parking phasing and construction
- Where possible, remove surface parking lots and consolidate parking supply into centrally located parking structures to allow for green space and campus development, increase parking efficiency, and improve water quality by reducing the amount of impermeable surface on campus

Parking Additions and Reductions

This plan recommends an addition of 6,380 and removal of 4,380 parking spaces, for a net increase of 2,000 parking spaces over the next 20-40 years to accommodate the planned build-out. Recommended parking additions and reductions are depicted in the table and figures below. Additions and reductions result in the following increases by district:

- West Campus: +689 spaces
- Near West Campus: +81 spaces
- Central Campus: +615 spaces
- South Campus: +615 spaces

Recommended additions and reductions are summarized in **Figures E-7** and E-**8**.

Figure E-7 Recommended Parking Reductions

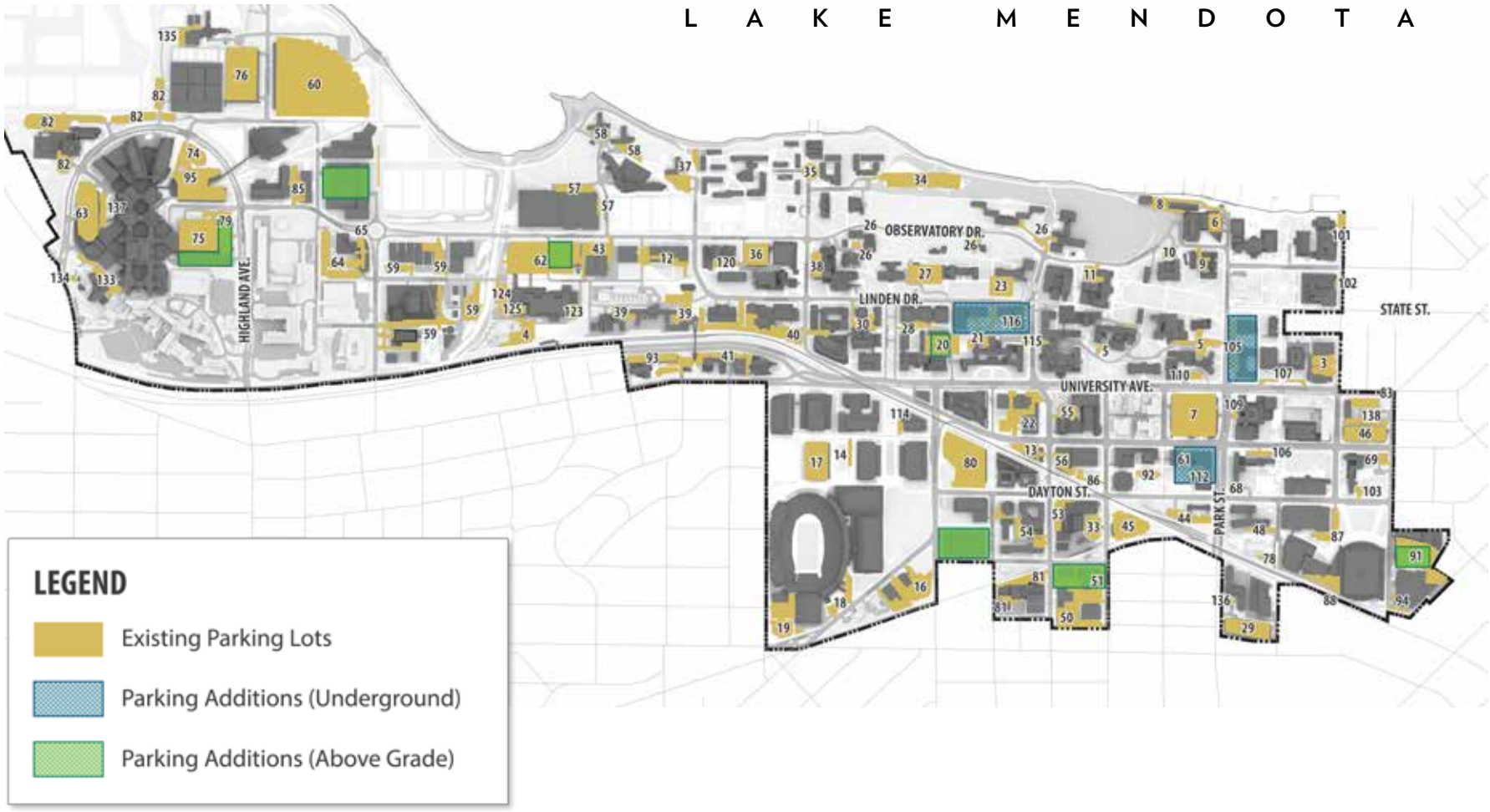


Figure E-8 Recommended Parking Additions

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1. INTRODUCTION

Background and Context

The 2015 University of Wisconsin–Madison (UW–Madison) Long Range Transportation Plan is an update to the 2005 UW–Madison Long Range Transportation Plan and Transportation Demand Management Plan. Moving around the UW–Madison campus safely, comfortably, and efficiently using a variety of modes is central to the experience of students, faculty, staff, and visitors.

This plan sets the vision for the development and improvement of parking and transportation options across all modes. Its objective is to leverage and build off past success and manage current and future travel and parking demands on campus in a balanced way. This plan seeks to further refine and improve transportation systems to encourage alternative modes of transportation to, from, and around campus. Although no significant growth in the campus population is expected, projected growth in programmed teaching and research space will alter the demand for campus parking. The university desires to effectively balance existing and future parking resources to provide an adequate and convenient supply of parking now and into the future.

UW–Madison Transportation Services is a national leader in educating students, faculty, staff, and campus visitors about the range of available transportation options, as well as providing and promoting alternative transportation choices to its clients. Transportation defines how students, faculty, and visitors experience the university as they move between buildings and across campus to get to class, to work, and to appointments.

Sustainability is a central theme of this plan and the transportation recommendations put forth. Recommendations aim to continue and expand on the culture and practice of sustainability that is part of the university's operation. With this in mind, the plan strives to concentrate parking and make it more efficient, and make key improvements to further expand the convenient and comfortable alternative travel options to, from, and around campus.

The plan recommends practical solutions for addressing the primary transportation challenges of the university, for the benefit of the students, faculty, staff, and daily campus visitors.

Transportation Improvements Made Since 2005

Various transportation system improvements made on or in the vicinity of campus by the university and city have been implemented since the university's 2005 Campus Master Plan. **Figure 1-1** displays these improvements.

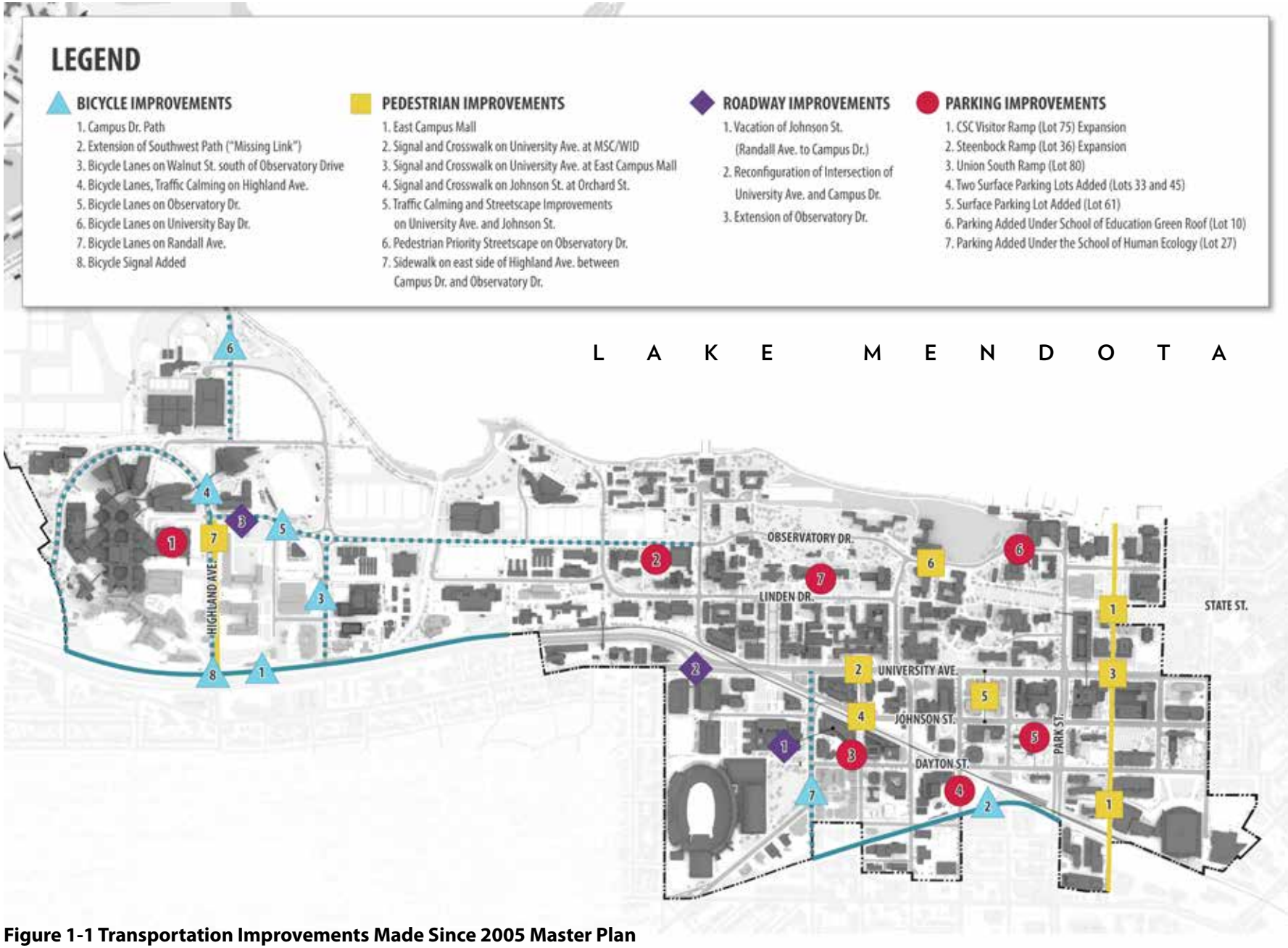


Figure 1-1 Transportation Improvements Made Since 2005 Master Plan

2. TRANSPORTATION CONTEXT

Existing Conditions Assessment and Analysis

This section describes the existing transportation conditions on the UW–Madison campus, including what is working and what needs improvement. Identification of the assets and challenges associated with all modes of transportation was informed by a broad analysis process that included site visits; discussions with students, university officials, and other stakeholders; and modeling and mapping exercises.

Later sections of this plan describe recommendations for addressing current and future demands on the transportation and parking infrastructure network and reducing single-occupancy vehicle trips through targeted improvements.

Current Travel Patterns and Behavior

Current travel patterns and behavior among students, faculty, staff, and hospital employees at UW–Madison were determined using home address information and results from a 2014 Biennial Transportation Survey Report completed by Transportation Services.

Trip Origin

Daily campus visitors come from locations near campus, throughout Madison, Dane County, and beyond.

Students

Parking is available to students on campus only under very specific limited conditions. Students are encouraged to live in university residence halls; in Eagle Heights; in nearby neighborhoods on the near south and west side city neighborhoods such as Regent, Vilas, and Greenbush; and in the neighborhoods of the State Street, Capitol, and near east side parts of the city. The robust walking, bicycling, and public transit network on campus and in Madison supports commuting to campus using alternative modes.

Faculty/Staff

The highest density of faculty and staff live on the near west and near east sides of Madison and in Shorewood Hills.

UW Hospital Employees

High densities of hospital employees live on the west, southwest, and east sides of Madison and the surrounding communities of Middleton, Verona, Monona, Waunakee, McFarland, Oregon, and Sun Prairie.

Trip Distribution

To better understand the travel behaviors of those working on campus, trip distribution was analyzed using address data of university faculty and staff, as well as UW Hospital staff. The distribution was broken into five sectors.

Individuals living in the northwest sector constitute 30 percent of total travelers and likely access campus using University Avenue to the west of campus. Those coming from the southwest of campus likely use Monroe Street and Regent Street and make up 20 percent of total travelers. In the southeast part of campus, 15 percent of people use US 151 to Park Street to access the campus area. Individuals making up the 30 percent of total travelers located in the northeast sector access campus via West Dayton Street, West Gorham Street, West Gilman Street, and Langdon Street from the Isthmus. Data indicates that 5 percent of total travelers are internal to the university campus.

Figure 2-1 on the following page depicts trip distribution among UW–Madison faculty, staff, and hospital employees.

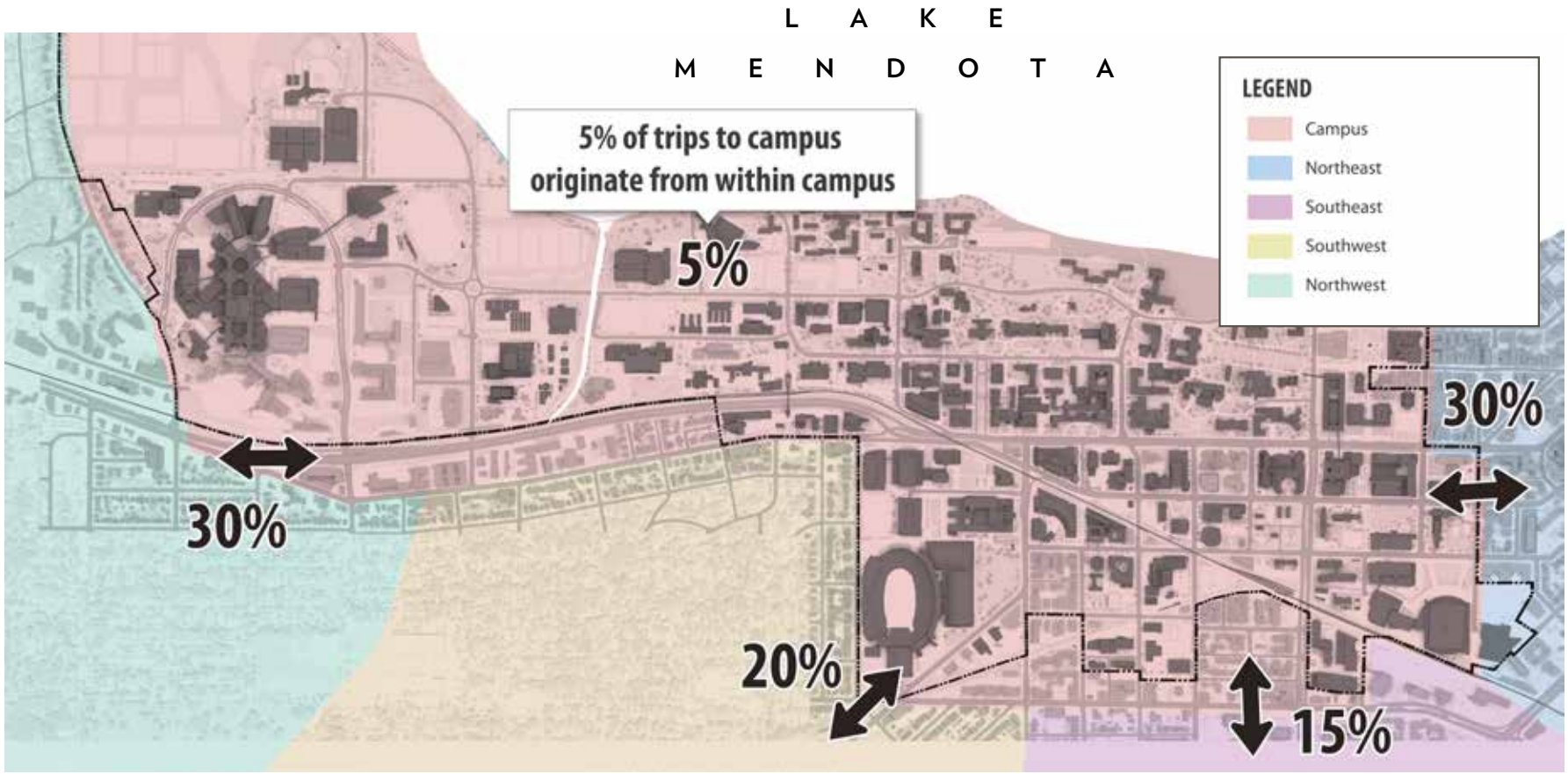


Figure 2-1 Trip Distribution for Faculty, Staff, and Hospital Employees

Mode of Travel

Transportation Services completed its Biennial Transportation Survey Report, detailing the process and results of a survey administered in the fall of 2014. The survey gathered information about the travel characteristics of students, faculty, and staff traveling both to and around campus.

Over 1,900 surveys were completed by students, faculty, staff, and UW Hospital employees. Responses received are a metric for understanding mode splits to campus and the percentage of people using different modes of travel to get to campus. Existing travel mode split estimates are as follows (data is shown for good weather conditions):

Students

Nearly half (49 percent) of students walk to campus, 22 percent ride their bicycle, 8 percent ride Metro Transit, and the remaining students use carpool/vanpool services, arrive via moped or motorcycle, or drive alone.

Faculty/Staff

More than half (52 percent) of faculty/staff drive alone to campus, 14 percent ride Metro Transit, 17 percent ride a bicycle, 4 percent walk, and the remaining use carpool, vanpool, and other options.

UW Hospital Employees

Among UW Hospital employees, 70 percent drive alone to campus, 11 percent ride Metro Transit, 5 percent ride a bicycle, 4 percent walk, and the remaining use carpool, vanpool, and other options.

UW Hospital employees have the most varied schedules of anyone traveling to campus. Hospital employees report more than any other group that they arrive to the hospital before 7:00 a.m. and leave after 7:00 p.m. There are eight recommended parking lots (Lots 59, 60, 76, 64, 79, 82, 85, and 95) within a short walk of the UW Hospital.

Weather as a Determining Factor

For all user groups poor weather significantly affects mode choice. Bicycling as a mode choice for students sees an 86 percent decrease during poor weather, while the use of Metro Transit service increases from 18 to 52 percent.

Figure 2-2 depicts the mode split among all user groups coming and going from campus. Percentages shown are blended averages.

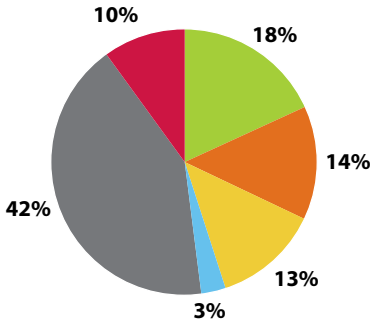


Figure 2-2 Faculty/Staff, Student, and Employee Mode Split to and From Campus

Source: 2014 UW Transportation Services Biennial Transportation Survey Report

Existing Transportation Demand Management (TDM) Strategies

Parking space is limited on the UW–Madison campus and plans for continued growth in facilities on campus will place additional demands on the network. UW Transportation Services currently employs a number of transportation demand management (TDM) strategies to reduce single-occupancy vehicle trips. These efforts are a key reason that the university is able to operate with only 13,000 parking spaces, which is one of the lowest parking ratios of any major university in the United States. Continuing to focus on and expand these strategies is consistent with the university's continued pursuit of campus sustainability, health, and well-being.

Single-occupancy vehicle trip reduction is accomplished through a variety of incentives and the provision of desirable travel alternatives. These include:

- Strong multimodal travel options, including Metro Transit bus and a comfortable walking and biking network
- UW–Madison Employee Bus Pass Program
- Free campus bus routes and subsidized Metro Transit bus passes for students, faculty, and staff
- Paratransit service
- Accessible Circulator Shuttle PILOT
- Carpool/vanpool options
- Emergency ride home
- Limited parking supply and permit parking requirements
- Park-and-ride
- Car sharing
- BCycle bicycle share
- Abundant and convenient bicycle parking

Vehicle Access and Circulation

Campus Road Network

Campus Drive and University Avenue runs east-west through campus and acts as the primary arterial "spine" on campus. Park Street is the primary north-south campus arterial. A variety of other lower volume collector streets run north-south including N. Randall Avenue, N. Mills Street, N. Orchard Street, and N. Charter Street. The lower volume east-west collectors include Observatory Drive, Linden Drive, and W. Dayton Street. Campus Drive and Observatory Drive provide the only vehicle connections across Willow Creek and to the West Campus.

Traffic Volumes

Traffic volumes on the roads leading into and circulating around campus are varied.

The highest motor vehicle traffic volumes on campus occur on University Avenue and W. Johnson Street between N. Charter Street and N. Park Street, with Average Weekday Traffic (AWT) counts of between approximately 25,000-30,000 vehicles per day.

In order to determine traffic volumes at key locations on campus streets, tube counts were taken at nine locations across campus on two consecutive weekdays in spring 2015:

1. Observatory Drive east of N. Charter Street
2. N. Charter Street north of Linden Drive
3. Observatory Drive east of Babcock Drive
4. Linden Drive west of N. Charter Street
5. Babcock Drive south of Linden Drive
6. Linden Drive west of Babcock Drive
7. Observatory Drive east of Elm Drive
8. Observatory Drive west of Elm Drive
9. Linden Drive east of Easterday Lane

Observatory Drive on the west end of campus saw the highest traffic volumes among the tube counts with 7,100 vehicles per day recorded just west of Elm Drive. A selection of these counts are shown in **Figure 2-3** as Average Daily Traffic (ADT) counts.

Traffic Operations and Control

Campus intersections are both signalized and unsignalized and the signalized intersections feature standard traffic controls.

The Wisconsin and Southern Railroad passes through campus, and several points along the west and south sides of campus feature at-grade railroad crossings. These crossings occur at major intersections, such as Highland Avenue and University Avenue, and have standard railroad crossing controls.

Roadway Capacity

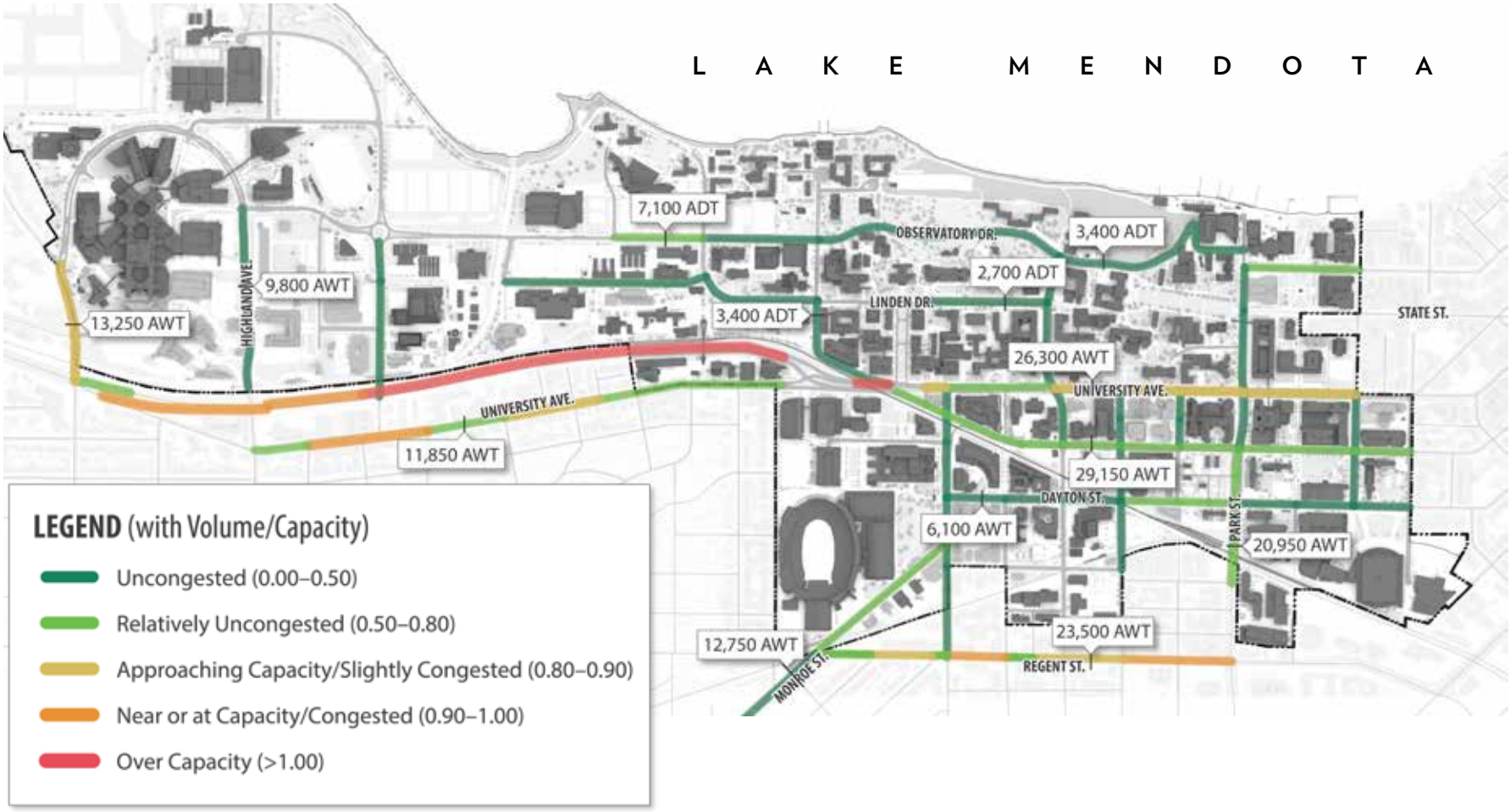
Overall, UW–Madison's vehicular traffic flows relatively well. When looking at traffic over the course of an entire day, most of the minor roadways on campus experience little congestion. Observatory Drive, Linden Drive, N. Mills Street, and N. Randall Avenue are examples of low-volume roadways that see little congestion over an average day but may have short periods of congestion or delay at certain peak periods. The Campus Drive and University Avenue arterials have the highest levels of congestion of roads on the campus network.

Several streets offering direct access to and from campus, such as Highland Ave, N. Randall Avenue, and Regent Street, have moderate levels of congestion over the course of a day. Some intersections on campus experience significant transit delay due to high volumes of pedestrians and bicyclists. The intersection of N. Charter Street and Linden Drive is an example of vehicular traffic delay occurring during short peak periods of the day due to high pedestrian traffic despite the low traffic volumes. This vehicular delay slows down transit vehicles and may get them off schedule. This is discussed in more detail later in the plan.

Figure 2-3 displays traffic volumes and congestion on campus.

Loading Docks and Truck Routes

Loading and service docks are located across campus serving the movement and delivery of goods. All campus roads can support truck loads. To the extent possible, the university tries to limit truck deliveries on campus to times of the day where pedestrian volumes are low. **Figure 2-4** displays loading docks on campus.



ADT and AWT. Based on campus counts and 2015 City of Madison traffic data.

Figure 2-3 Motor Vehicle Traffic and Congestion on Campus

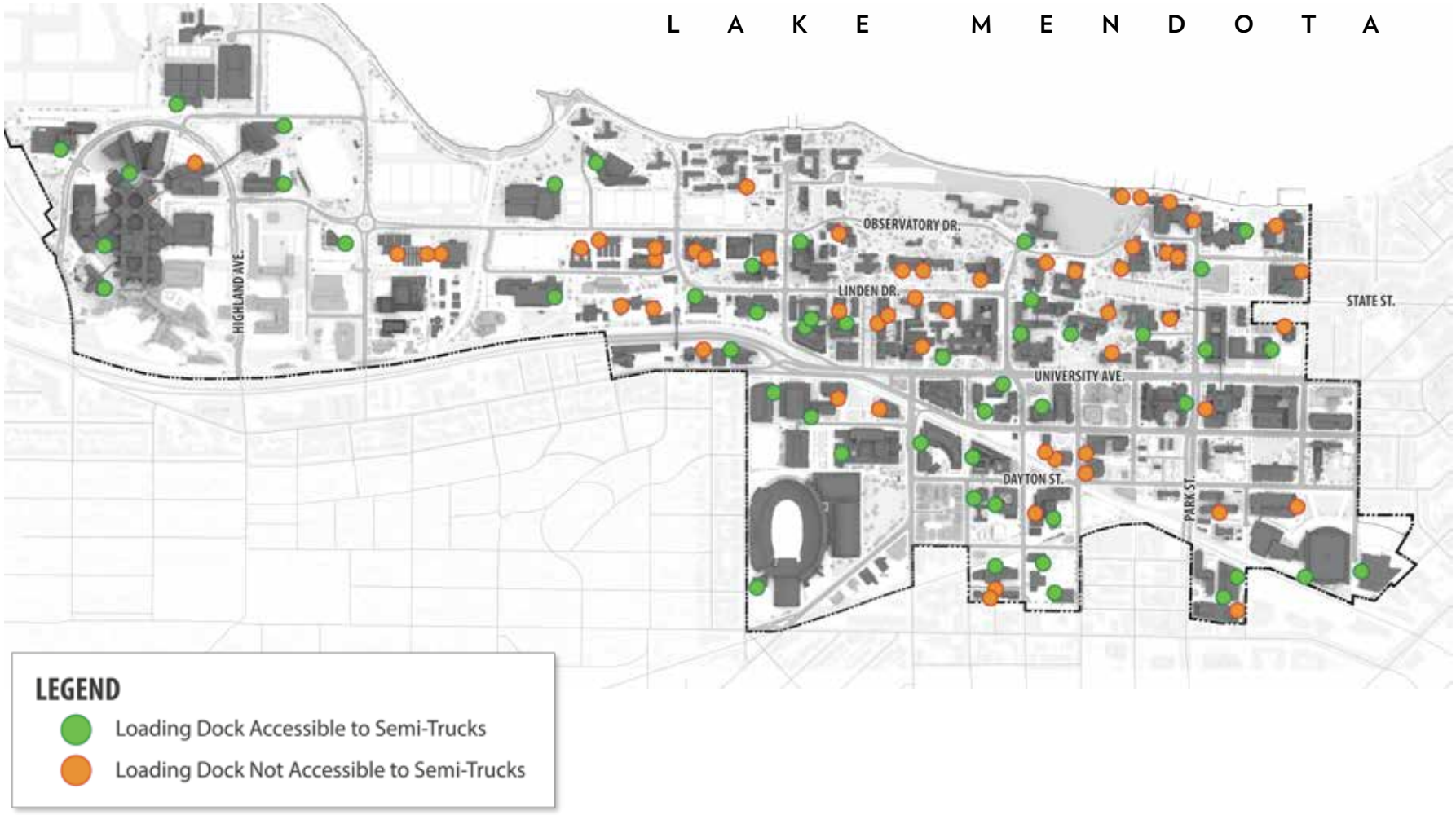


Figure 2-4 Campus Loading Docks

Walking and Biking Network

Non-Motorized Circulation: Connecting Campus Destinations

Walking and biking are the predominate modes of transportation on campus. Attractive streetscapes and comfortable walking and biking facilities connect pedestrians and bicyclists around campus on a daily basis.

Similar to the City of Madison, UW Transportation Services gives highest priority to the comfort of pedestrians and bicyclists (i.e. non-motorized travelers) on campus through a number of programs and amenities. The high quality walking and biking network is a primary reason the campus gets such high marks for accessibility, sustainability, and beauty. Facilities for bicycling and walking are the central components of the campus transportation network. This emphasis serves as the basis for analyzing issues and formulating recommendations in this master plan.

The walking and biking network on campus can be divided into primary and secondary pathways, connecting nodes of walking and biking destinations and activity.

Primary points of entry into campus for bicyclists include State Street, Park Street, the Southwest Path, the Howard Temin Lakeshore Path, and the Campus Drive Path. Major nodes for pedestrian and bicycle activity include Park Street and University Avenue, the Library Mall/Langdon Street/East Campus Mall area, and Linden Drive and N. Charter Street. University Avenue and W. Dayton Street are the primary east-west pedestrian and bike connections. Linden Drive and Observatory Drive carry pedestrians and bicyclists across the center and west parts of campus. North-south connectivity is served by streets from the Greenbush-Vilas Neighborhood including N. Randall Avenue, N. Mills Street, N. Orchard Street, and Park Street. University Avenue serves as the “spine” that runs through the heart of campus. This street must be crossed by pedestrians and bicyclists traveling north-south on campus. Intersections and other crossing points are priority locations for enhancing pedestrian comfort and connectivity.

Despite all of the campus' pedestrian and bicycle assets, there are areas that deserve targeted improvements. Issues are described in this section with detailed recommendations provided in the following section.

Current Walking Facilities

UW–Madison consists of a dense building network interconnected with walking facilities, particularly on the east part of campus. With nearly 22,000 faculty and staff and over 43,000 students on a nearly 1.5 square mile campus, walking continues to be the most accessible and popular form of transportation. It has been prioritized in the campus planning process and supported heavily by UW Transportation Services.

The UW–Madison campus consists of a comprehensive network of separated pedestrian-only and shared-use walking facilities. These pathways exist in the form of sidewalks, paved and unpaved walking paths, and paved and unpaved shared-use paths. Pathways connect major nodes of pedestrian activity such as Bascom Hill, Library Mall, Henry Mall, and State Street. The East Campus Mall, connecting Library Mall with the University Avenue pedestrian node, is a recently established and crucial connection that sees high volumes of pedestrian use each day.

Figure 2-5 on the following page displays the locations and types of current campus walking facilities. The campus is well-connected with comfortable and accessible walking facilities.

Current Biking Facilities and Features

UW–Madison is a leader in providing comprehensive and comfortable bicycling facilities. The City of Madison recently became a Platinum-Level Bicycle Friendly Community as designated by the League of American Bicyclists, and the university and Transportation Services reflect this excellence in their own prioritization of cycling infrastructure. UW–Madison itself was recently designated a Gold-Level Bicycle Friendly University by the League of American Bicyclists due to its commitment to providing comfortable and connected bicycle accommodations, as well as abundant and convenient bicycle parking.

High volumes of bicyclists ride through campus on a daily basis, particularly in warmer months. The Southwest Path at Monroe Street saw a peak volume of 2,223 bicycles a day during counts from October 2014 to April 2015.

On-Street and Off-Street Bicycling Facilities

The UW–Madison bicycling network consists of infrastructure ranging from bike priority streets (painted sharrows) to fully dedicated trails and curb-separated biking lanes on streets under city and university jurisdiction.

Several dedicated bike routes on campus are separated from vehicles and facilitate travel to and through campus. Sharrows (shared lane pavement markings) are present on Linden Drive west of N. Charter Street. There is a contraflow, eastbound protected bike lane, separated by a concrete barrier on the south side of University Avenue. A westbound bike lane exists on University Avenue south of the westbound transit/vehicle turn lane. Other bike routes on campus include the unpaved Howard Temin Lakeshore Path along Lake Mendota, and the 5.6 mile City Southwest Path that is a rails-to-trails bike route beginning in Fitchburg and passing through the southern part of campus. W. Dayton Street is the only east-west street in South Campus with bicycle accommodations.

Bike lanes exist across campus providing bicyclists with dedicated space but no physical separation from vehicles. Major biking corridors that contain bike lanes include W. Dayton Street, N. Randall Avenue, Park Street, N. Charter Street

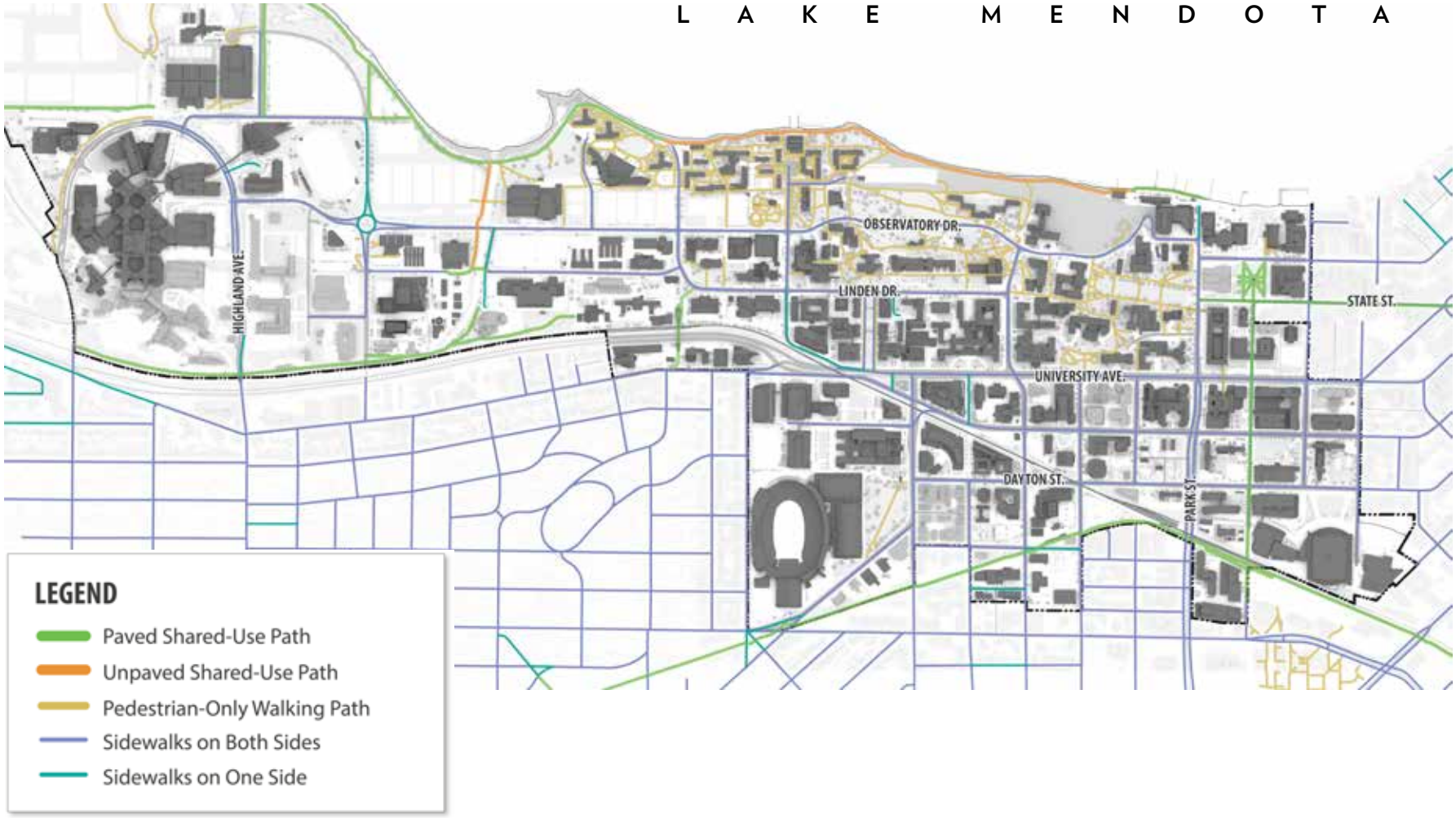


Figure 2-5 Existing Campus Walking Facilities

north of University Avenue, and Observatory Drive on the west side of campus. Contraflow bicycle lanes (traveling in the opposite direction of motor vehicle traffic) exist on N. Charter Street south of W. Dayton Street, as well as on N. Orchard Street north of W. Johnson Street, and on Babcock Drive south of Linden Drive.

Figure 2-6 displays the locations and types of existing campus biking facilities, as well as features that support campus bike use. In general, the campus is well-covered with comfortable, accessible, and connected biking facilities. However, there are specific areas of concern that need improvement.

Bicycle Parking

Abundant and convenient bicycle parking is essential to supporting bike use in any environment with high bike volumes. There are currently 13,600 bicycle parking spaces across campus today among about 290 rack locations of varying types. The goal of the university is to have 14,500 bicycle parking spaces on campus by the end of summer 2017, and eventually have 16,000. The demand for bicycle parking is very location-specific. In many cases bicycle parking is not appropriately located relative to specific building entrances that see high demand. Locations such as Linden Drive at N. Charter Street see spillover bicycle parking demand, where bikes are often locked to trees and sign posts during peak times. The university has worked to standardize bicycle parking and provide high-density racks where needed.

BCycle Bike Share

In 2011 the City of Madison began offering a bike sharing system called BCycle, which has grown to include 39 stations and 350 bikes around the city and campus, including 7 stations on campus. In 2014, over 104,000 trips were made using BCycle. Students, faculty, and staff are eligible to join BCycle at a discounted rate of $20 per year.

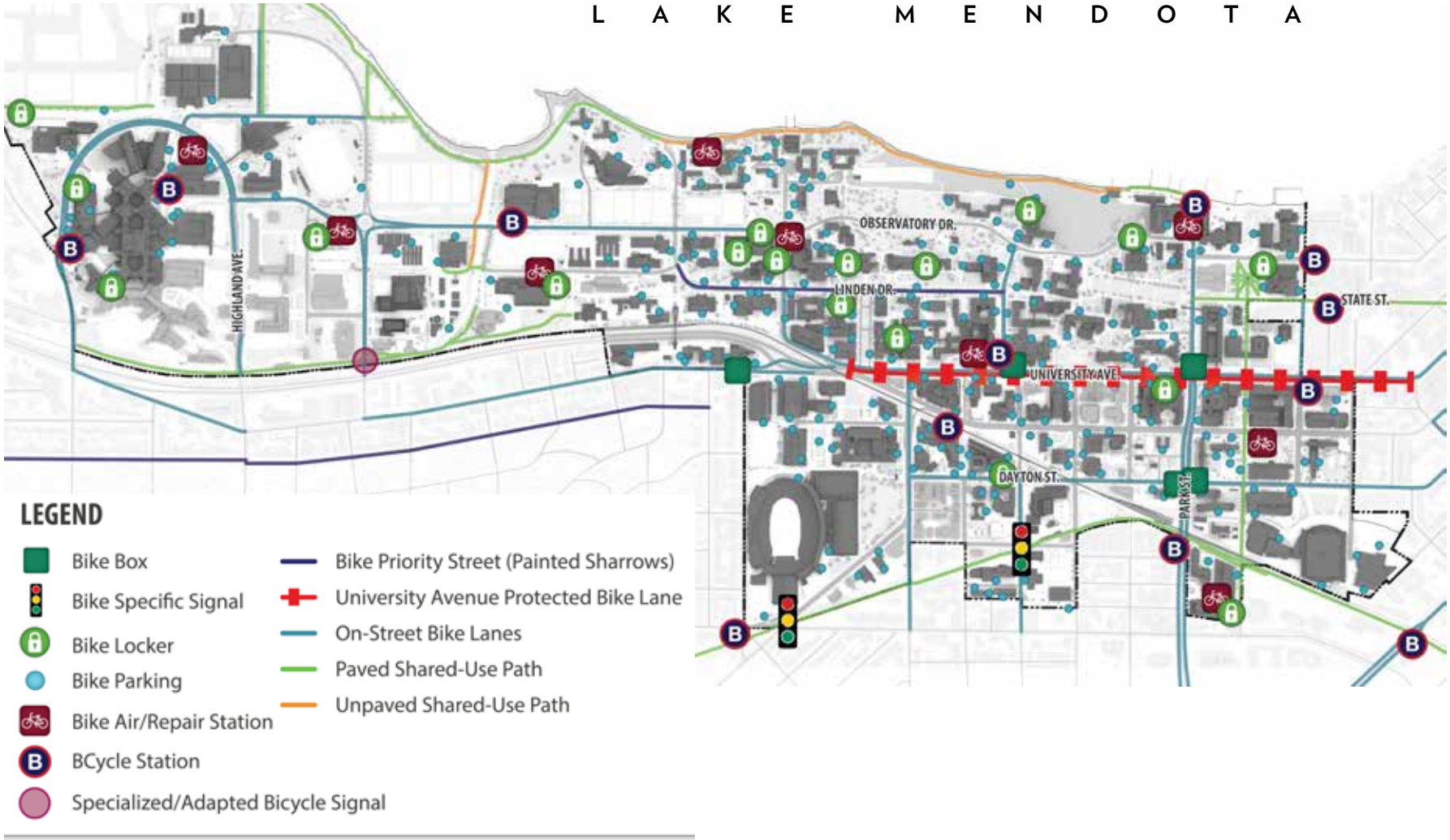


Figure 2-6 Existing Campus Biking Facilities and Features

Bicycle-Supportive Features

Madison and the university offer other features that support and encourage bicycling on campus. Applicants can sign up to gain access to paid bike lockers and cages that are located at various locations around campus. Bike Madison offers free maintenance bike pumps along some paths and bike racks are located in the front of all Metro Transit buses. Transportation Services has a program offering free refurbished bicycles for departments to use for campus travel.

Additionally, the university Bicycle Resource Center is located within the Helen C. White parking structure at the north end of N. Park Street near the Memorial Union. This facility is staffed by Commuter Solutions student employees, is open during the week, and offers tools for bike repair and other biking resources.

Walking and Biking Analysis

The following sections describe the current assets and challenges with the non-motorized transportation network. The findings presented below form the basis of recommendations offered in the next section of this plan.

Gaps in Connectivity

For Pedestrians

Paved pedestrian-only pathways represent the primary routes carrying students, faculty, and staff across campus grounds and between buildings; these pathways provide micro-level connections. Paved shared-use facilities such as the Southwest Path and unpaved facilities like the Lakeshore Path serve longer distance, cross-campus connections. Campus destinations are well-connected, with a few exceptions.

Sidewalks exist on the majority of campus streets and carry high volumes of pedestrian traffic on a daily basis. Interior connecting roads such as Lathrop Drive, Clymer Place, Conklin Place, and Fitch Court do not always have sidewalks present on either side of the road but alternate pathways are present nearby. However, analysis identified Lathrop Drive as being particularly uncomfortable for pedestrians because there is an absence of infrastructure or design elements indicating whether pedestrians or automobiles have priority in this space.

There is a primary gap in pedestrian connectivity on the west side of campus. The Campus Drive shared-use path ends near the School of Veterinary Medicine. A connection to Babcock Drive and University Avenue to the east would better connect pedestrians and bicyclists along this corridor.

Busy arterial roads and railroads act as barriers to pedestrian connectivity on campus because of uncomfortable intersections and the absence of adequate crossing locations. There is limited pedestrian connectivity across Campus Drive and the railroad corridor west of Babcock Drive. This crossing is served by the Alicia Ashman Bridge at the Stock Pavilion, as well as Walnut Street and Highland Avenues, approximately 1/2 mile and 0.70 mile to the west, respectively. Limited connectivity in this area is a concern due to the number of campus destinations that are present, and the concentration of students living in the Old University Avenue corridor and Camp Randall Stadium area.

For Bicyclists

Corridors without designated biking markings or signage discourage bicycling, especially where motor vehicle speeds and volumes are high. Adding biking infrastructure in the listed gaps will work to boost bicycling, reduce instances of bicyclists riding on sidewalks, and promote overall efficiency and safety for all modes.

Critical locations where gaps in walking and bicycle infrastructure reduce campus connectivity are summarized in **Table 2-1** (the Route IDs correspond to the map in **Figure 2-7**).

Challenging Crossings and Interactions with Other Modes

Pedestrians and bicyclists travel in large volumes across streets, railroad crossings, and intersections throughout campus. Many pedestrians cross streets at mid-block locations or at locations without designated pathways or crossings. Pedestrian and bicyclist compliance with walk signals and other control devices is often low. People are often in a hurry to get to class or appointments because of limited time and long travel distances. Pedestrians and bicycles regularly interact with Metro Transit buses, personal automobiles, delivery trucks, service vehicles, and mopeds across campus. Interactions often result in close calls and delay as the modes wait for each other to pass through the intersection. Crossings are made more difficult in some locations due to long crossing distances, intersection configuration, and in some cases, low visibility from weather or sun glare, such as on westbound University Avenue in the afternoon.

Table 2-2 summarizes intersections and crossings identified as critical locations where pedestrian and bicyclist interactions with other modes diminishes overall efficiency and safety. The Location IDs correspond to those on the map in **Figure 2-7**.

Quality and Maintenance of Facilities

Smooth, well-maintained, and high quality walking and biking facilities are essential to comfortable and accessible pedestrian and bicycle travel, particularly for those with assistance devices (further discussed below). Sidewalks, walking paths, and on and off-street bicycle facilities should be clear of debris and snow; free of cracks, gaps, and roots; and have a wide travel space free of obstacles such as light poles, utility boxes, or trees. Paths should be routed appropriately around buildings and to building entrance points.

Overall the walking and biking facilities on campus are high quality, well-placed, and well-maintained. Specific issues encountered through analysis that deserve attention for improvement include:

- The width of sidewalks on the south side of campus is inadequate to comfortably and safely accommodate the large volumes of users in many locations on W. Dayton Street, N. Randall Avenue, N. Orchard Street, and N. Mills Street
- The university works to maintain consistency of pavement markings across campus. However, with many campus streets under the control of the City of Madison, there is not a standard pedestrian crosswalk marking on campus. Crosswalks in some locations are worn and faded
- The routing of the Lakeshore Path from the Memorial Union area around the Limnology Building is unclear
- The westbound bicycle lane on University Avenue is currently unprotected and buses and turning vehicles must cross this facility
- Better snow clearance on the eastbound University Avenue protected bike lane during the winter since this is a high-volume priority bike route
- Intercity buses frequently park in the dedicated bus lane in front of the Chazen Museum, requiring Madison Metro buses to use the bike lane to get around intercity buses picking up and dropping off long-distance passengers. This creates congestion and unsafe traffic conditions, especially for bicyclists

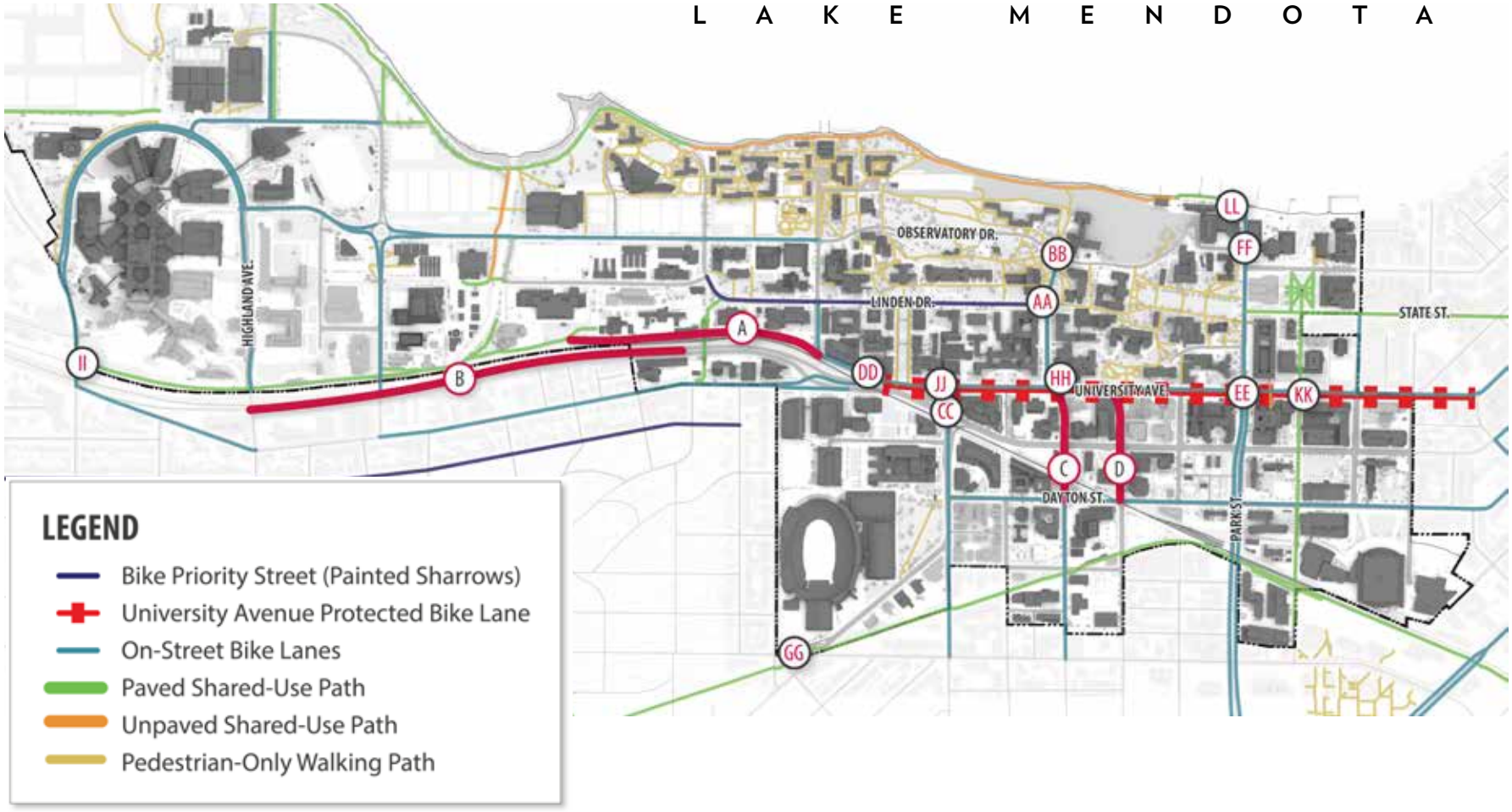


Figure 2-7 Existing Walking and Biking Routes and Identified Challenges

Table 2-1 Summary of Gaps in Walking and Biking Connectivity

Route ID	Location	Challenge/Need
A	Campus Drive Path and Linden Drive	Need for connection between end of path at Veterinary Medicine to Babcock Drive and University Avenue to the east
B	West Campus Connection over Campus Drive	Additional north-south crossing of Campus Drive for pedestrians and bicyclists between existing bridge and Walnut Street
C	N. Charter Street between W. Dayton Street and University Avenue	Primary north-south route connecting north campus with campus and neighborhoods to the south Need for bicycle accommodations on N. Charter Street between W. Dayton Street and University Avenue
D	N. Mills Street between W. Dayton Street and University Avenue	Primary north-south route, similar to N. Charter Street Need for bicycle accommodations between W. Dayton Street and University Avenue to connect northern parts of campus to the neighborhood area to the south Will have to integrate with on-street parking

Table 2-2 Summary of Locations Where Challenges Exist

Location ID	Location	Challenge
AA	N. Charter Street and Linden Drive	High non-motorized volumes; peak 15 minute pedestrian volume from 10:45 – 11:00 a.m. on a Tuesday in April 2015 of 2,199 pedestrians and 95 bicyclists Conflicts between modes, major transit delays
BB	N. Charter Street and Observatory Drive	High non-motorized volumes; peak 15 minute pedestrian volume from 10:45 – 11:00 a.m. on a Tuesday in April 2015 of 1,299 pedestrians and 26 bicyclists Conflicts between modes, major transit delays
CC	Campus Drive and N. Randall Avenue	Skewed intersection, long crossing Various turning movements, high vehicle speeds and volumes Pedestrian, bicyclist, and vehicle yielding confusion Railroad crossing
DD	Campus Drive, University Avenue, and Babcock Drive	Skewed intersection, long crossing Various turning movements, high vehicle speeds and volumes Pedestrian, bicyclist, and vehicle yielding confusion Railroad crossing
EE	N. Park Street and University Avenue	Various turning movements, high vehicle speeds and volumes Pedestrian, bicyclist, and vehicle yielding confusion Very high pedestrian and bicycle traffic
FF	N. Park Street and Observatory Drive	Highly skewed and offset intersection Transit layover area on west side of Memorial Union All mode turning movements Low pedestrian and bicycle compliance
GG	Southwest Path, Regent Street, Breese Terrace, Crazy Legs Lane, and Monroe Street	City has worked to address green pavement markings, bike specific signal going westbound, and other measures Highly skewed intersection results in a lot of confusion between all modes and intersection shared-use path
HH	University Avenue and N. Charter Street	Skewed intersection with difficult crossings for pedestrians and bicyclists Modal conflicts, transit delay
II	University Bay Drive and Campus Drive Path	Bicyclists crossing this intersection come into conflict with buses, emergency hospital vehicles, and high vehicle volumes
JJ	University Avenue and N. Randall Avenue	No pedestrian crosswalk at the west leg of the intersection Long crossing with high motor vehicle traffic speeds and volumes
KK	University Avenue in front of Chazen Museum	Intercity buses park in front of the museum, forcing Metro Transit buses to use the westbound bike lane to pass
LL	Lakeshore Path at the Limnology Building	Lakeshore Path ends and users must use the narrow sidewalk next to the Limnology Building or travel through the building's parking lot to access N. Park Street

Limitations in Accessibility

Accessibility for those who rely on assistance vehicles is an important issue on campus. There are currently 1,300 registered students with disabilities. Having wide, smooth paths with strongly contrasted pavement, as well as clear and audible crossing control devices are important features for those with mobility and visual limitations. Clear and abundant wayfinding and signage are also essential to accessible travel.

Additionally, it was identified that wayfinding is often difficult on campus and service vehicles often surprise the visually-impaired.

Improved Wayfinding, Lighting, and Personal Safety Measure Placement

Abundant and well-placed lighting is critical to supporting a pleasant walking and biking experience. Outside of the Howard Temin Lakeshore Path, walking and biking facilities on campus are well-lit. UW Transportation Services operates a SAFEwalk program featuring walking escorts for students after dark. This service is available by request from 7 p.m. to 1 a.m. from October to March and 8 p.m. to 1 a.m. April to September, seven days a week. This program is not available on holidays or to the far western portion of campus that includes the University Hospital and Eagle Heights. Additionally, there are emergency phones including "blue-light" call boxes placed at various locations across campus.

There are several different signs and wayfinding elements that guide pedestrians, bicyclists, and motorists to destinations around campus. The 2003 *Exterior Graphics, Wayfinding, and Signage Policies and Design Guidelines* document details how and where the university will place certain types of signs and what the different sign types will look like. A Signage and Wayfinding Implementation Subcommittee under the Campus Planning Committee developed the policy, and staff in Facilities Planning & Management oversees the signage master plan and reviews requests as needed.

Campus signs are unified by their black color, arched shape, university crest, white lettering, and a red bottom stripe. This consistency provides clarity to pedestrians, bicyclists, motorists, and visitors as to when they are on campus and identifies which buildings are university buildings.

Campus signs are divided into several distinct categories, each serving a different purpose:

- Off-campus trailblazer wayfinding signs
- Main campus identification signs
- On-campus directional signs
- Parking lot signage
- Wayfinding maps and directories
- Building identification signs
- Building information signs

Dane County is adopting a bicycle wayfinding plan that will serve as a resource to the university and others in unifying the form and function of county bikeway signage.

There are several larger elements that provide visual cues to travelers signifying that they have entered campus including pre-cast concrete and brick signs, and the pedestrian bridge over N. Park Street at Bascom Hill has "UW–Madison" written across its side. There also are numerous banners and flags hung up at buildings and other locations across campus. There is a need for more wayfinding information to direct pedestrians and bicyclists around campus. Signage and wayfinding could be integrated into plans to help promote the overall sense of place and identity on campus.

Improved Bike-Supportive Features

Analysis indicated several opportunities for improving the facilities and accommodations that support bicycling. The following concerns were noted and should be addressed:

- There is a desire for an improved and centrally-located bike resource center on campus. This center could be located within or nearby Union South. In addition to providing educational resources, the center would provide biking amenities to the public, such as a shower and changing area, repair shop, and bike locker area.
- The type and placement of bike parking needs to be improved. There is a desire for more attractive and covered bicycle parking and better placement of bicycle parking areas adjacent to building entrances. Bicycle parking could serve artistic and placemaking purposes as well.

Public Transportation

Existing Service Options

There are a variety of service options that connect to and around the UW–Madison campus.

Metro Transit Bus Routes

Metro Transit provides frequent service to and from campus, as numerous east-west Metro Transit routes travel on University Avenue and W. Johnson Street. Routes 80, 81, 82, and 84 circulate around the UW–Madison campus and are free to all riders. Routes 2, 11, 27, 28, 38, and 44 provide additional campus circulation function. Figure 2-8 displays peak transit service circulating campus, as well as transit stops.

Currently, there is an average of 16,900 boardings on the UW–Madison's campus each weekday during the academic year.. According to available Metro Transit data, the busiest stop on campus is at University Avenue and N. Park Street, with an average of 1,460 daily boardings. See **Figure 2-9** for a depiction of transit boardings on campus (ridership data was not available for all stops).

The UW–Madison currently contracts with the local transit provider, Metro Transit, to provide transit service to students, faculty, and staff on campus. Metro Transit bus passes for an unlimited number of rides are available for eligible UW–Madison faculty and staff for $24 per year. Students pay $55.48 per semester for an unlimited pass on Metro Transit routes. Those without a pass can ride Metro Transit routes for $2 per ride.

Paratransit

Paratransit service is available on campus for eligible students and staff. Those utilizing the service must have a valid UW–Madison ID, Metro Transit bus pass, and also fill out an application with Metro Transit to get registered. This service is available by scheduled appointment and must be requested by 4:30 p.m. the day prior to travel. Service is available from 5:30 a.m. to 11:30 p.m. on weekdays, 7:00 a.m. to 11:30 p.m. on weekends, and 7:00 a.m. to 6:30 p.m. on holidays.

Accessible Circulator Shuttle Pilot

Throughout the 2014-2015 school year the UW–Madison piloted an accessible circulator shuttle. This service was created as a result of comments received during the *Campus Transit and Accessible Transportation Study*. The service was a hybrid between a fixed-route service and a demand responsive route. The fixed-route portion traveled between the Humanities Building, the Social Sciences Building, Allen Gardens, Ag Engineering, and the WID Building. Those wishing for service at another location were able to request service by phone or e-mail.

The accessible circulator shuttle was available Monday through Friday from 7:30 a.m. to 7:30 p.m. during fall and spring class sessions and exam periods. Analysis of the accessible circulator shuttle's performance is currently underway. Future availability of this service will depend on funding and the shuttle's performance.

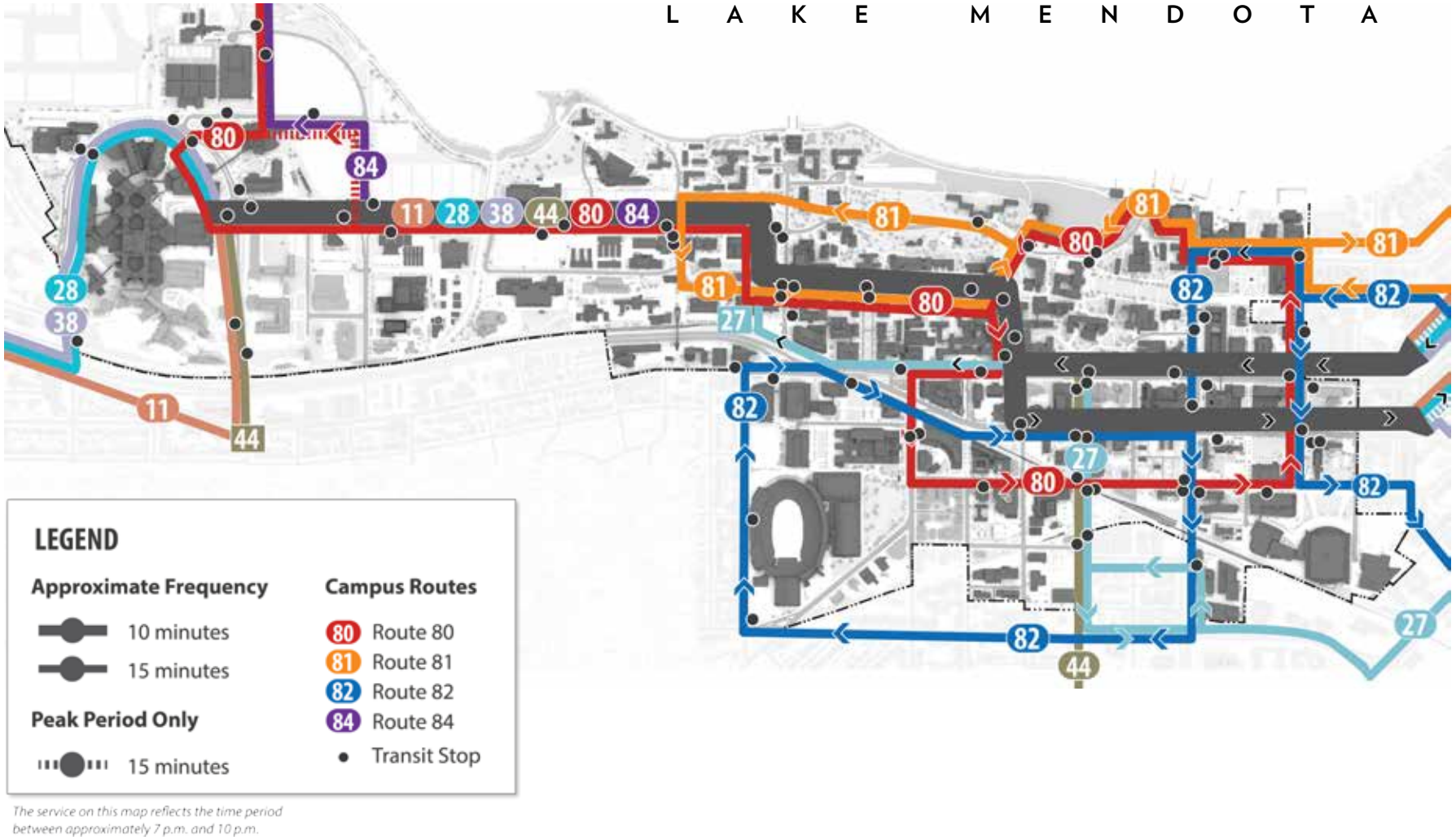


Figure 2-8 Metro Transit Bus Routes Circulating UW–Madison Campus

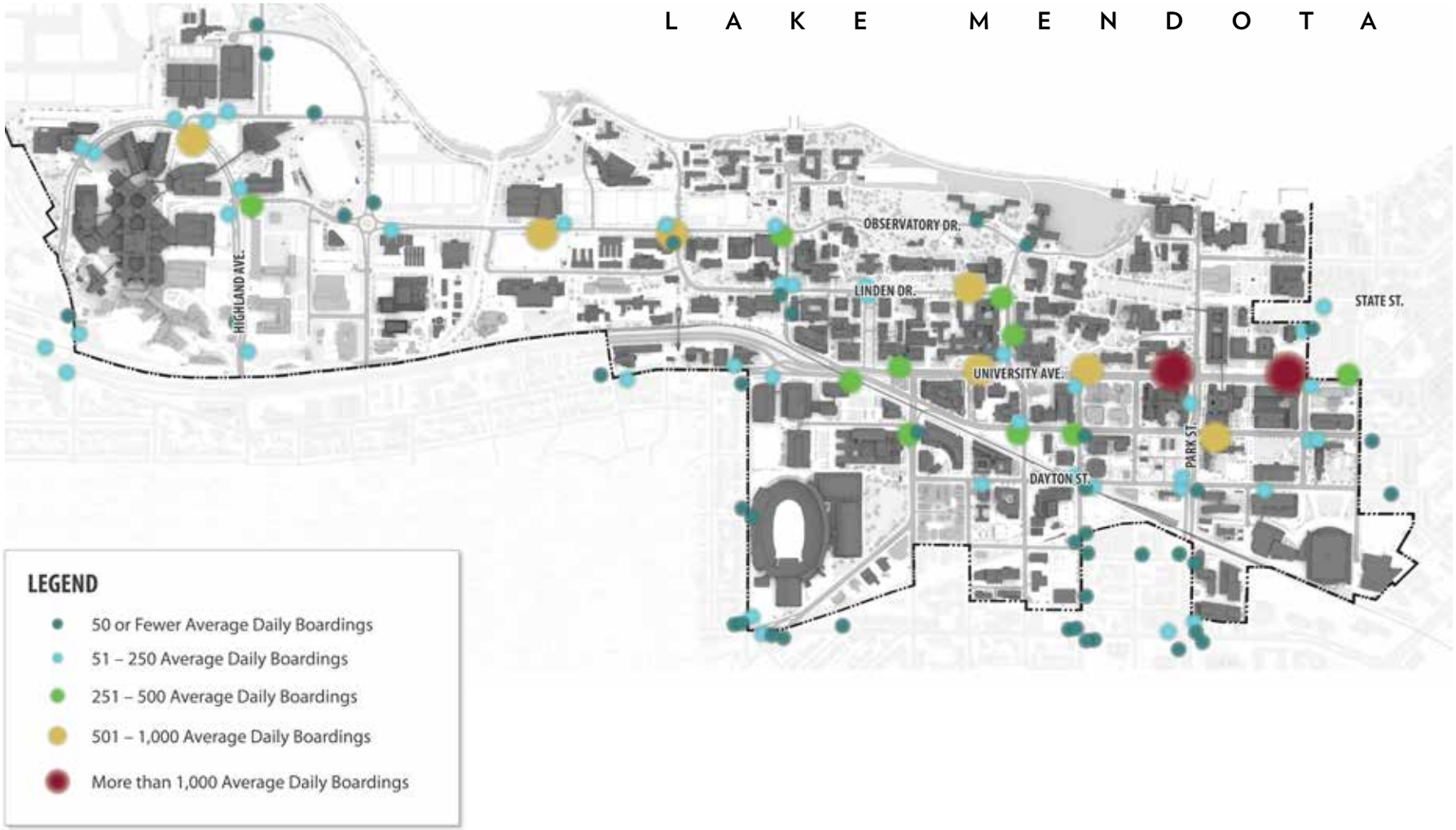


Figure 2-9 Average Daily Transit Boardings

Carpool

The Wisconsin Department of Transportation administers carpool locations in Verona, DeForest, Sauk City, Northwest Dane County, Middleton, Mount Horeb, and Mazomanie. Carpools may elect to register for a carpool permit with UW Transportation Services to give them priority in acquiring a parking permit in the parking lot of their choice from a select list of lots across campus. Each carpool member is entitled to the Emergency Ride Home Program, as well as six complimentary daily parking passes per year for days that carpoolers need to drive their own vehicles. Since employees may not live near their coworkers the university has highlighted seven locations for carpool groups to meet in addition to the transit park-and-ride facilities.

Vanpool

Vanpools are another option that the UW–Madison provides for employees commuting to campus. Vanpools consist of 8-15 employees that travel to work in a State of Wisconsin van and cover its operating costs by paying a fare. Vanpools are serviced by the Wisconsin State Vanpool Program. Vanpool groups operate routes from many outlying communities into Madison, and the only requirement for the vanpool is that a state employee is on board. All vanpool riders are eligible for Emergency Ride Home service in case they need to return home suddenly and unexpectedly during the day.

Car Sharing

The car sharing service Zipcar has a partnership with the university that offers discounts for students, faculty, staff, and UW Health employees. Car sharing expands transportation and mobility options for those who may only occasionally need access to a vehicle. Zipcar has cars available at seven campus locations and two locations east of campus, as well as numerous locations throughout the city that are accessible for personal use and travel.

Intercity Buses

Megabus, Van Galder, and Badger Bus offer intercity bus service to Chicago, LaCrosse, Minneapolis/St. Paul, and other regional destinations from a stop at the Chazen Museum of Art on University Avenue. Buses layover in the northern bus lane at this location. During bus layover, Metro Transit buses are forced into the adjacent vehicle travel lane, which necessitates crossing the westbound bicycle lane.

Park-and-Ride Service

Metro Transit serves five designated park-and-ride lots with direct transit service to and from campus. Complimentary parking is provided to riders at these locations. The existing Metro Transit park-and-rides include the North Transfer Point (served by Routes 2, 4, 17, 20, 21, 22, 27, 28, 56, and 57), Dutch Mill (served by Routes 11 and 12), Northside Town Center (served by Routes 21, 22, and 29), American Center (served by Route 25), and Verona (served by Routes 55 and 75).

The university also has its own park-and-ride locations. These include Lot 200 (served by Routes 6 and 11), Lot 202 (served by a UW–Madison shuttle), and Lot 203 (served by a UW–Madison shuttle). These park-and-rides are serviced by UW–Madison independent of Metro Transit in order to improve commuters' access to campus. UW–Madison and Metro Transit recognize the need to improve service from area park-and-ride locations. More convenient schedules and direct connecting service is desired.

Monona Express

The City of Monona provides its own express bus service direct from Monona to downtown Madison and UW–Madison. The express bus makes 15 stops within Monona before traveling directly to downtown Madison. The bus travels during peak periods in peak direction, from 5:50 a.m. to 8:00 a.m. in the morning and 3:30 p.m. to 5:30 p.m. in the evening. The route costs $3 for adults, $1.50 for students, and $1.50 for seniors/those with disabilities.

Bus Rapid Transit

Plans are underway by Madison Metro for a bus rapid transit (BRT) service routes throughout the greater Madison area, including a route between the east and west sides of Madison through the isthmus and along University Avenue through campus. The university and city are planning integration of this service with other campus transit and multi-modal infrastructure.

Transit System Analysis

The current UW–Madison transit system works well and those wishing to access campus via a high-occupancy vehicle have several options. Transit is available for those traveling just around the corner as well as those traveling to the other side of campus. Transit service is also available during the peak period, the middle of the day, and the evening.

The transit system analysis presented here builds off of the 2013 *Campus Transportation System Evaluation* completed by Nelson Nygaard, currently serving as a reference for Transportation Services. There are several areas in need of improvement within the UW–Madison transit system. These include the street network, route structuring, travel time, capacity, and express service. Each of these items is discussed in further detail below.

Street Network Connectivity

The street network throughout UW–Madison is a significant limitation to the transit network. There is a lack of connecting roadways and a significant number of one-way streets so transit routes are required to operate in a circuitous and indirect manner. This prohibits bi-directional service, creates inefficiencies, and provides less optimal service with longer travel times. There is an identified desire to explore allowing transit vehicles to operate through the Observatory Drive switchback.

Route Structuring

Some routes on campus currently serve competing purposes. As discussed previously, this is particularly an issue for the current structure of Route 80. This route is currently structured to serve as a connector between the east and west ends of campus and as a circulator. As a result of these contradictory roles, the route is inhibited from performing well in either one. There is a strong desire for a Memorial Union to Union South circulator route that would operate back and forth between these popular destinations.

Travel Time & Delay

Several factors contribute to the issues associated with travel time on buses on the UW–Madison campus. As discussed previously, the road network and route structures create several travel time limitations. Additionally, there are a large number of pedestrians and bicyclists on campus during peak times, which often conflict with bus operations, particularly at intersections such as N. Charter Street and Linden Drive, and N. Park Street and University Avenue. Buses are forced to wait for pedestrians and bicyclists to clear busy intersections and crossings. The current bus stop spacing on campus also is a detriment to travel time since buses stop frequently along with slow fare collection and manual rider counting methods contributing to delays. Finally, buses often face increased delay and poor performance during times of inclement weather and high transit use.

Capacity Limits

Capacity is another issue with the transit system on the UW–Madison's campus, especially following class change times. This issue causes students to have to wait for the next bus or commute via another mode. As with other issues, capacity is exacerbated during times of inclement weather since buses are delayed and have more passengers per stop than usual. During other times of the year buses are well below capacity. A more demand-responsive set of routes on campus should be examined. Improving the efficiency and reducing the capacity limitations of Route 80 is a high priority on campus. Metro Transit is currently unable to address overcrowding on routes serving the campus because of the inability to increase fleet size, a direct result of the garage being well beyond design capacity.

Limited to No Express Service

Currently there is limited or no express bus service to the UW–Madison campus. This results in those taking transit from outlying areas to transfer or experience an indirect, time-consuming trip to campus. There is likely latent transit demand not being captured, since direct service to campus is not available—this is evident based on the substantial amount of "hide-and-ride" activity that occurs in the residential areas near campus. Direct, express transit service for area park-and-rides should be explored as a viable option to reducing on-campus vehicle use and parking demands.

Other Transit Needs

Additional campus transit needs include the following:

- Establish an intercity bus terminal near campus to eliminate observed queuing of intercity buses on University Avenue
- Examine placement of Route 80 stop locations to optimize efficiency
- Continue to analyze the benefits and feasibility of articulated buses

Parking on Campus

Existing Inventory Supply

In total, there are approximately 13,000 parking stalls on the UW–Madison campus. These stalls are located in surface lots or in underground and above-ground structures. The inventory includes approximately 9,400 faculty/staff spaces, 1,600 visitor spaces, and 2,000 service/fleet spaces. There are also approximately 350 motorcycle stalls which are not included in the parking inventory total.

A total of 12 structured parking areas are located on campus and are available for visitors. The Transportation Services website displays real-time stall availability per garage in order to assist visitors in planning their parking destination. About half of these garages are located in Central and South Campus, with the remainder in other various locations.

There also are numerous surface parking lots on campus. The hours of availability vary depending on general campus location and the specific lot. Many of the surface lots in the Central and South Campus area are available for use all day, while most lots in the Near West and West Campus area are only open Monday through Friday. Campus development consumes available surface parking which is causing the university to seek replacement parking often in more consolidated (but more expensive) parking structures.

All mopeds on campus must be licensed by the State of Wisconsin and must have a university permit to park in designated moped parking stalls and lots across campus. Some lots allow "all access" moped parking that is open to all those with moped parking permits no matter what lot they have been assigned. The city and university lack consistent regulations and standards managing moped parking. Parked mopeds tend to accumulate on city terraces within campus boundaries and riders often need to illegally operate on sidewalks and crosswalks to access these areas.

Figure 2-10 and **Table 2-3** display existing campus parking facilities.

Permitting and Pricing

Parking rates vary depending on location on campus, and parking duration. Although most stalls are reserved for permitted vehicles, numerous permit types exist within the UW–Madison system, depending on the user's need. Daytime permits are most commonly used by UW–Madison faculty, emeriti, and staff. Daytime permits for students are limited to those who live outside the central Madison transit area or to those with other special circumstances. The current waiting list for permits is 374 for all user groups. Approximately 370 cars park at the UW Park Street/Wingra, University Crossing, and Research Park park-and-ride lots.

Other permit types include afternoon, nighttime, carpool, park-and-ride, disabled user, motorcycle, and departmental permits. Non-UW–Madison affiliated permits for vendors and construction contractors and monthly permits are also available. Regular annual permit rates range between $265 for park-and-ride spots to $1,199 for high-demand lots.

Event parking is deployed during peak periods, such as athletic and commencement events. A large number of regularly permitted lots are affected during events; these impacted lots and the recurring events that impact them are listed on the Transportation Services website.

The UW–Madison issues an annual *Parking Lot Rate Redesignation Plan* that re-categorizes parking area priorities. In fall 2013, the university detailed various steps to condense pricing and prioritization categories. The changes will align all garages, ramps, and high-demand surface lots in one category and all remaining surface lots in a separate category.

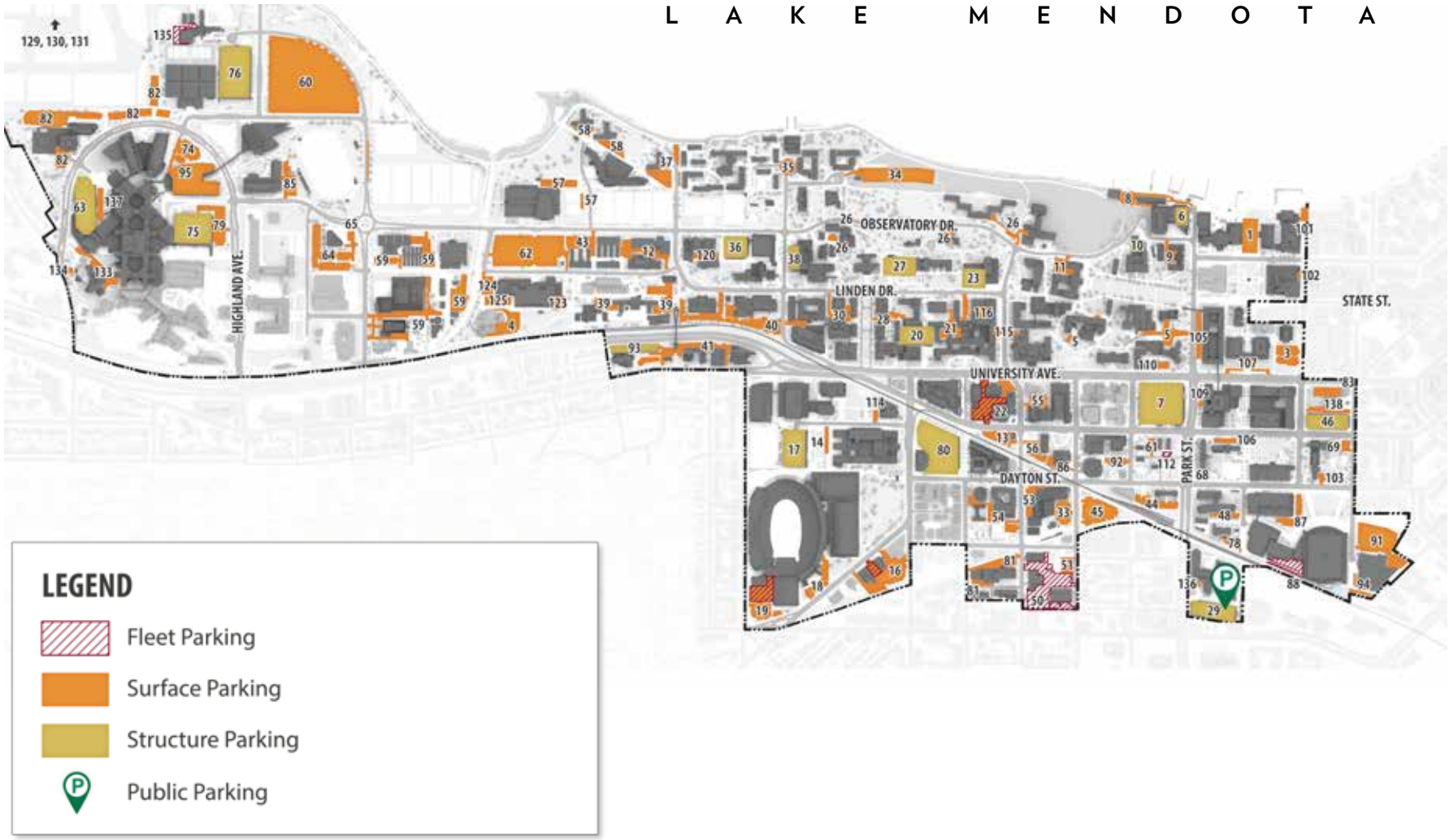


Figure 2-10 Existing Campus Parking Facilities

Table 2-3 Existing Campus Parking Spaces, as of July 2016

Lot Number	Total Spaces
1	57
3	70
4	31
5	45
6	190
7	412
8	23
9	16
10	37
11	37
12	19
13	45
14	10
16	143
17	797
18	48
19	43
20	220
21	47
22	68
23	43
26	95
27	48
28	12
29	339
30	22

Lot Number	Total Spaces
33	60
34	272
35	19
36	457
37	37
38	146
39	69
40	170
41	128
43	58
44	66
45	102
46	734
48	10
50	176
51	35
53	21
54	37
55	27
56	43
57	65
58	44
59	167
60	1316
61	30
62	420

Lot Number	Total Spaces
63	255
64	131
65	51
68	13
69	12
72	12
74	78
75	1197
76	1290
78	15
79	229
80	168
81	57
82	317
83	296
85	43
86	8
87	42
88	27
91	170
92	30
93	78
94	29
95	152
101	4
102	2

Lot Number	Total Spaces
103	10
105	8
106	6
107	5
109	4
110	3
112	6
114	7
115	13
116	6
120	8
123	8
124	27
125	11
129	28
130	93
131	95
133	18
134	4
135	6
136	3
137	12
138	4
Total	12,717

National Leaders in Parking and Transportation Demand Management

UW–Madison has approximately 13,000 parking spaces that serve approximately 22,000 faculty and staff, 8,600 UW Hospital Employees, and 43,000 students. This yields a parking ratio of 0.18 parking spaces provided per person. This is the second lowest parking ratio of peer universities in the United States. With limited physical and financial resources, the university focuses on providing a minimal but efficiently managed parking supply to meet the needs of its faculty, staff, employees, visitors, and select students. **Figure 2-11** illustrates how UW–Madison's parking ratio compares with peer universities.

UW–Madison is a national leader in providing effective travel demand management and alternative commuting strategies and messaging. The City of Madison provides services and infrastructure that support travel to and around the UW–Madison. Alternative commuting options include connected and comfortable walking and biking facilities, Metro Transit bus service, park-and-ride options, and carpool and vanpool programs. These options have allowed UW–Madison to maintain low parking ratios along with an attractive, livable environment on a campus with limited space and constrained parking resources.

Without the current policies in place, traditional land use-based parking calculations would estimate a necessary supply of nearly 24,000 spaces to meet the faculty, staff, employee, and visitor parking demand. If students were permitted to park on campus this demand would increase by as many as 18,000 more parking spaces. In summary, the current supply is about 13,000 parking spaces. Unconstrained demand would be as high as 24,000 parking spaces of demand (or higher if students were allowed to park). Current parking supply is effectively full. The current constrained demand is approximately 13,750 spaces, which includes those that are on the waiting list and those that park at area park-and-ride lots.

Occupancy Analysis

An occupancy analysis was conducted to determine the current supply and demand pattern for each user type for all parking lots on campus. Knowledge of these existing parking behaviors helps to identify spatial and temporal opportunities to improve parking efficiency and highlight needs of the system as the university undergoes physical changes across the 20+ year period of this master plan.

Overall, campus parking supply is operating between 85-90 percent full during the peak period—occupancies between 85 percent and 95 percent are considered to be effective capacity maximums. This indicates that current observed parking occupancies on campus are at or very near the overall effective capacity. **Figures 2-12** and **2-13** display mid-day parking occupancies for faculty and staff, as well as visitors. Lots colored in orange and red are effectively full.

Visitor parking is particularly challenging to find, especially in South and Central Campus. The university tightly controls and manages parking supply on a daily basis to allocate available spaces (including visitor parking spaces), depending on events and other situations which drive demand. Transportation Services is challenged with allocating the correct supply of visitor spaces in the correct locations to meet changing demand, while maintaining permit parking supply. This problem is further exacerbated by consumption of parking supply by ongoing campus building development.

Visitor parking allocations fill up daily and requests exceed available supply. Transportation Services indicates a need of approximately 2,000 additional parking spaces to accommodate increasing visitor parking demand, and to provide flexibility and "swing space" (additional parking space needed to accommodate parking phasing during campus construction that results in the loss of existing campus parking spaces).

As a result of limited supply in the desired locations, visitors and other university parkers spend considerable time searching for available parking spaces and usually end up parking in locations far from their destinations. Visitors are less likely to use alternative modes of travel due to lack of knowledge or their inability to access alternatives from where they are traveling.

UW–Madison will never reach an equilibrium in placing an adequate supply of parking directly adjacent to building destinations. Some parking will always occur in adjacent districts. Parking supply must be continuously evaluated relative to the demand for academic and research building sites.

Current TDM policies and practices nearly halve the actual amount of parking necessary to serve the land uses and destinations on campus. Additional campus growth and development will require continued focus on TDM strategies to maintain consistently low faculty/staff parking ratios, with limited additions of parking to serve campus visitors and to serve as swing space.

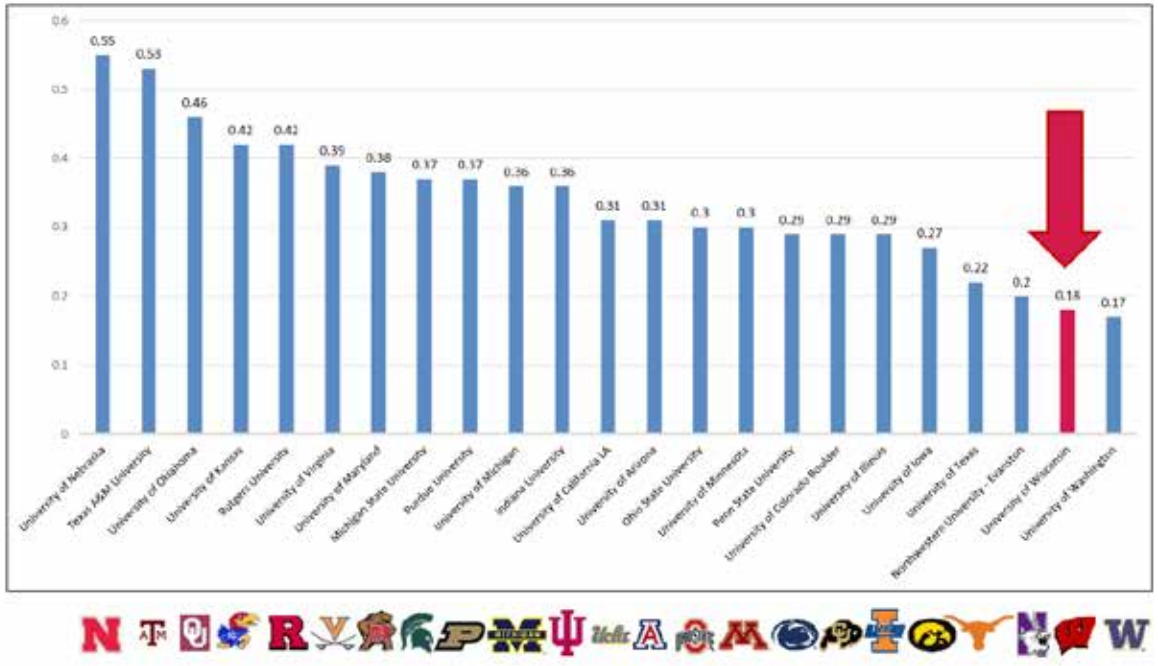


Figure 2-11 Parking Spaces per Person (Employees + Students) at Select Peer Universities

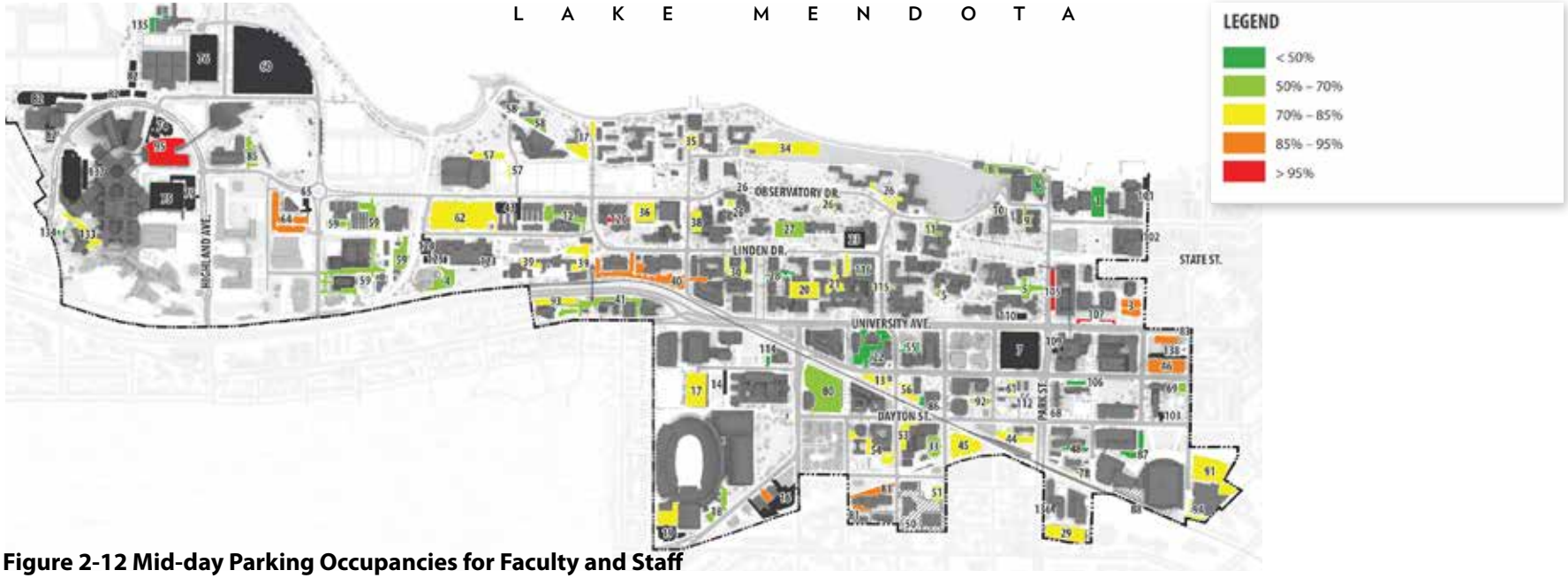


Figure 2-12 Mid-day Parking Occupancies for Faculty and Staff

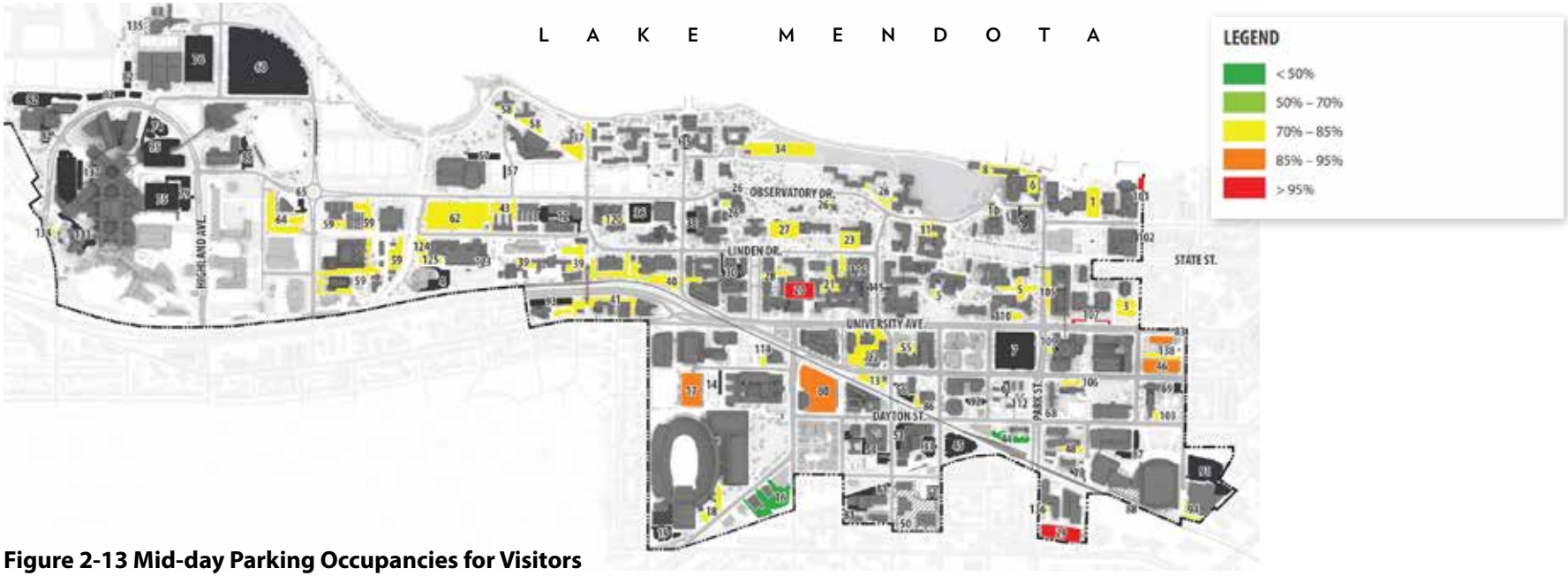


Figure 2-13 Mid-day Parking Occupancies for Visitors

The infographic below summarizes the key characteristics of the university's transportation system.

WHAT IS WORKING

VEHICLES

- Vehicle flow through campus is adequate
- University Avenue is the spine of campus and offers city and regional connectivity

WALK/BIKE

- Heavy pedestrian and bike volumes around campus
- University Avenue cycle track and other dedicated facilities make travel more comfortable and connected

TRANSIT

- Well-used system with a high number of boardings particularly at the center of campus
- Paratransit and other commuter solutions are offered

PARKING

- Low parking ratios and strong TDM programs

WHAT IS NOT WORKING

- Some areas of congestion on University Avenue and Johnson Street
- Vehicle delay occurs at intersections such as University Avenue and Charter Street with heavy pedestrian and bicycle movements

- Critical gaps in connectivity exist
- Various intersections present challenging conditions for pedestrians and bicyclists that often contributes to transit and vehicle delay
- Continued need for more and better placed bike parking

- Park-and-ride facilities offer potential for direct service routes
- Locations with high pedestrian and bicycle volumes cause transit delays
- Lack of intercity bus terminal causes model conflicts

- Visitor parking proximate to buildings is often difficult to find
- Many parking lots operate as effectively full

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3. TRANSPORTATION RECOMMENDATIONS

Alternatives Development and Recommendations

The recommendations presented in this plan are meant to strategically build off of existing transportation assets and address known deficiencies to maximize system efficiency, safety, and operations within the future campus land use scenario.

The university strives to continue to be a national leader in multimodal transportation and commuter solutions, the provision and encouragement of non-motorized transportation and transit use, and the effective and sustainable management and operations of campus parking.

This section includes recommendations for maintaining high quality transportation operations and connectivity for all modes and is separated into the following four recommendations (by mode):

1. Emphasize walking and biking as the primary forms of transportation to and around campus
2. Improve the service and efficiency of transit operations
3. Increase road network connectivity and redundancy while carefully managing single-occupant vehicle demand on the transportation network
4. Strategically add limited automobile parking supply to address visitor parking deficiencies and meet projected demand by campus district

Emphasize Walking and Biking as Primary Forms of Transportation To and Around Campus

Walking and biking are fundamental and widespread forms of transportation on campus, and the university places a high priority on providing connected and comfortable facilities for pedestrians and bicyclists. Moving forward, the following should be priorities for enhancing the campus walking and biking experience:

- Improve intersections with modal conflicts and transit delay
  - Create grade separation at N. Charter Street and Linden Drive
  - Address difficult crossings for pedestrians and bicyclists at other campus intersections
- Complete the gaps in the campus walking and biking network
- Enhance the comfort and operations of the University Avenue corridor
- Increase sidewalk capacity and improve the pedestrian experience in south campus
- Enhance supporting and end-of-trip bicycle facilities

Improve Intersections with Modal Conflicts and Transit Delay

Engagement with the public and coordination with stakeholders has identified various intersections which deserve attention to increase the comfort and connectivity of pedestrian travel and reduce transit and vehicle delay. This master plan recommends intersection improvements at the locations displayed in **Figure 3-2** on the following page.

N. Charter Street and Linden Drive

This intersection is at the center of campus with several primary academic and research locations in the area, including Van Hise, Human Ecology, Van Vleck, Bascom Hall, Sterling Hall, and others. The intersection sees some of the highest transit, pedestrian, and bicycle activity on campus. At peak class change times, Metro Transit buses and motor vehicles experience delay at this location waiting for the large numbers of pedestrians and bicyclists to clear the intersection. This delay has a lasting effect on the overall performance of the Metro Transit routes traveling through this area.

Figure 3-1 Concept Rendering of the Proposed Grade Separation at N. Charter Street and Linden Drive, Elevation (Top) And Plan View (Bottom)

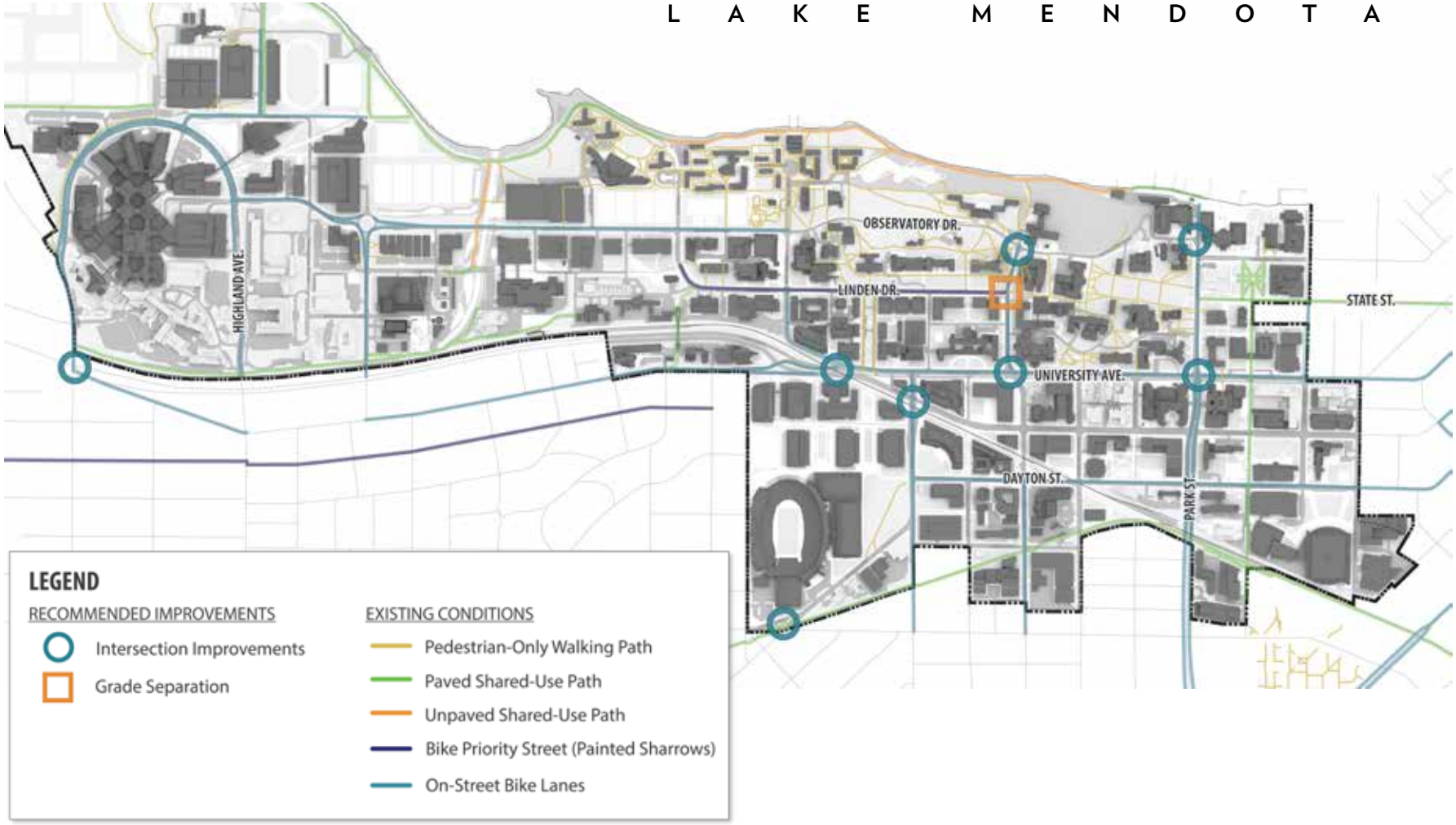

Figure 3-2 Locations of Recommended Intersection Improvements

Numerous potential solutions were explored for application at this intersection with ranging levels of intervention. Alternatives included increased enforcement, a pedestrian scramble phase, gates, fencing, and grade separation. This plan recommends creating a pedestrian plaza/bridge over the intersection. This separated level would capitalize on existing topography and tie into upper levels of future buildings to be built/redeveloped in this area.

Grade separation would provide a continuous connection for pedestrians from the entrance of Van Vleck to the future Medical Sciences building as well as the upper plinth of Van Hise and the sidewalk parallel to Linden Drive connecting west to Human Ecology. This recommendation assumes the removal of a majority of the pedestrians from the street level to reduce intersection transit delay. Motor vehicles, transit users, and bicyclists would travel at the existing street level. By linking into future new and redeveloped buildings at the intersection, the vertical circulation would made primarily through the buildings. Street access would be provided along the east side of N. Charter Street to and from the grade separated area.

The recommended grade separation concept is depicted in the rendering. More information about this concept is available in the Landscape Master Plan. Detailed analysis and design will be required before any such concept is constructed. New building development at this location should concentrate primary ingress/egress on the floor level with the pedestrian plaza.

Additional Intersections

Intersections recommended for improvement were identified based on input from UW–Madison staff, city staff, and the public. High volumes of pedestrians and bicyclists travel through these intersections and around campus every day, and the comfort and connectivity of their travel should be continuously promoted and improved. Each of these intersections has its own unique challenges caused by intersection geometry: motor vehicle speed, volume, and turning movements, intersection visibility, pedestrian and bicyclist volumes, and other factors.

Pedestrians and bicyclists should be offered a direct, convenient, and highly visible path crossing at these intersections. Non-motorized crossings should be given an adequate signal phase time and intersections with high-volumes of pedestrians and bicyclists should include a protected pedestrian-only (and in some cases a bicycle-specific/bicycle-only) signal phase to facilitate crossings.

Other potential improvements to be applied to these intersections include:

- Pedestrian-leading intervals
- Curb extensions/bump-outs
- Median pedestrian refuge islands
- High-visibility continental crosswalks
- Bike boxes
- Green paint identifying the path of bicycles through the intersection

This plan recommends working with appropriate city and other stakeholders to evaluate these intersections and incorporate modifications into long-term university and other improvement plans. Additionally, the university should work with the city to develop a standard set of pavement markings and infrastructure improvements to maintain consistency across campus.

Complete the Gaps in the Campus Walking and Biking Network

This master plan recommends completing the identified gaps in the campus biking network to intra-campus travel, as well as commuting to and from campus. **Figure 3-4** displays the recommended walking and biking connections to address known gaps. Further study and coordination with the City of Madison on proposed modifications to the city street network outlined below will be required.

This plan recommends the following improvements to the overall connectivity of non-motorized travel:

- Install pedestrian routes through redeveloped area around existing Lot 60 in West Campus
- Develop off-street shared-use path along the east side of Willow Creek
- Construct off-street shared-use path along Campus Drive connecting Campus Drive Bike Path to Babcock Drive. This requires the partial or complete removal of the existing Meat Science and Muscle Biology Laboratory that currently encroaches on the railroad right-of-way. This Master Plan proposes redevelopment of this building, which will allow for path extension
- Install a two-way cycle track on the south-side of University Avenue. Further study and evaluation with the City of Madison is required
- Convert N. Charter Street from W. Dayton Street to Regent Street from one-way to two-way and add on-street bicycle lanes in each direction
- Install on-street bike facilities on N. Mills Street
- Increase pedestrian connectivity with pedestrian only walking routes on West Campus, across the N. Charter Street/Linden Drive intersection, and through the reconfigured central block area south of Linden Drive and west of N. Charter Street
- Convert N. Brooks Street to a pedestrian mall between N. Dayton Street and W. Johnson Street and pedestrian routes through the redeveloped block bounded by W. Dayton Street, W. Johnson Street, N. Park Street, and N. Mills Street
- Create grade separation linking the west side of Bascom Hill with Van Hise and the upper sidewalk north of and parallel to Linden Drive

See **Figure 3-5** for an illustration of the recommended connection between the Campus Drive Path and Babcock Drive along the railroad track and through the animal and plant sciences area.

Figure 3-3 Bike boxes and Green Conflict Markings are Proposed at All Intersections of University Avenue on Campus

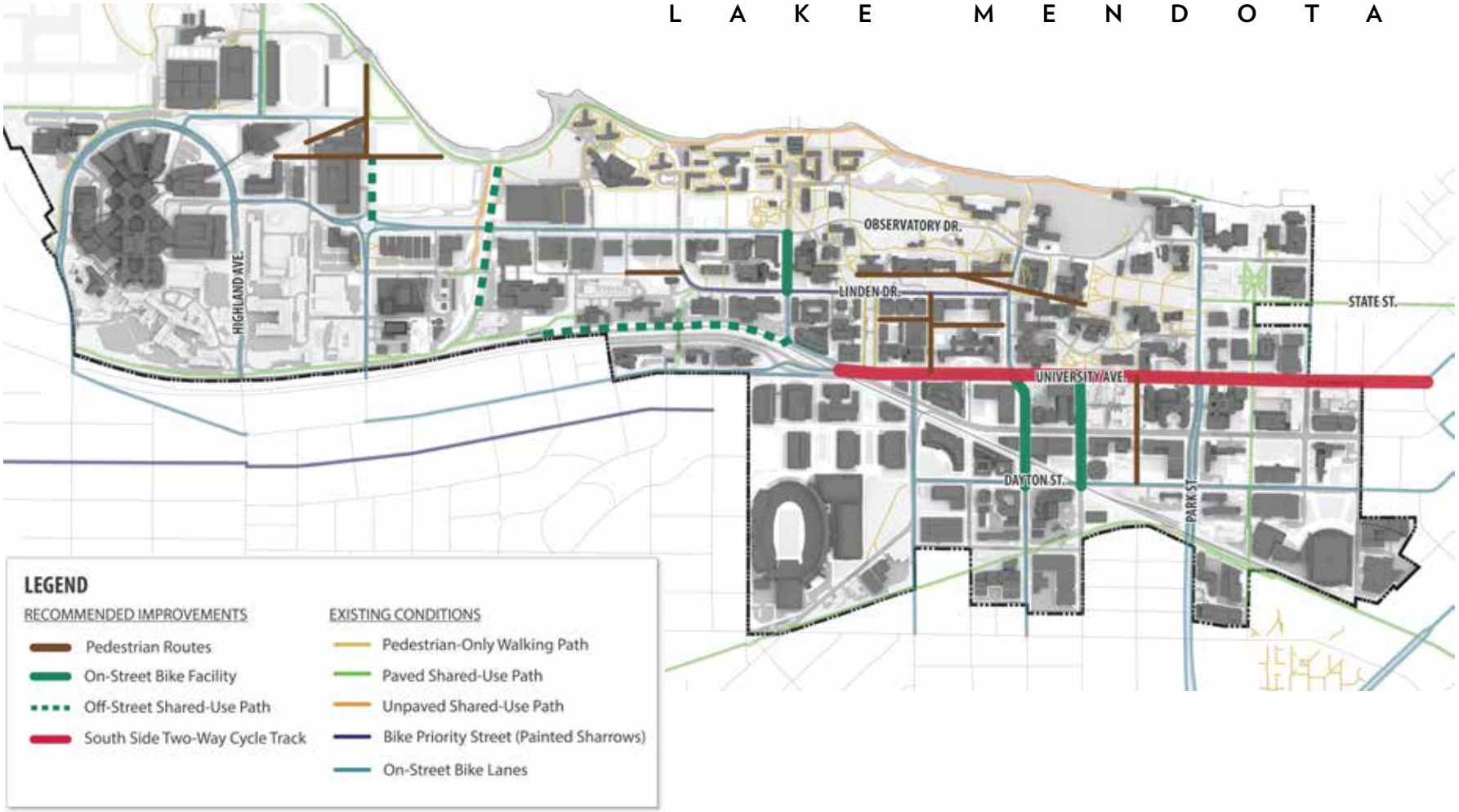

Figure 3-4 Recommended Walking and Biking Improvements

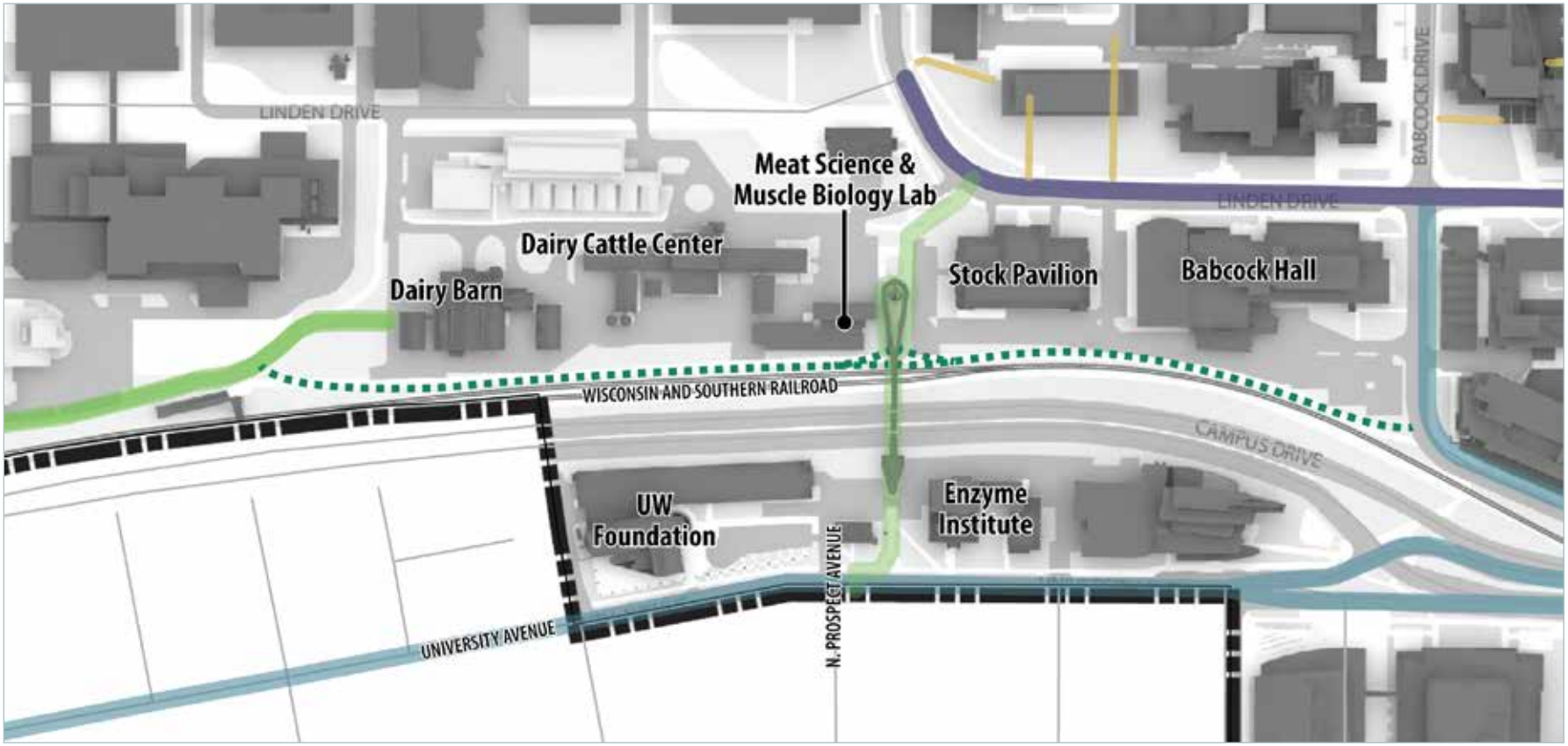

Figure 3-5 Recommended Campus Drive Path Extension

Enhance the Comfort, Operations, and Aesthetics of the University Avenue Corridor

University Avenue is a primary corridor that serves as the "spine" in the center of the UW–Madison campus. Thousands of vehicles, transit users, pedestrians, and bicyclists travel along and across the street every day. To better facilitate this travel and make University Avenue a more comfortable, attractive, and identifiable street for all users, this plan recommends the following enhancements:

- A protected two-way cycle track on the south side of the street (see Figure 3-6 for a two-way cycle track that is similar to what is being recommended for University Avenue)
- Signature boulevard experience from increased plantings along the sidewalk, upgraded aesthetically pleasing fencing along the north side of the street, and a planted median between the south side cycle track and motor vehicle traffic
- A dedicated north side transit lane equipped for future bus rapid transit (BRT) integration
- A protected vehicle left turn lane at each intersection
- Bicycle queue boxes on the north-south streets intersecting University Avenue where possible and appropriate to facilitate turning movements
- Bicycle-specific signal timing and leading bicycle intervals where possible and appropriate

Although University Avenue was recently reconstructed, another reconstruction is likely within the timeline of this master plan. The university should work closely with the City of Madison in planning and designing University Avenue when it becomes time for re-paving, re-striping, and/or re-construction. The recommendations put forth by this plan serve to connect the recommended Campus Drive Path extension from the west to the proposed bicycle facilities

Figure 3-7 Recommended University Avenue Cross Section where Right-of-Way Allows

Figure 3-6 Dunsmuir Street in Vancouver, BC, Canada

Figure 3-8 Plan View of Proposed University Avenue Re-Design

on Bassett Street on the east. Proposed University Avenue cross-section and plan view concept renderings are included below.

Additionally, this plan recommends simplifying the intersection of Babcock Drive and University Avenue/Campus Drive. Recommendations for this intersection include:

- Establish visual and tangible connection and crossing from Henry Mall to Engineering Mall, and eventually to Camp Randall
- Remove the pedestrian crossing at Babcock Drive and establish a single prominent crossing of pedestrians and bicyclists east of Henry Mall with a relocated traffic signal at this location
- Establish a bicycle crossing at the transition from the two-way cycle track on University Avenue to the bike facility on Babcock Drive
- Add a vertical barrier to restrict crossings of University Avenue at non-crosswalk locations

The concept rendering below depicts the proposed changes at this intersection.

Figure 3-9 Proposed University Avenue Intersection Configuration at Henry Mall

Increase Sidewalk Capacity and Improve the Pedestrian Experience in South Campus

Narrow sidewalks and limited aesthetic consistency dominate the South Campus. W. Dayton Street and N. Charter Street in particular serve important connectivity functions. This plan recommends enhancing the multimodal function and aesthetics of these streets to establish them as signature and lively streets on campus.

W. Dayton Street

W. Dayton Street connects the Kohl Center with Union South and Camp Randall. This plan recommends establishing W. Dayton Street as a programmable events street that is attractive, lively, green, and flexible to different uses (see concept rendering). Since it sees lower traffic volumes than arterials University Avenue, W. Johnson Street, and Regent Street, it offers more flexibility of use. It connects two primary athletic facilities on campus and is a frequent destination for game day visitors. The street is recommended to be flexible and host programming such as Game Day parades, food trucks, fairs, exhibitions, and other events to create a clear sense of place in South Campus.

Figure 3-10 Recommended Concept for W. Dayton Street

N. Charter Street

This plan recommends establishing N. Charter Street as a gateway green street with terraces serving as bio swales. It is recommended that N. Charter Street between W. Dayton Street and Regent Street be converted from one-way to two-way with the addition of 5-foot minimum on-street bicycle lanes in each direction. North of University Avenue, it is recommended that street trees and bio swales/infiltration planters are introduced along the street, along with relocating the bicycle parking to the inside (closer to the buildings) of the pedestrian sidewalk on the east side of N. Charter Street. The recommended cross-section is displayed in the rendering below.

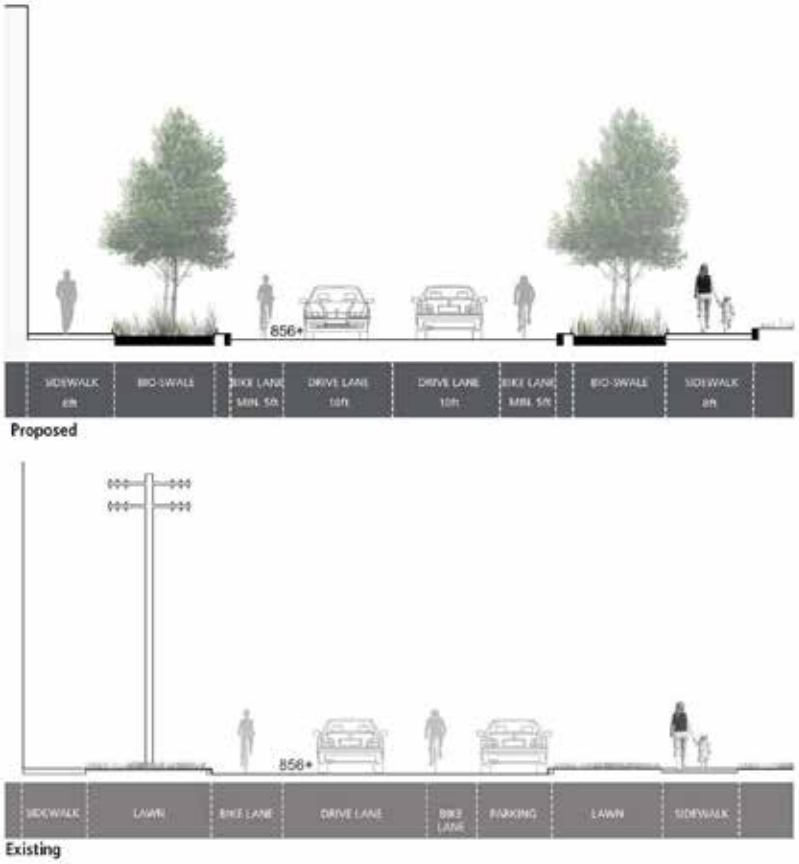

Figure 3-11 Existing and Recommended N. Charter Street Cross Section

Guidance on Campus Street Design Guidelines

The Landscape Master Plan includes guidance on streetscape cross-section features for campus streets based on four streetscape typologies:

1. Gateway Streets
2. Primary Streets
3. Secondary Streets
4. Green Streets

The Landscape Master Plan should be consulted for additional information on sidewalk width, pedestrian and bicycle accommodations, and other streetscape design considerations.

Additionally, the university's Campus Design Guidelines provides a set of recommended "Build-To Dimensions" for campus streets within various designated design neighborhoods across campus.

The Build-To Dimensions ensure architectural framing of the street is occurring where appropriate, green space is preserved, and that a comfortable and active human-scaled pedestrian streetscape is created.

Enhance Supporting and End-of-Trip Bicycle Facilities

In addition to physical bicycle infrastructure, ancillary features are important to encouraging and supporting bicycling. Efforts such as providing abundant and well-placed bicycle parking and bicycle sharing options encourage greater bicycling on campus. This plan has the following recommendations:

- The duckbill rack should continue to be the standard preferred bicycle rack
- Place high-capacity bicycle racks, such as those at Union South where space is limited and does not allow for duckbill racks
- Provide additional bicycle parking in the near-term at the corner of Linden Drive and N. Charter Street
- Incorporate convenient bicycle parking relative to primary building entrances in all new campus building construction and remodeling projects, without blocking the accessibility of building entrances
- Establish covered bicycle parking where possible and appropriate
- Integrate bicycle parking into the landscape to buffer the visual clutter of bicycle parking
- Work with BCycle to explore the placement of additional bike share station locations on campus

The Landscape Master Plan contains additional guidance about bicycle parking type, design, and placement.

Improve the Service and Efficiency of Transit Operations

Introduction

Metro Transit service is one primary way that faculty, staff, students, and employees travel to and from and around campus. This master plan recommends four priorities for improving transit service ridership, efficiency, and operations:

1. Address intersection locations with transit delay
2. Implement limited stop and/or express bus service to serve campus
3. Improve intra-campus bus connectivity
4. Establish a permanent inter-city bus terminal

Address Intersection Locations with Transit Delay

As discussed in the previous section, several intersections across campus see transit delay due to high volumes of pedestrians and bicyclists at peak travel times. Most notably among these is the intersections of N. Charter Street and Linden Drive, N. Charter Street and University Avenue, and University Avenue and N. Park Street. Recommended improvements to these intersections are meant to reduce transit (and vehicle) delay and improve conditions for pedestrians and bicyclists.

Implement Express Bus Service

This plan recommends the university work with Metro Transit to add a limited stop and/or express bus service from area park-and-ride locations to campus, stopping in South Campus (Park Street/University Avenue), Central Campus (Charter Street/Linden Drive), and West Campus at the UW Hospital and Health Sciences Learning Center. Such a premium service with 20 minute headways and high quality vehicles would increase transit ridership and reduce the parking demand on campus. There is a particular opportunity to divert UW Hospital employees from driving single-occupancy vehicles to transit with this premium service. West Campus has a higher parking generation ratio of any district on campus. UW Hospital employees commute from further out and use single-occupancy vehicles in a larger percentage than other UW–Madison faculty and staff. Planned BRT connecting the east and west sides of Madison would complement this express bus service by offering more opportunities for connecting across campus during the day and for return trips.

BRT, a concept officially adopted by the City of Madison, will allow for quicker commutes to and from the campus, for both students and staff. It will also provide increased capacity, reducing the chronic overloads that are being experienced now. Operation of BRT will require enhanced passenger stations located on or near the UW campus.

The university should work closely with the City of Madison, the Madison Area Transportation Planning Board, and other stakeholders to implement BRT service in the city and through campus, including developing routes and schedules, and locating appropriate station locations.

Improve Intra-Campus Transit Connectivity

In order to improve the efficiency and customer experience of intra-campus transit, this plan recommends reverting back to the previous routing of Route 80 to provide more direct connections between the east and west sides of campus. Prior to reintroducing the circulating Route 85, the university should explore the demand for this route. While the route carried many passengers when it was in operation, it was slow due to its circulatory nature. The distance covered by the previous Route 85 was minimal, so those who took this circulator could likely walk more quickly to their destination. If this or any other circulators are introduced on the UW–Madison campus it is recommended further evaluation be done to determine whether they can operate in both directions so that riders are not traveling extra distance in the opposite direction of destinations.

It also is recommended that as Metro Transit is able to increase their bus storage facilities that articulated buses are introduced on the UW–Madison campus. These buses would address capacity issues as well as provide better maneuvering ability near Observatory Hill. It is critical that buses are able to safely maneuver this hill for bi-directional circulation. Articulated buses cost approximately $800,000 per bus. In lieu of articulated buses, the university should explore the use of intelligent transportation systems (ITS) technology at the base of the hill to alert westbound vehicles of oncoming eastbound buses.

Bus stops should be examined closely for possible elimination or consolidation. Eliminating extraneous and unnecessary bus stops would serve to decrease rider delay. The current frequency of stops creates significant delays for those on board. Off-board fare payment collection also is recommended as a method for decreasing transit delay and improving travel times and passenger experience.

Since capacity is currently an issue on buses during class change times, it is recommended that doubleheaders (two simultaneously arriving buses) are operated on routes with capacity issues during class change time. Schedules also could be adjusted so they deviate from strict clocked headways and buses would operate more frequently while students are changing classes and less frequently while they are in class. These changes would impact Metro Transit's overall operations and should be carefully explored before implementing them.

Establish a Permanent Inter-City Bus Terminal

This plan recommends a permanent inter-city bus terminal in east campus to remove queuing buses from University Avenue and East Campus Mall. The new bus terminal should be in a location that is easily serviceable by transit without adding new routes. Opportunities to integrate Metro Transit connections and mixed-use development into the terminal facility should be evaluated.

One potential location for an east campus bus terminal is the current City of Madison Lake Street parking garage which is central to campus destinations and population density. The first floor of a redeveloped parking structure may be able to serve as an inter-city bus terminal facility, to serve the needs of the university and the City of Madison. UW–Madison will continue to work with the City of Madison Planning Division, Traffic Engineering Division, Metro Transit, and others to locate a site for a new intercity bus terminal.

Increase Road Network Connectivity and Efficiency

Introduction

Facilitating motor vehicle connectivity to and around campus is essential to the long-term vitality of the campus, particularly as buildings and parking are removed, added, and redeveloped. Thousands of faculty, staff, employees, visitors, freight, and service vehicles travel to and around campus each day. This plan recommends the following modifications to the road network to promote access and circulation in light of planned land use changes:

1. Vacate parts of Marsh Drive, Willow Drive, and Walnut Street, and install a new north-south road from Marsh Drive to Observatory Drive to accommodate planned land uses
2. Vacate Easterday Lane and add an east-west connection across Willow Creek
3. Install new north-south access drive from University Avenue to Linden Drive, west of Charter Street
4. Install new east-west parallel access road south of Linden Drive, west of Charter Street
5. Install protected left turn phase for N. Charter Street southbound vehicles turning left on to Johnson Street
6. Convert Brooks Street into a pedestrian mall/shared emergency drive
7. Convert Charter Street from one-way to two-way and add on-street bicycle lanes in each direction from W. Dayton Street to Regent Street

Figure 3-12 on the following page summarizes the recommended road additions, modifications, and vacations.

Vacate Easterday Lane and Add Willow Creek Crossing

In conjunction with the expansion of Veterinary Medicine, it is recommended that Easterday Lane between Linden Drive and Observatory Drive be vacated. Easterday Lane does not serve significant transportation purposes and its vacation enables site planning opportunities. Vacation of Easterday Lane creates options for developing Willow Creek as a functional space. This plan also recommends an extension of Linden Drive across Willow Creek south of and parallel to Observatory Drive providing additional access across Willow Creek in the event Observatory Drive is obstructed. Extending Linden Drive across Willow Creek enhances connectivity for pedestrians and bicyclists, and establishes the possibility of a future connection to Walnut Street to the west.

Manage Building Development and Added Parking Capacity in the Central Campus

Install New Access Drives

Building and parking additions and reductions are planned in the Central Campus between University Avenue and Linden Drive, and N. Charter Street and Henry Mall. In conjunction with these changes, this plan recommends two access roads to be created:

- Parallel to and west of N. Charter Street between Linden Drive and University Avenue
- From N. Charter Street west into the block, parallel to Linden Drive

These access roads also will provide increased fine-grain pedestrian and bicycle connectivity through this area, as well as limited access to parking garages and loading docks. Through traffic will be discouraged. Transit routes will remain on Linden Drive and N. Charter Street.

Accommodate Additional Traffic

Additional building square footage and parking capacity in the Central Campus will bring added traffic on N. Charter Street and University Avenue. Much of the traffic from the development in this area will desire to turn left onto Johnson Street from southbound N. Charter Street. This plan recommends a short protected leading left turn vehicle phase from southbound N. Charter Street to eastbound W. Johnson Street. Pedestrians will be held during this phase. This would be in addition to the current permissive left turn phase. A protected left turn phase will provide additional capacity for turning movements without negatively affecting the intersection of N. Park Street and W. Johnson Street (the key intersection in the area).

Convert N. Brooks Street from W. Johnson Street to Dayton Street into Pedestrian Mall/Shared Emergency Drive

In conjunction with future building redevelopment at this block, this plan recommends converting N. Brooks Street from W. Johnson Street to W. Dayton Street into a pedestrian mall/shared emergency access drive.

Convert N. Charter Street from W. Dayton Street to Regent Street

This plan recommends converting N. Charter Street from W. Dayton Street to Regent Street from a northbound one-way street (with a southbound contra-flow bicycle lane and on-street parking) to a two-way street with minimum 5 foot bicycle lanes in each direction. This recommendation serves to establish N. Charter Street as an attractive multimodal gateway from South Campus and providing a connection through the center of campus all the way to Lake Mendota. These modifications require removal of on-street parking from the east side of N. Charter Street. There is sufficient nearby public street and university parking to make up for removal of parking along N. Charter Street.

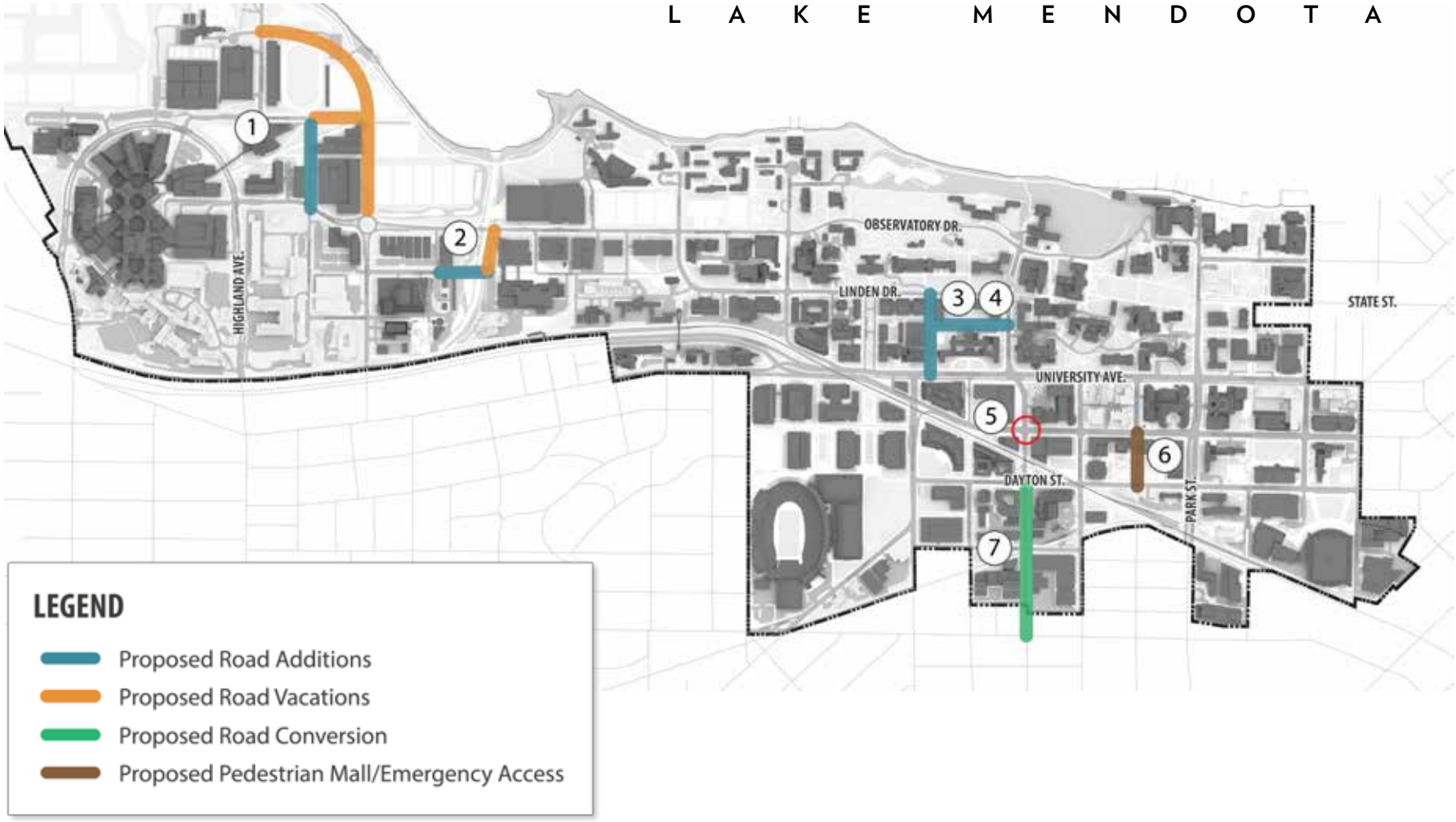

Figure 3-12 Proposed Road Additions, Vacations, and Conversions

Parking Operations and Management

The effective operation and management of parking at UW–Madison is paramount to the long-term success of the university and quality of life on campus. The university strives to continue to be a national leader in parking management, the provision of low parking ratios, and a comprehensive and complementary set of alternative commuter solutions. The university also recognizes the importance of providing available and accessible parking spaces for campus visitors and employees.

Future Parking Needs

Future parking needs were modeled under the planned future campus land use scenario. Approximately 900,000 square feet of new programmable building space is planned for West Campus compared to the existing condition. Additional parking supply is recommended for all campus districts to meet demand. Analysis indicates an overall future campus parking deficit of just 18 spaces as a result of the development programmed in this master plan. Analysis was used to modify and finalize the planned master plan land use development and redevelopment build-out scenario.

Recommendations

This plan presents several recommendations for the university to effectively and efficiently provide and manage parking in conjunction with this Master Plan's proposed campus development and redevelopment.

1. Continue to be leaders in transportation demand management (TDM) and alternative commuter solutions
2. Maintain current parking ratios for faculty and staff. Work to shift UW Hospital employee and other faculty and staff parking demand off campus through enhanced park-and-ride transit service
3. Add 2,000 parking spaces over the next 20-40 years for visitors and provide swing space to accommodate parking phasing and construction
4. Where possible, remove surface parking lots and consolidate parking supply into centrally located parking structures to allow for green space and campus development, increase parking efficiency, and improve water quality by reducing the amount of impermeable surface on campus

Recommended Parking Additions and Reductions

This plan recommends the addition of 2,000 parking spaces for visitors and to provide swing space over the next 20-40 years. Additional parking is needed to serve development phasing. New parking needs to be built before current parking lots are taken off line to accommodate building projects. In addition to providing construction swing space, the additional parking spaces will serve visitors. The demand for visitor parking is typically during off-peak travel periods, especially in the middle of the day, when lots are full of faculty and staff vehicles. Campus roads see much lower demand during these time periods. Roadways in West Campus and across campus are sized to meet peak demand levels. No significant traffic impacts during peak or off-peak periods are anticipated due to the recommended increase in visitor parking supply.

This plan recommends an addition of 6,380 and removal of 4,380 parking spaces, for a net increase of 2,000 parking spaces over the next 20-40 years to accommodate the planned build-out. Recommended parking additions and reductions are depicted in **Tables 3-1** and **3-2** on the following page, **Figure 3-13** and **Figure 3-14**. Additions and reductions result in the following increases by district:

- West Campus: +689 spaces
- Near West Campus: +81 spaces
- Central Campus: +615 spaces
- South Campus: +615 spaces

Table 3-1 Recommended Parking Reductions

Parking Reductions		
Lot/Location	**District**	**Stall Count**
Lot 1	Central	60
Lot 3	Central	62
Lot 13	Central	34
Lot 17	South	787
Lot 20	Central	207
Lot 22	South	65
Lot 23	Central	42
Lot 26	Central	88
Lot 34	Central	267
Lot 41	Near West	71
Lot 43	Near West	56
Lot 45	South	89
Lot 50	South	176
Lot 51	South	33
Lot 54	South	16
Lot 56	South	43
Lot 60	West	1,311
Lot 62	Near West	417
Lot 79	West	244
Lot 81	South	81
Lot 85	West	36
Lot 91	South	160
Lot 92	South	28
Lot 114	South	7
Total		**4,380**

Table 3-2 Recommended Parking Additions

Parking Additions		
Lot/Location	**District**	**Stall Count**
Humanities (N-11B)	Central	450
Lot 75 (W-02)	West	780
Linden Block (N-06B)	Central	550
Engineering (S-27)	South	1,050
Vet Med (W-27)	Near West	625
Nursing/Pharmacy (W-09A)	West	1,500
Mills and Spring (S-10A)	South	400
Grainger South (S-13)	South	350
Art Lofts (S-16A)	South	300
Lot 20 (N-05C)	Central	375
Total		**6,380**
Net Increase		**2,000**

Note:

This is anticipated over a 20-30 year time period. Additional parking would be built on an as-needed basis after public review.

Figure 3-13 Recommended Parking Reductions

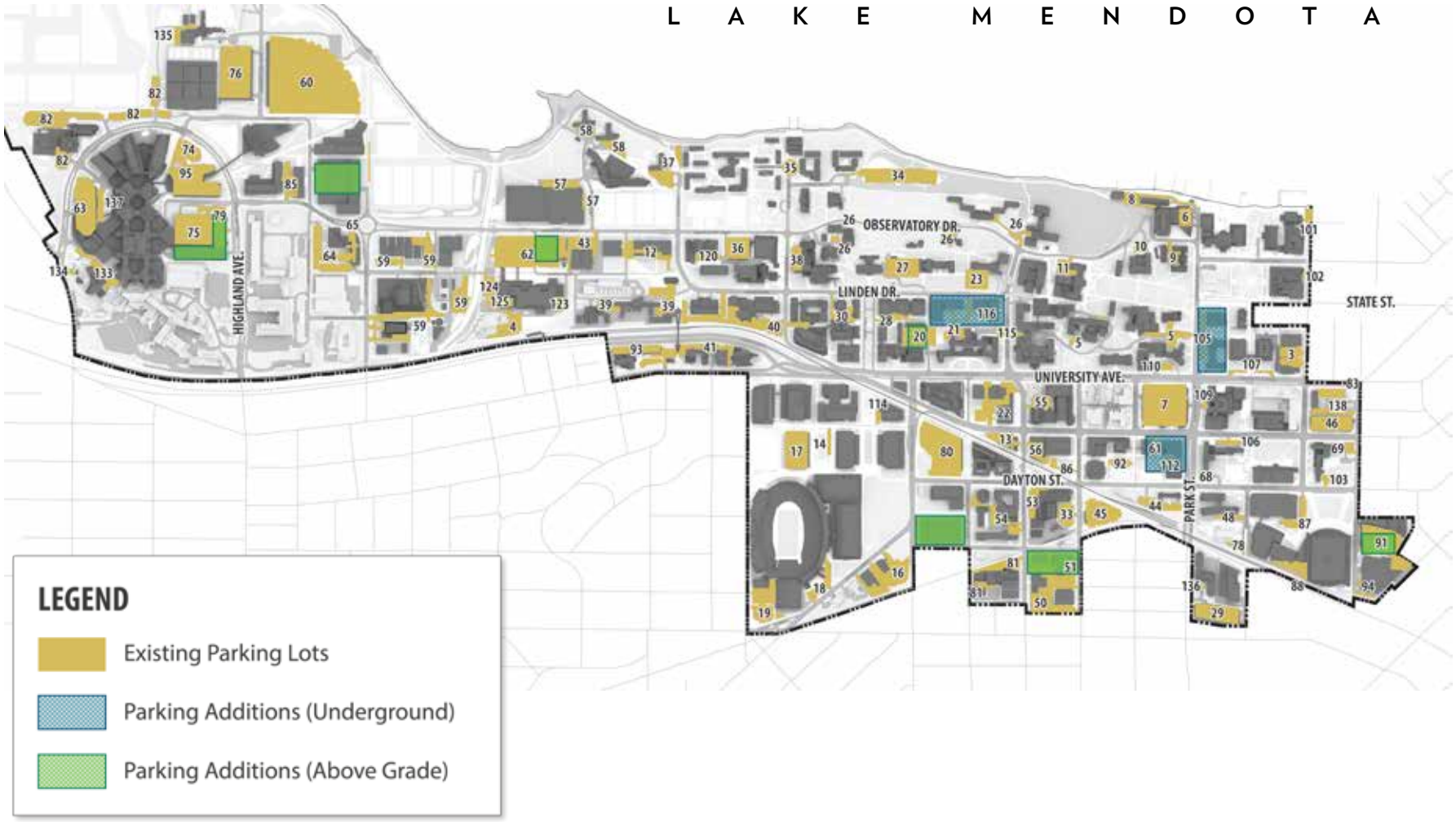

Figure 3-14 Recommended Parking Additions

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