

TRANSPORTATION DEMAND MANAGEMENT MASTER PLAN 2023

COLORADO STATE UNIVERSITY



SP-97

ACKNOWLEDGMENTS

CSU TDMP Technical Advisory Committee Members

Parking and Transportation Services

Aaron Fodge Devan Durand

Adam Anderson Erika Benti
Bradley Calahan Jamie Gaskill

Brian Grube Stephanie Zakis

Dave Bradford Tiffany Glover

Facilities Management

Gargi Duttgupta David Hansen

Special acknowledgments goes to the following individuals and organizations who also made significant contributions to the development of this document.

Aaron Iverson, City of Fort Collins

Administrative Professional Council

Alternative Transportation Fee Advisory Board (ATFAB)

Anita Dunkelman, Facilities Management

Associated Students of Colorado State University (ASCSU)

Christina Bagley, Parking and Transportation Services

Christie Mathews, Housing and Dining Services

Chris Williams, Parking and Transportation Services

Classified Personnel Council

Claude Jaillet, Facilities Management

Community Language Coop

Cortney Geary, City of Fort Collins

DeShane Williams, Biomedical Sciences

Ethan Martinez, Parking and Transportation Services

Faculty Council

Heather Reimer, Central Receiving

Housing and Dining Services Catering

Jeff Dodge, University Marketing and Communications

Jenny Lynskey, Parking and Transportation Services

Joan Paulsen, Facilities Management

Josephine Martinez-Rivera, Housing and Dining Services

Joy Childress, CSU Police Department

Josh Reyling, CSU Centroid

Julia Innes, Facilities Management

Laura Carter, Housing and Dining Services

Madie Burton, Parking and Transportation Services

Matt Costigan, Parking and Transportation Services

McKenna Cortney, Parking and Transportation Services

Mike Ellis, Lory Student Center

Rodney Gillespie, Facilities Management

Sandy Sheahan, Facilities Management

Sydney Crowe, Housing and Dining Services

Tamene Abebe, Lory Student Center

Crucial perspectives and feedback were provided by many other stakeholders within CSU and the Fort Collins community throughout the public engagement process. These participants and groups are listed in the Community Outreach section in Chapter 1: Introduction.

This Plan was paid for, in part, using funds from a Colorado Department of Transportation (CDOT) - Transportation Demand Management Innovation Grant. Thank you to CDOT, the taxpayers, and the State of Colorado for investing in this important initiative.

This Plan was prepared by the following contracted team from the transportation planning and engineering firm Kimley-Horn:

Jeremiah Simpson – *Project Manager*

Bennett Hall, AICP – Lead Analyst

Kristen Faltz, AICP - Analyst

Mike Griffith - Community Outreach Specialist

Eve Fillingham – *Graphic Designer*





CONTENTS

1 Ac	knowled	Igments
------	---------	----------------

8 Executive Summary

- 8 Purpose
- 8 Context
- 9 Goals
- 9 TDMP Goals Checklist
- 9 Key Recommendations

10 Chapter 1: Introduction

- 11 Context
- 12 Objectives
- 13 Glossary of Terms
- 13 Data Sources
- **14 Community Outreach**
- 16 Unified Campus Mobility Charter
- 17 Campus Transportation Performance Measures
 - 18 MODE SPLIT TARGETS
- 20 PARKING RATIOS
- 23 MODE HIERARCHIES

- 23 2040 TARGETS
- 23 GOALS ROADMAP

24 Chapter 2: Multi-Campus Overview

- 25 Study Area
- 25 Main Campus
- **26 West Campus**
- **26 South Campus**
- **26** Foothills Campus
- 27 Curb Space
- 27 Recent Growth Trends & Commute Mode Share
 - 27 STUDENT ENROLLMENT
- 28 FACULTY & STAFF EMPLOYMENT

30 Chapter 3: strategies by mode

31 Mode: Driving/SOV

- 34 PARKING UTILIZATION
- 36 PERMITS
- 36 DRIVING / PARKING CHALLENGES
- 39 DRIVING / PARKING STRATEGIES

2023 TDM MASTER PLAN // TABLE OF CONTENTS





43	M	od	e:	W	a l	ki	in	a

45 WALKING CHALLENGES

45 WALKING STRATEGIES

48 Mode: Bikes

50 CYCLING CHALLENGES

50 CYCLING STRATEGIES

55 Mode: Transit

56 REGIONAL TRANSIT

59 TRANSIT CHALLENGES

59 TRANSIT STRATEGIES

62 Mode: Micromobility

64 MICROMOBILITY CHALLENGES

64 MICROMOBILITY STRATEGIES

65 Mode: Carpool & Vanpool

66 CARPOOL & VANPOOL CHALLENGES

66 CARPOOL & VANPOOL STRATEGIES

68 Mode: Rideshare

69 RAMRIDE X LYFT & RAMRIDE SECURE

69 RIDESHARE CHALLENGES

69 RIDESHARE STRATEGIES

71 Mode: Carshare

73 CARSHARE CHALLENGES

73 CARSHARE STRATEGIES

74 Mode: Fleet

75 RENTAL MOTOR POOL

- 75 CHARTER BUSES
- 75 CRITICAL & DEPARTMENTAL FLEETS
- 75 FLEET CHALLENGES
- 75 FLEET STRATEGIES
- 78 Infrastructure & Connectivity Strategies Summary
- 79 Policies, Programs & Initiatives Strategy Summary

80 Chapter 4: Equity & Access Summary

- 81 PHYSICAL ACCESSIBILITY FOR PEOPLE WITH DISABILITIES
- 81 CURB ACCESS
- 81 FACILITIES MANAGEMENT SITES

83 Chapter 5: Technology Summary

34 TECHNOLOGY KEY STRATEGIES





85 Appendices

86 Appendix A: Peer University Profiles

90 Appendix B: Inventory of Existing TDM Strategies (As of Spring 2022)

94 Appendix C: CSU Cordon Study: Arrivals & Departures by Mode 2017 - 2022

100 Appendix D: Supporting Modal Date

109 Appendix E: Stakeholder Engagement

112 Appendix F: Draft CSU Corridor Concepts (Toole Design Group 2022 Submittal)

ATTACHED 2014 Fort Collins Bicycle Master Plan

FORTHCOMING Complete Streets Plan

FORTHCOMING Construction Detour Guide





FIGURES

- 8 Figure 1: What is TDM?12 Figure 2: TDMP Document Objectives
- 15 Figure 3: Stakeholder Engagement Summary
- 16 Figure 4: Unified Campus Mobility Charter Statement
- 18 Figure 5: Performance Measures Dashboard
- 19 Figure 6: 2023 Mode Split Survey Primary Modes
- 19 Figure 8: 2033 Mode Split Targets
- 19 Figure 7: 2025 Mode Split Targets
- 21 Figure 9: CSU Parking Supply, Demand, & Mode Shift
- 22 Figure 10: Mode Hierarchies
- 25 Figure 11: TDMP Study Areas
- 26 Figure 12: 2019 Foothills Campus Transportation Survey Results
- 27 Figure 13: Curb Space Considerations
- 27 Figure 14: Total Student Enrollment Fall 2018 to Fall 2022
- 28 Figure 15: Academic Year Faculty & Staff Headcounts²
- 29 Figure 16: Mode Split Survey Primary Modes 2018-2023 (From Neon Global)
- 32 Figure 17: Main + South + West Campus Buildings & Street Accesses
- Figure 18: Campus-Wide Standard Stall Utilization Rate 2017-2023
- Figure 19: Main + South + West Campus Peak Weekday
 Parking Lot Utilization Spring 2023
- 37 Figure 20: Reported Major + Fatal Main/South Campus Crashes 2018-2023
- 38 Figure 21: Main + South + West Campus Parking Lot Designations

- 39 Figure 22: Recommended Priority Main Campus Pullout Zones
- 40 Figure 23: 2023 Completed and Proposed Main + South Campus Parking Garages
- 41 Figure 24: Main & West Campus Loading Zones
- Figure 25: Example of Automated Parking Guidance System.
- 44 Figure 26: Main + South + West Campus Sidewalks & Multi-Use Trails
- Figure 27: Alternative Modes Travel Shed Analysis
- 49 Figure 28: Main + South + West Campus Biking Infrastructure
- Figure 29: Main + South + West Campus Crashes Reported 2018-2022
- 57 Figure 30: Transfort and Regional Transit Routes
- 58 Figure 31: Transfort Frequency Map
- 60 Figure 32: Recommended Mobility Hub Sites
- 69 Figure 33: Main Campus Rideshare Pickup/Dropoff Zones
- 70 Figure 34: Existing + Recommended Kiss and Ride/ TNC Locations
- 72 Figure 35: Existing Zipcar Campus Locations at Main/ West Campus
- 75 Figure 36: Light-Duty Vehicle EV Alternatives
- 77 Figure 37: Recommended Dispersed Rental Pool Locations
- 82 Figure 38: Potential New Main Campus Pullout Locations
- Figure 39: Priority Pullout Street Redesigns
- 94 Figure 40: CSU Cordon Study: Arrivals by Mode 2017

2023 TDM MASTER PLAN // TABLE OF CONTENTS





95	Figure 41: CSU Cordon Study: Arrivals by Mode 2018
96	Figure 42: CSU Cordon Study: Arrivals by Mode 2019

97 Figure 43: CSU Cordon Study: Arrivals by Mode 202098 Figure 44: CSU Cordon Study: Arrivals by Mode 2021

99 Figure 45: CSU Cordon Study: Arrivals by Mode 2022

100 Figure 46: Parking Permit Sales 2018-2022

102 Figure 47: Current (2023) Fort Collins Bike Facility Snow Removal Routes

102 Figure 48: Current (2023) CSU Bike Facility Snow Removal Routes

103 Figure 49: Transfort Service Map

104 Figure 50: Transfort Bus Network Service Hours Matrix

105 Figure 51: Around the Horn Route Alternatives Preliminary Analysis

106 Figure 52: City-Wide Spin Trips September 2021 to

January 2023

106 Figure 53: Spin Trips by Time of Day

106 Figure 54: Spin Vehicle Inventory

106 Figure 55: Device Ration for total Spin Trips Starting/ Ending on Campus

107 Figure 56: Fort Collins/CSU TNC Pickups

108 Figure 57: Fort Collins/CSU TNC Dropoffs

109 Figure 58: Multi-Campus Investment Activity Results

110 Figure 59: 2023 College of Business Mode Transportation Survey

111 Figure 60: On-Campus Pop-up Investment Activity Results

2023 TDM MASTER PLAN // TABLE OF CONTENTS





TABLES

- Table 1: Yearly Mode Split Targets, 2023–2033
- 21 Table 2: Parking/Driving Targets and Projections
- 28 Table 3: Larimer County Faculty & Staff Home Cities of Residence
- Table 4: Spring 2023 Main + South + West Campus Parking Spaces/Total Pop. Ratio
- Table 5: Parking Permit Sales 2018-2022
- 39 Table 6: Existing CSU Campus EV Chargers
- Table 7: CSU + Peer University Approaches To Bike Registration & Administration
- Table 8: Secure Bike Storage Utilization 2017-2022
- Table 9: Spin Device Inventory
- 72 Table 10: Zipcar Student/Employee/Alumni Rates
- 75 Table 11: Rental Fleet Fuel Types

- 75 Table 12: Rental Fleet EPA Weight Class
- 75 Table 13: Charter Bus Full Type and EPA Weight Class
- 78 Table 14: Infrastructure & Connectivity Strategies Summary
- 79 Table 15: Policies, Programs & Initiatives Strategy Summary
- 84 Table 16: Technology Recommendations Priority Features
- 100 Table 17: Parking Permit Sales 2018-2022
- 101 Table 18: CSU Parking Permit Prices
- Table 19: CSU Reported Bike Thefts 2018-2022



EXECUTIVE SUMMARY

Purpose

The CSU Master Plan Committee and Parking & Transportation Services department commissioned and guided the development of this 2023 Transportation Demand Management Plan, which serves as the transportation component of the next 10-year multi-campus master plan. University leadership acknowledges the close relationship between multi-modal transportation access and large-scale campus decisions for land use, academic building priorities, student enrollment, and other far-reaching university decisions.

Just as the 2014 Parking and Transportation Master Plan established short- and long-term strategies to support campus parking offerings and recommended a shift to more multi-modal transportation planning, this TDMP builds on this multimodal approach to meeting CSU's campus access needs. By putting people at the center of the transportation and commute equations, CSU aims to actively support equitable and sustainable access to the multi-campus system in Fort Collins for the diverse community of students, staff, faculty, and visitors.

What is "TDM"?

TDM, or Transportation Demand Management, is a set of strategies aimed at improving transportation network efficiency. TDM prioritizes the equitability and competitiveness of all transportation modes so that users have maximum travel options and face fewer barriers to daily mobility.

TDM strategies come in many forms and depend on local context. Approaches may include safety education programs, infrastructure improvements, incentives, or flexible work policies, to name a few.

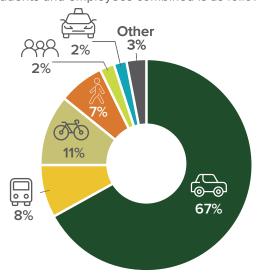
This Plan will delve into strategies that align with CSU's specific local and regional context.

Figure 1: What is TDM?

Context

The Fort Collins campuses that comprise the TDMP scope include the Main Campus, South Campus, West Campus, and Foothills Campus. There is a push to better integrate these campuses with one another and with the surrounding communities.

Main Campus has an increasing resident student population. Off-campus, high living costs and a lack of housing compared to demand have pushed many students and employees further from campus. The Spring 2023 commute mode split for students and employees combined is as follows:





Mode Split Survey Primary Modes

As CSU has retrofitted its campuses for better bike and pedestrian access over the years, gaps in safety remain. Many people want better and clearer separation between modes on campus streets, multi-use pathways, and pedestrian areas.

Transit use declined during the COVID-19 pandemic and has not recovered as the bus driver shortage continues to limit bus frequencies.

Driving remains the most common commute mode for both students and employees. There are 0.47 campus Main and South Campus parking spaces (13,518 in total) per enrolled student—with a total of 27,939 students enrolled in Fall 2022. While many choose this mode, parking permit customers who participated in the stakeholder outreach frequently lamented the high cost of permits.

Newer commute mode options like rideshare (Uber, Lyft), e-scooters, and telecommuting have emerged as viable options for some people. There is a need to better organize their use across the campuses.



Goals

LEGEND









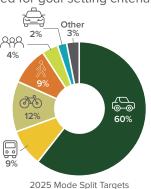


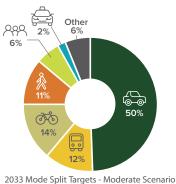




The TDMP sets ambitious but realistic goals for the next 10 years that are directly tied to existing campus conditions and feedback gathered from the robust stakeholder outreach process carried out by PTS and other CSU staff. These outreach efforts took place from December 2022 to July 2023 in phases, ranging from informational sessions to interactive tabling events around campus to focus groups to online surveys and open feedback forms.

Peer university profiles and existing institutional commitments were also referenced for goal-setting criteria.





Based on the feedback received from stakeholders and the analysis of mode capacity, this Plan recommends the following mode split targets along with key

TDMP Goals Checklist

goals and recommendations:



Balance the commute mode split by aiming for 50% overall driving/SOV **rate by 2033**







Increase equity by:

Increasing households within 0.25 miles from frequent transit (10-15 minute headways throughout the day)

Increase households within 0.25 miles from a low-stress bikeway

Reduce household average transportation spending for students and employees

Increase transportation customer satisfaction



Achieve Vision Zero by eliminating serious and fatal transportation

Key Recommendations



Infrastructure & Connectivity



Raise parking utilization from 65% to 80% campus-wide



Add on-street pullouts in prime locations for access



Install signage and infrastructure (a) to separate bike/ped in problem areas



Expand Foothills sidewalk and bike trail network to link areas together



Expand Around the Horn to serve



UCA and other key destinations



Implement West Elizabeth BRT with complementary support from CSU where connecting to Foothills Campus, West Campus, and Main Campus



Implement campus "mobility



Explore student Transfort driver pipeline program



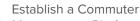
Policies, Programs, & Initiatives



Promote bike registration and lock education to deter theft



Increase bus frequency and expand third-party route planning options





Management Platform for parking permits, carpool matching, and other commuter resources



Launch a PTS-administered carpool/vanpool initiative for CSU employees



Update motor pool rental process to digital and disperse the rental fleet around campus for convenience



Implement centralized fleet management software

A complete matrix of TDM recommendations can be found in Table 14 and Table 15 at the end of Chapter 3 of this report.





his document, the Colorado State University Transportation Demand Management Plan 2023 ("TDMP"), provides a roadmap of feasible goals and strategies for implementing continuous transportation improvements across the network of Colorado State University ("CSU") campuses in Fort Collins, Colorado.

CSU and its leadership are currently finalizing the 2024 Master Plan, which outlines the campus's overall strategy for growth and infrastructure planning over the next 10 years. The 2024 Master Plan follows the 2014 version, which included an accompanying "Parking and Transportation Master Plan 2014," prepared by Kimley-Horn and Associates, Inc.

The 2023 TDMP will support the 2024 Master Plan and will build upon CSU's prior parking and transportation master plan, with a specific emphasis on transportation demand management (TDM) strategies. TDM refers to infrastructure, programs, incentives, and other steps that improve the quality and accessibility of transportation options and ultimately increase mobility.

Effective TDM acknowledges that there are a variety of mode choices available to students, faculty, staff, and visitors as they travel to, through, and between the CSU campuses. Parking for private automobiles will remain an important part of CSU's access strategy for the foreseeable future. However, this plan will also seek to leverage the campus's investment in bicycle, pedestrian, transit, and micro transit programs and infrastructure to maximize the efficiency of these systems and provide alternatives to single-occupancy vehicle commuting.

Implementing effective TDM will have positive impacts on CSU's long-term ability to grow and recruit students by creating a safe, cost effective, and reliable environment for all commute modes. Additionally, the right-sizing of parking ratioswill allow campus planners to prioritize land uses related to the University's

core function, such as classrooms, housing, recreation, and amenities.

Context

Over the past decade, the University has built significant parking infrastructure and a new football stadium and welcomed thousands more in student enrollment capacity. As the Fort Collins campuses continue to expand, according to the university's strategic plans, the transportation choices available to all user groups must keep pace with these changes to move everyone efficiently.

The MAX bus in the Transfort network and the Around the Horn campus circulator bus have been operational since 2014, giving students, faculty, and visitors new options to get to and around the expanding campus.

Micromobility options like e-bikes and e-scooters have become an economical option for short trips and first- and last-mile connections in many countries and are well suited to university campus environments such as CSU. Certain areas of campus and downtown Fort Collins have ubiquitous coverage from Spin, a leading micromobility provider. These options, with their motorized assistance and ease of use, appeal to a wider potential user group than manual bikes.

At the same time, e-bikes and e-scooters allow riders to benefit from the same expanding bike lane infrastructure that has been a university and city priority for many years.

More recently, compounding dynamics brought on by factors such as the COVID-19 pandemic, monetary inflation, and a tight labor market have strained Transfort's resources and led to cancelled and reduced service on less popular bus routes. The successful MAX route along Mason Street, launched in 2014 and lauded as a prime example of a strategically successful small city BRT project, was reduced from 10-15-minute headways to 20-minute headways in 2021.





Meanwhile the campus and surrounding community (like many other regions of the country) have struggled with the rapid increase in the cost of housing, which has outpaced the growth in incomes. This means that many faculty, staff, and employees, along with students not housed on campus, may have less options for housing that are within walking or biking distance.

While the acknowledging the recent trends and challenges, CSU has doubled down on its greenhouse gas emission reduction goals with the 2022 Climate Action Plan ("CAP"). The University's new goal is to reach carbon-neutral status by 2040 (compared to the previous target year of 2050 outlined in the 2010 CAP) based on various campus metrics—notably fleet and commuting emissions within the transportation sphere.

Transportation-related injuries continue to occur on CSU campuses each year. CSU is an active participant in the "Vision Zero" movement, which aims to increase transportation safety and awareness.

To meet these challenges and continue its mission to provide a high-quality, accessible education to a diverse student body, CSU seeks to optimize its transportation resources for the challenges that lay ahead.



Driving, walking/rolling, biking, transit, carpool/vanpool, and telecommuting all play a vital role in connecting students, faculty, staff, and visitors with varying travel preferences to campus on a daily basis.

Objectives

As previously stated, this document will build upon the prior parking and transportation master plan with a specific emphasis on applicable TDM elements. Specific objectives for the 2023 TDMP are outlined in Figure 2.

TDMP Document Objectives Evaluate the efficiency of existing CSU transportation systems and programs Establish transportation mode split targets, include parking supply ratios, to help inform land use priorities in the upcoming 2024 Master Plan Further the University's sustainability and Vision Zero safety goals Outline performance monitoring tools to track progress Plan for transportation infrastructure, technologies, and resources needed to allow people to travel safely and efficiently Incorporate feedback from robust stakeholder engagement Ensure that all campus communities are represented in Plan recommendations

Figure 2: TDMP Document Objectives



Glossary of Terms

ASCSU - Associated Students of Colorado State University, the elected body that represents CSU student interests on campus and in local, state, and federal government matters.

ATFAB – Alternative Transportation Fee Advisory Board

BRT - bus rapid transit; According to the Federal Transit Administration, "Bus Rapid Transit is a high-quality bus-based transit system that delivers fast and efficient service that may include dedicated lanes, busways, traffic signal priority, off-board fare collection, elevated platforms and enhanced stations."

Carbon neutral – the state of an organization, company, city, etc. having net-zero carbon emissions over time, often by balancing carbon emissions with carbon offsets such as sustainability programs or carbon storage techniques (planting trees, etc.).

CSU - Colorado State University, encompassing the Main, South, West, and Foothills campuses in Fort Collins for the purposes of this Plan.

FM - Facilities Management department of CSU.

GHG - greenhouse gases, which come from a multitude of sources and are known to trap heat in the atmosphere.

HDS - Housing & Dining Services department of CSU.

PTS - CSU's Parking & Transportation Services department.

PUDO - pick-up and drop-off; generally, refers to designated areas where ridehailing (Uber/Lyft) occurs.

SOV – single-occupancy vehicle; SOVs are so-called for having underutilized capacity (empty seats) that strains shared land and street resources.

TDM - Transportation Demand Management, which refers to programs and incentives that seek to maximize transportation options with the goal of increasing overall transportation network efficiency and removing barriers to personal mobility.

TNC - transportation network company; refers to Uber, Lyft, and other modern app-based, pre-arranged taxi services that may be shared or unshared with other groups of rider(s) and differ from traditional taxi services in that the rides cannot be hailed on the street or by phone call.

Vision Zero – a non-binding global road traffic safety commitment pursued by individual states, municipalities, universities, and other entities who seek to minimize serious traffic-related injuries and deaths through roadway design and policy changes.

Data Sources

Data (including tables and certain figures) shown in the current conditions and modespecific analyses of this Plan were provided by the CSU Parking & Transportation Services Department, with supplemental data from the CSU Police Department and the CSU Geospatial Centroid. Peer university profile data was gathered from the respective universities' publicly available parking and transportation services departments or transportation master plans and other planning and institutional sources. The most recently available data was used, and historic trends are derived from the 2017-2018 timeframe onward.





Community Outreach

The TDMP project team engaged in four phases of public outreach to assess and incorporate the quantitative and qualitative transportation concerns, preferences, and ideas on from the minds of students and employees who access the campuses on a regular basis. This feedback guided the project team's investigation of problem areas on the campuses and informed the direction of the strategies and recommendations contained in this Plan.

Stakeholder groups participating in informational and active feedback sessions included:

- CSU Master Plan Committee
- O Alternative Transportation Fee Advisory Board
- Off-Campus Life
- **CSU Athletics**
- Parking Services Committee
- CSU Bicycle Advisory Committee
- CSU Public Safety Team
- Transfort Leadership
- Classified Personnel Council
- CSU Police Department & CSUPD Command Staff
- Physical Development Committee
- Parking & Transportation Services
- Collaboration for Student Achievement
- Student Affairs VP Council
- Residence Hall Association
- Vision Zero Task Force
- Inclusive Physical & Virtual Campus Committee

- O Space Committee
- O Graduate Student Council
- O Associated Students of CSU Cabinet + Senate
- Administrative Professionals Council
- O CSU President's Sustainability Commission
- O Faculty Council
- O North Front Range MPO Technical **Advisory Council**
- O CSU Transportation Board
- O CSU Admissions
- O College of Veterinary Medicine & Biomedical Sciences Executive Leadership Team
- O Student Disability Center
- O Housing & Dining Services Leadership Team + Staff
- O CSU Professional Development Institute
- O CSU Central Receiving

Hundreds of university-affiliated students, staff, and faculty were also engaged through pop-up events and transportation surveys. Parking & Transportation Services staff led the outreach efforts with these groups, assisted by the consultant team.

Engagement activities consisted of:

Phase 1 – January 2023

- What is TDM?
- Why is CSU pursuing the TDMP?
- **Project Timeline**
- Sign up for email updates
- How to volunteer for a focus group or find a pop-up session

Phase 2 – Introductory sessions & workshops – January through April 2023

- What is TDM?
- Why is CSU pursuing the TDMP?
- What challenges that reflect the group you represent (student, staff, etc.) should the TDMP consider?
- Activity How and where would you spend \$5,000 in campus transportation improvements?
- O Host on-campus "pop-up" tabling events February through March
 - O Activity How and where would you spend \$5,000 in campus transportation improvements?
- O Focus Groups February through March
 - O Contribute to the Unified Campus Mobility Charter
 - Participate in "What is your journey?" exercise exploring how you travel to and around your campus(es)

Phase 3 - Public Comment - July 2023

- Invite stakeholders to submit comments on the draft TDMP content
- Advertise public comment period on social media, SOURCE, email list, and other outlets

Phase 4 - University Acceptance of Plan - July/August 2023

O Present final plan document to CSU leadership for adoption and integration into 2024 Campus Master Plan











Stakeholder Outreach-Key Takeaways

Broad Support For:

- O Street and pathway infrastructure that promotes safety
 - O Better separation of bike/scooter and pedestrian infrastructure
 - O Remedying conflict zones where bikes, motor vehicles, and pedestrians converge
- O Greater transit frequency and expanded hours to meet rider needs
- O More affordable (and flexible) parking permit options, especially for hourly workers and graduate students
- O Transportation options that feel intuitive and convenient

3,559 Total stakeholders engaged



34 TDMP presentations reaching **696** students, staff, and faculty



4 Activity workshops with **54** participants



7 Popup events connecting with **554** students, staff, and faculty



6 Focus groups with 36 participants



2,104 Transportation Survey respondents



91 Online transportation investment prioritization activity respondents



24 Draft Plan Public Comments

Figure 3: Stakeholder Engagement Summary



Unified Campus Mobility Charter

The Unified Campus Mobility Charter in Figure 4 is a synthesis of the values, vision, and goals expressed by the students, staff, and faculty who participated in 1 of 6 TDMP focus groups. The Charter also incorporates feedback from community members who provided public comment on the draft TDMP document.

The TDMP content, and its subsequent execution across the CSU campuses, aims to adhere to this Charter in accordance with the guidance of the CSU stakeholders who participated in its creation.

Participants expressed the common values of safety, convenience, equitability, and sustainability. They desire for these values to be imbedded into a multicampus environment that is more intuitive to access using a variety of modes than what the present CSU and Fort Collins transportation networks provide. There is widespread acknowledgment that CSU must lean on key partnerships among its departments, leaders, the City of Fort Collins, Transfort, and other Northern Front Range institutions to enact needed transportation improvements in the coming years.

These engaged CSU community members want the TDMP outcomes to result in clear and measurable goals like reducing traffic injuries, improving customer satisfaction amongst the traveling public of students and employees, increasing the viability of multimodal lifestyles, and making transportation more affordable. Many participants expressed concern about being squeezed by limited housing options, family commitments, and other personal and economic pressures to the extent that their transportation choices are limited. These limited transportation options often lead to higher out-of-pocket costs for students' and employees' daily transportation.

Strategies to implement these values and visionary elements in pursuit of the aforementioned goals will be explored throughout this Plan.

VALUES

The CSU community values transportation options that are safe, convenient, equitable, and sustainable. These values are aligned with the spirit of the CSU Principles of Community-- respect, integrity, service, social justice, and inclusion.

VISION

Students and employees envision a campus that is simple and straightforward to access and supports many travel modes to meet the unique needs of a diverse community, actualized by thoughtful and close collaboration between university departments, university leadership, and the City of Fort Collins.

GOALS

To that end, a successful Transportation Demand Management Plan will optimize transportation efficiency for travelers to and within the CSU campuses by aspiring to measurable goals such as reducing transportation-related injuries, improving student and employee transportation satisfaction, supporting the competitiveness of active and shared transportation options, and balancing transportation business needs with affordability for users who face persistent barriers to using alternative

Figure 4: Unified Campus Mobility Charter Statement



Campus Transportation Performance Measures

These metrics are based on the core goal of sustainability, a concept which is both the stated goal of the University and an integral part of the long-term success of any higher education institution.

In line with the University's latest Climate Action Plan 2022, this plan will provide a roadmap for pursuing service quality and sustainability improvements in four key transportation/TDM areas:









Commuting and fleet vehicle activities encompass the many ways students, employees, and visitors travel to, from, and around CSU's four Fort Collins campuses. Emissions reductions from these two sources will support an overarching goal of fostering a healthy, sustainable multi-campus community.

This Plan aligns with the following Objectives, some of which have been previously laid out by CSU and partner organizations:

- O 60% SOV mode share by 2025, aligned with the Colorado Employee Trip Reduction Program
- Balance the campus transportation mode share in pursuit of maximum mobility options
 - This Plan proposes a path to a 50% driving / SOV commute mode share goal for CSU by 2033, resulting from significant improvements to active transportation modes
- CSU-wide carbon neutral status by 2040
 - Comprised of two tracked transportation emissions metrics:
 - O Commuting
 - O Fleet Vehicles
- Provide more reliable, equitable, and healthy transportation options and better campus access for diverse CSU students, employees, and visitors
- Aggressively pursue Vision Zero—to achieve and maintain minimal transportation-related serious injuries and fatalities

In addition, CSU seeks to improve curb management policies and build a plan for better use of curb space for activities such as deliveries, pick-up and drop-off, etc. that minimize street conflicts and maintain safety.

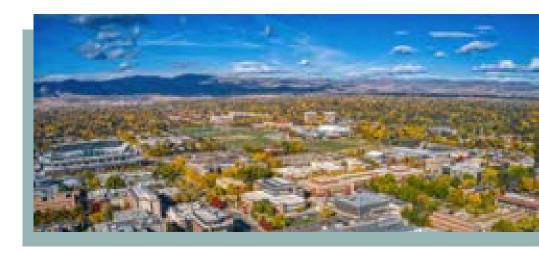
The Plan will include specific Vision Zero/transportation safety considerations related to the three primary modes of concern according to CSU Police Department and Fort Collins Police Department crash report statistics: driving, cycling, and walking.

Along with the importance of GHG emissions reductions to CSU's continued community stewardship and academic vitality, the University also stresses equity and environmental justice principles in its definition of comprehensive sustainability. The strategies and performance measures detailed in this TDMP reflect that dual emphasis. There is a growing recognition that GHG emission reductions cannot be broadly achievable or equitable if sustainable transportation modes are not accessible to CSU students, employees, and visitors with diverse backgrounds, incomes, mobility needs, and other factors.

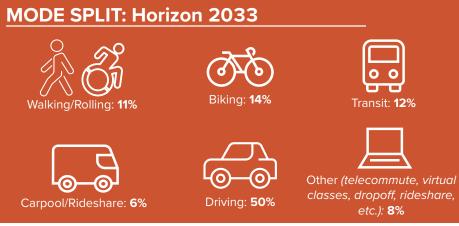
Performance Considerations

MODE SPLIT

The mode split performance indicators focus on rebalancing the campus and local transportation system around healthy and flexible travel options for students and employees. CSU's annual Mode Split Survey has been a cornerstone of its metrics tracking efforts and the overall transportation network preferences of the CSU community since its launch in 2014. This survey has been and will remain a key tool for accurately measuring CSU student and employee commute constraints and preferences and the University's progress in facilitating a more efficient transportation system.











EQUITY: Horizon Ongoing 1/4 mile from frequent transit: 1/4 mile from low-stress bikeway: Increase # of households Increase # of households Transportation customer Commute transportation satisfaction: Increase satisfaction spending: Reduce spending

Figure 5: Performance Measures Dashboard

CARBON EMISSIONS

Through coordinated efforts to increase the competitiveness of walking, biking, transit, and other non-SOV modes, CSU can lower the carbon intensity of student and employee commutes. This plan will focus heavily on strategies for encouraging the transition to more sustainable commuting behaviors. University fleet vehicle efficiencies will also be covered. Commuting and fleet vehicle emissions metrics are estimated and tracked annually by the University as it steers a course to carbon neutrality by 2040.

EQUITY

The equity performance indicators in Figure 5 to the left are centered on affordability and geographic access. "Increase # of households" should be understood primarily as a process of increasing frequency on more Transfort routes so that more households have access to frequent (convenient) transit, but consideration for proximity to transit at new housing developments should also be a priority.

"Commute transportation spending" and "transportation customer satisfaction" are factors that can be routinely tracked through a targeted survey administered by PTS or as an addition to the Mode Split Survey.

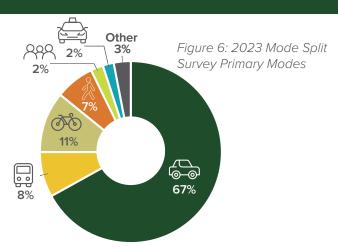
It is important to acknowledge that while it is difficult to move the needle of individual transportation spending, average expenses are an important transportation equity barometer. Accompanying demographic information will assist in interpreting the causal factors and potential future strategies for addressing commute transportation spending. Generally, transportation spending as a percentage of total income is the primary metric for understanding affordability for individual households.

SAFETY

CSU tracks reported transportation-related incidents on and near its campuses as part of its participation in the international Vision Zero movement to minimize serious and fatal transportation system crashes. This Plan will use historic crash data and transportation planning best practices to support CSU's Vision Zero efforts. The University can monitor crash location and severity data in subsequent years to determine the need for future infrastructure improvements.

Mode Split Targets

The most recent commute mode split for students and employees at CSU campuses, based on the PTS annual Mode Split Survey, is shown in Figure 6 on the next page. These rates provide the most comprehensive representation of student and employee transportation behaviors available and should be considered highly reflective of the state of the CSU and Fort Collins transportation network. These reported commute habits have held relatively steady since PTS began distributing this springtime survey in 2014.



Mode Split Survey Primary Modes

This Plan establishes a road map for facilitating a more balanced transportation mode split through the year 2033. There are myriad human health, equity, environmental sustainability, and campus growth benefits associated with a renewed focus on mobility and transportation options instead of the current trend of modal dependency. When students, employees, and visitors have less reliance on a singular mode (such as driving a personal vehicle), the entire campus and wider community benefit.

Figure 7 shows a target mode split for 2025 that is based on prior voluntary commitments CSU has made, as a constituent organization within the North Front Range Metropolitan Planning Organization (NFRMPO) area, to reduce single-occupancy vehicle commuting to at least 60%. Given the relatively stagnant mode split trends of the past few years, this is an ambitious target to reach in a short time span. This Plan will emphasize some of the most pressing non-driving transportation barriers expressed in the stakeholder engagement process as short-term goals to reach this target.

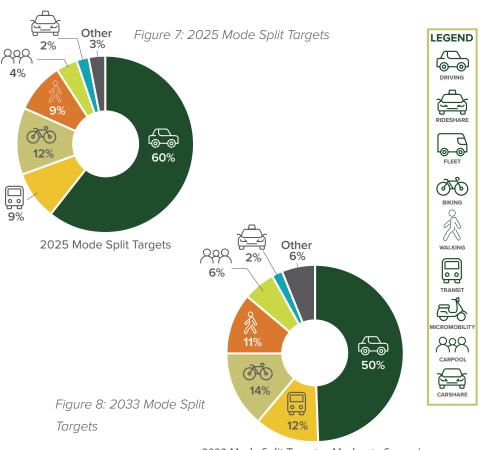
The 2033 target mode split goal, shown in Figure 8, is reflective of a sustained, highly strategic reimagining of transportation in and around the CSU campuses. Factors that were considered in the 2033 Mode Split Targets include:

- O Proposed transit improvements such as the West Elizabeth Bus Rapid Transit route
- O Propensity for higher Transfort bus ridership as a result of improved frequency of bus service on routes throughout the city
- O New off-campus housing (and affordable housing, in particular)
- O More on-campus housing for under- and upper-classmen
- O The menu of infrastructure and programmatic transportation improvements recommended in Chapter 3 of this plan

O Peer universities' current reported transportation mode splits and mode split goals

To achieve this target, CSU will need to consider street safety, wayfinding, transit quality, technology, incentives, and other core elements of campus infrastructure and programs along with related determinants of transportation access such as housing availability and affordability. Partnerships and dialogue with the City of Fort Collins and other public- and private-sector stakeholders will be vital for CSU's pivot to expanded campus transportation options.

This Plan is a guide for elevating the quality and competitiveness of transportation alternatives to SOV driving, which CSU cannot accommodate at the 2023 baseline rate (67%) while growing its student enrollment (and associated faculty and staff employment) while simultaneously achieving its sustainability goals.



2033 Mode Split Targets - Moderate Scenario

Staff

Parking Ratios

Table 1: Yearly Mode Split Targets, 2023-2033

Mode	2023 ²	2024	Annual SOV Rate of Growth 2022-2025 -3.5%	2026	2027	2028	2029	2030	2031	2032	2033	Annual Rate of Growth 2025-2033 ⁴
SOV	67%	64%	60%	59%	58%	56%	55%	54%	53%	51%	50%	-1.25%
Transit	8%	8%	9%	9%	10%	10%	10%	11%	11%	11%	12%	0.31%
Bike	11%	11%	12%	12%	13%	13%	13%	13%	14%	14%	14%	0.27%
Walk	7%	8%	9%	9%	9%	10%	10%	10%	10%	10%	11%	0.21%
Carpool/Vanpool	2%	3%	4%	4%	5%	5%	5%	5%	6%	6%	6%	0.27%
Rideshare/Dropoff	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	0.02%
Other ¹	3%	4%	4%	4%	5%	5%	5%	5%	5%	5%	6%	0.17%
TOTAL	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	
New User Shifts to Alternative Modes ⁵											Total Shifted 2024 - 2033	
Students	-	984	990	356	358	360	362	364	366	369	371	4,878
Faculty + Staff	-	74	75	27	27	27	27	28	28	28	28	369

[&]quot;Other" category includes telework, virtual classes, university fleet vehicle, longboard, scooter, etc.

Table 1 above shows the yearly mode split targets proposed through 2033 that represent a rebalancing of the commute mode split amongst CSU students and employees. The 2023 Baseline mode split is informed by the results of the 2023 CSU Mode Split Survey issued in February 2023. The 2025 target is aligned with the Colorado Employee Trip Reduction Program to which CSU has voluntarily committed. Participating organizations and municipalities have pledged to implement multimodal transportation improvements so that no more than 60% (3 out of 5) of commute trips are made by SOV by 2025.

The 2024 mode split is adjusted proportional to the difference between 2023 baseline and 2025 target mode share for SOVs, with the increase in other mode shares coming primarily from:

 Spot treatments to bike and pedestrian infrastructure like the CSU Complete Streets corridor redesigns

- Increasing carpool/vanpool usage from the recommencing of a CSU-organized employee carpool matching program
- 3. Ongoing steady adoption of telework agreements for administrative staff

These 3 improvements are "low-hanging fruit" with relatively low upstart costs that can be implemented in the near term.

Key alternative modes like transit, biking, walking, carpooling/vanpooling, and telework are benchmarked to increase moderately (>0.15%) on an annual basis between 2025 and 2033. Large-scale systemic changes like bike facility improvements, increased bus frequency, more affordable housing proximate to campus, and sustained carpool program participation, which are some of the primary transportation recommendations detailed later in this Plan, will be necessary to achieve this target mode split.

² Based on 2023 Mode Split Survey results.

³ Target 60% single-occupancy vehicle commute rate by 2025 per voluntary Colorado Employee Trip Reduction Program.

⁴Based on 50% SOV goal for 2033, which would require a minimum average 1.25% annual reduction in SOV commuting from 2025-2033. Non-SOV modeshare increases would need to be an annual average of 0.02%-0.31% to compensate

⁵ Represents the number of student and faculty/staff that must shift from SOV to alternative commute modes annually to achieve targets. Based on 2023 average mode shares as reported in the PTS Mode Split Survey, 0.6% annual student enrollment growth, and a steady employee-to-student ratio of 0.28 through 2033 to match the 2023 employee-to-student ratio.

G Contraction of the contraction

Table 2: Parking/Driving Targets and Projections

						10010	2. r arran	9/2/1/1/19	rargets a	ind i rojeci	.10110
	Baseline	seline Projection/Goal									
Metric	2023	2024	2025	2026	2027	2028	2029	2030	2031	2032	2033
Student Enrollment ¹	27,939	28,107	28,275	28,445	28,616	28,787	28,960	29,134	29,309	29,484	29,661
Driving Rate ²	67%	64%	60%	59%	58%	56%	55%	54%	53%	51%	50%
Parking Demand Ratio ³	0.30	0.29	0.28	0.28	0.28	0.27	0.27	0.27	0.26	0.26	0.26
Parking Demand ⁴	8,468	8,221	7,981	7,928	7,876	7,824	7,773	7,722	7,671	7,620	7,570
Parking Supply (stalls) ⁵	13,518	13,518	13,518	13,518	13,518	13,518	13,518	13,518	13,518	13,518	13,518
Parking Supply Ratio ⁶	0.48	0.48	0.48	0.48	0.47	0.47	0.47	0.46	0.46	0.46	0.46
Parking Utilization % (with Baseline Supply) ⁷	65%	63%	61%	59%	59%	58%	58%	57%	57%	57%	56%
Parking Stall Surplus ⁸	5,050	5,297	5,537	5,590	5,642	5,694	5,745	5,796	5,847	5,898	5,948
Target Parking Utilization %9	-	80%	80%	80%	80%	80%	80%	80%	80%	80%	80%
Recommended Parking Supply ¹⁰	-	10,276	9,976	9,910	9,845	9,780	9,716	9,652	9,589	9,525	9,463
Parking Stall Surplus per Targets/Recommendations ¹¹	-	2,055	1,995	1,982	1,969	1,956	1,943	1,930	1,918	1,905	1,893

¹ Projections based on assumption of 0.6% YoY enrollment growth.

⁷ 2023 baseline rate based on the completed Spring 2023 PTS parking utilization survey. Subsequent years are a calculation of calculated parking demand and base supply of 13,518 stalls.

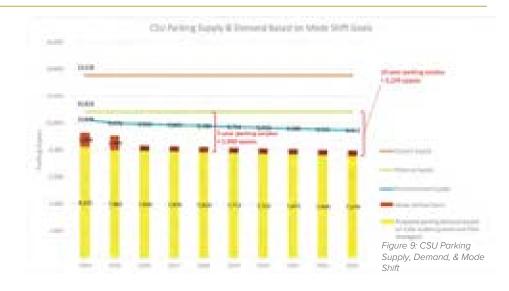
⁸ Baseline is based on existing parking supply of 13,518 total parking stalls minus observed parking demand. Projections are based on the base 13,518 stalls minus the projected parking demand.

⁹ 80% utilization target reflects more efficiently-used parking and land resources while retaining a buffer to accommodate special events, mitigate vehicles circulating excessively to find spaces, etc.

The above chart outlines target metrics and projections to analyze underutilized parking areas on campus and increase the parking utilization rate so that PTS parking resources, which are a significant portion of CSU's land resources, can be used more efficiently. Note that the 13,518 spaces used for the base "Parking Supply" in this chart includes approximately 460 non-revenue generating spaces at the Veterinary Teaching Hospital, Medical Center, and elsewhere for document consistency, although these are not included in the parking utilization surveys.

The driving rate baseline is the "driving/SOV" primary commute mode split result from the 2022 CSU Mode Split Survey. The subsequent years progress at a -3.5% YoY rate toward the ambitious 60% driving mode share target CSU is pursuing for 2025 and then -1.25% YoY rate toward the 50% driving mode share target this Plan proposes for 2033.

The parking demand ratio is a function of student enrollment and the base parking demand ratio of 0.30 observed during the Spring 2023 parking demand survey. The driving rate targets leading to the 50% driving commute mode share goal for 2033 have been applied to this ratio.



² 2023 baseline is derived from CSU Mode Split Survey results. Goals are based on target 50% driving mode share in 2033 that reflects a more balanced multi-modal environment for commuters.

³ Parking demand (stalls) per total student enrollment. The baseline and goal driving rates are factored into these ratios.

⁴ Baseline demand is derived from 2023 parking survey. Projections are based on projected student enrollment and target driving rates.

⁵ Includes all student, employee, remote, and daily/hourly spaces at the Main, South, and West campuses.

⁶ Total spaces per total student enrollment.

¹⁰ Includes a 20% supply buffer in excess of projected demand.

¹¹ Surplus stalls based on the existing 13,518 stalls minus the recommended parking supply.

"Parking utilization % with baseline supply" represents the parking utilization that is projected for the campus in a scenario in which the current total of 13,518 stalls remains usable through 2033 and the driving rate falls at the target rate as a result of TDM and other improvements to other transportation modes. In this scenario, the parking utilization rate falls to 56% if the parking supply remains at 13,518, suggesting CSU's existing parking resources will be even less land use-efficient in the coming years if the SOV commute rate declines.

Line 8 displays the projected parking surplus compared to peak demand in the baseline year (2023) through 2033. For example, there was a parking surplus of 5,050 spaces in Spring 2023, or peak demand for 8,468 stalls compared to a supply of 13,518 stalls. In 2033, there will be a projected surplus of 5,948 stalls, or demand for 7,570 stalls compared to a supply of 13,518 stalls (assuming that the campus parking supply does not change). Pending campus developments such as the expansion of the VTH facilities at the South Campus should consider any loss of parking spaces in comparison to the calculations shown in Table 2.

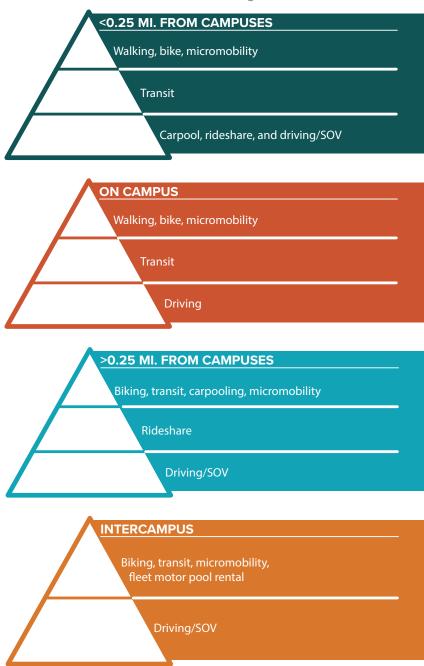
This Plan proposes a target parking utilization rate of 80% to make better use of CSU's expansive parking resources. The current parking utilization rates (65% observed in Spring 2023, 67% observed in Fall 2022, etc.) suggests a significant portion of spaces are underutilized during peak weekday academic year conditions and that a significant supply buffer exists to accommodate all parking needs with less excess parking supply without negatively impacting users' parking experience. There is an opportunity to repurpose the parking surplus resulting from these targets and recommendations for other uses that suit the University's vision and priorities in the forthcoming 2024 Campus Master Plan. These strategies and capital improvements can further support the mode split targets detailed in this plan by providing vital campus land resources such as multi-modal hubs, student housing, and other complete campus elements.

This analysis found that, based on the projected enrollment, projected parking demand with factored driving rate targets, and a recurring yearly target parking utilization rate of 80%, 10,276 parking spaces is the recommended parking supply to accommodate 2024 projected total parking demand with a 20% supply buffer to ensure excess vehicle circulation and driver frustration is minimized. By 2033, in a scenario where CSU achieves the ambitious mode split rebalancing goals set forth in this Plan, 9,463 parking spaces would be recommended to meet parking demand with a 20% supply buffer.

The "parking stall surplus per Targets/Recommendations" are spaces that may be allocated to other university land uses without impacting the quality of the campus parking environment for students, employees, and visitors.

Strategies to ensure parking spaces remain conveniently available for the various user groups will be discussed in *Chapter 3: Strategies by Mode*.

Figure 10: Mode Hierarchies





Mode Hierarchies

The modal hierarchies in Figure 9 support the mode split goals discussed above. Emphasis is placed on active modes for students and employees living within 0.25 miles of the campuses or traveling within a single campus. When walking is not feasible, such as moving between campuses or coming onto a campus from more than 0.25 miles away (depending on the individual and their physical mobility and time constraints and the weather), shared modes like transit, carpooling, and biking are prioritized over driving and SOV driving in particular. These are the high-level transportation customer capture parameters CSU, Transfort, and other partners should use for street improvements, service planning, capital improvements, and TDM strategies.

2040 Targets

CSU committed in its 2022 Climate Action Plan to achieve a university-wide goal of carbon neutrality by 2040. The TDMP outlook is through 2033, but the strategies laid out herein seek to put CSU's transportation infrastructure and programs on a realistic path to eventual commuting and fleet vehicle carbon neutrality within the 2040 horizon.

Goals Roadmap

This plan proposes to meet the University's mode split targets and overall mobility goals by identifying strategies to improve the following physical and programmatic elements of the transportation system across the CSU campuses. The following "Infrastructure & Connectivity" and "Policies, Programs, & Initiatives" will appear throughout this TDMP to call out corresponding strategies:

Infrastructure & Connectivity

Transportation infrastructure on campus is comprised of physical attributes such as streets, sidewalks, intersections, parking lots, curb space, paved pathways, and elements of these core assets such as bike lanes, other pavement paint, bike racks, bus stops, parking spaces, micromobility devices, and the like.

Infrastructure & Connectivity features can be summed up as the tangible, tactile components of the transportation network that facilitate travel from one place to another and form the foundation for Programs, Policies, and Initiatives to function.



Policies, Programs, & Initiatives

Policies, programs, and initiatives, including educational campaigns and communication efforts, allow CSU to promote CSU's many transportation options to a wide population of students and employees effectively. Some of these programs may have physical infrastructure elements, such as the Spin e-bike and e-scooter service that is a partner agreement between Spin, CSU, and the City of Fort Collins, a mobile app, and a physical fleet of devices.

These Policies, Programs, & Initiatives aim to educate, increase travel mode competitiveness, and provide incentives for the range of transportation options available to students, employees, and visitors using the campuses' existing Infrastructure & Connectivity features as a base. These elements are less tangible and may rely on technology or pop-up campaigns to spread awareness and engage users.







The central transportation vision for CSU's four primary Fort Collins campuses is to unify the campuses through high-quality multimodal travel options to suit a wide range of academic and business needs. There is a desire to link the campuses through key transportation services to minimize physical barriers and maintain a strong, shared academic culture and campus life.

Speed limits of 20 mph on all campus streets and 10 mph in parking lots are enforced.

Study Area

In order to provide a master plan framework for this unified transportation vision, this TDMP will focus on the four primary Fort Collins campuses—Main, South, West, and Foothills—shown in Figure 11 below.

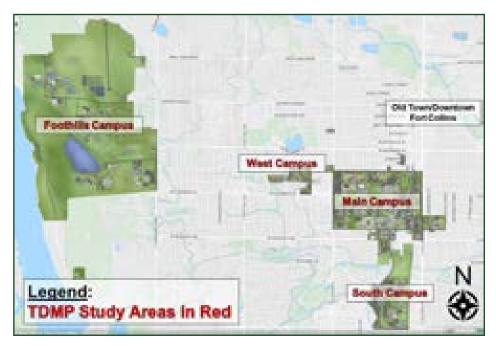


Figure 11: TDMP Study Areas

Main Campus

The CSU Main Campus has been designed over the years to emphasize permeability for pedestrians and cyclists. On the other hand, the University has taken steps to limit vehicular traffic within and through the Main Campus core so that the environment is safer and more inviting for students, employees, and visitors on foot and on smaller wheeled devices like bikes, skateboards, longboards, scooters, and wheelchairs.

The Center Avenue Mall, Academic Training Center, and Academic Village Commons dismount zones are active Monday-Friday from 7:30am-5:00pm to restrict bikes, scooters, longboards, and other non-ADA-designated wheeled mobility devices. Users of these conveyances must dismount and walk during these hours to mitigate conflicts between pedestrians and mobility devices.

Academic buildings are heavily weighted toward the east side of the Main Campus where the Center Avenue Mall dismount zone is located. The University's two parking garages, the South College and Lake Street garages, are located on this side of campus on Pitkin Street and Lake Street, respectively. Street access on this side of the campus primarily serves parking garage users, delivery vehicles, Facilities Management vehicles, cyclists, and pedestrians using the MAX bus route's Laurel, University, and Prospect stations. The University Center for the Arts is located on the far east side of the Main Campus across College Avenue at the former Fort Collins High School. A pedestrian and bike underpass has been constructed under South College Avenue to link UCA to the rest of the Main Campus, although users of UCA facilities report frustration about low connectivity to the rest of the campus.





The west side of the Main Campus is more oriented toward student housing and recreational and collegiate-level sports facilities including Moby Arena and Canvas Stadium. Plum Street, Pitkin Street, Hughes Way, and Lake Street serve as primary accesses from the west. The new Elizabeth Street Underpass was built to serve pedestrian and bike access to and from the Main Campus that avoids the busy and potentially hazardous crossings on South Shields Street.

Interior travel between the east and west sides of the Main Campus is largely restricted to active modes (biking, walking, scooting, rolling) only, although the Around the Horn campus circulator bus routes through the engineering parking lot past the CSU Transit Center in order to access the North Oval and continue southward to the South Campus.

Aside from a large vehicle parking supply, extensive sidewalks and pedestrianized areas, on-street and off-street bike routes, and the Around the Horn circulator and other local bus routes, the Main Campus' key transportation assets include a fleet of 450 Spin brand e-bikes and e-scooters rentable per minute via mobile app.

In the midst of the extensively managed campus parking system, there is a trend of students parking in free two-hour spaces in the neighborhood north of West Laurel Street, presumably to avoid parking fees.

West Campus

The West Campus is an upper-classman student residential area, owned by CSU and operated by Housing & Dining Services, that is made up of the University Village and International House apartment complexes. There is also an HDS storage and distribution building on West Plum. West Campus is roughly 0.3 miles west of the Main Campus and connected by sidewalks and bike lanes along West Plum Street and West Elizabeth Street.

The highest rate of cycling and pedestrian trips to and from the Main Campus come from the west due to the high student population in this area.

South Campus

The South Campus is dominated by a mix of student and federal government anchors such as Aggie Village Family, the CSU Veterinary Teaching Hospital, The Johnson Family Equine Hospital, and various U.S. Department of Agriculture National Resource Research Center offices. The University Tennis Complex has two large parking lots that can serve as remote Main Campus overflow parking.

Although it is contiguous with the Main Campus, which is just to the north of West Prospect Road, the spatial layout is more like that of a commuter campus environment, which is largely due to the significant land area needs of the animal-related facilities. The federal offices have a suburban business park-style layout.

South Campus is connected to the Main Campus by Center Avenue vehicular and bus transit (Around the Horn) access, the Mason Trail bike/pedestrian trail, and Spring Creek and Drake stations for MAX and FLEX service. Additional bus transit and vehicle access comes from West Drake Road to the south. Bay Road provides limited car access along the east side.

Foothills Campus

The Foothills Campus is two miles west of the Main Campus along West Elizabeth Street. It houses CSU hydrology, animal, and biotechnology labs as well as USDA and Centers for Disease Control and Prevention facilities over a sprawling area that utilizes the land resources for active biological, soil systems, and animal research.

Primary street accesses to the campus include West Elizabeth Street, West Mulberry Street, and Laporte Avenue. Dedicated cycling lanes are limited in this area of the city. The Foothills bus offers connections to the 2 and 32 buses that go to the Main Campus.

The permitted parking system was implemented at the Foothills Campus in August 2020. This permitting system provides uniformity across the CSU campuses and allows Parking & Transportation Services to responsibly fund transportation facilities maintenance specifically needed at the Foothills Campus. In general, permitholders can park anywhere necessary for research and teaching purposes and parking within striped vehicle spaces is not enforced.

The Foothills Campus' remoteness contributes to high vehicle use, and the paid parking environment is not fully accepted by users. On-street parked vehicles on Laporte Avenue can be observed during the daytime when drivers come to the Atmospheric Chemistry Building and seek to avoid paying permit fees. Meanwhile, the nearby parking lot often has high vacancy.

Despite its specialized activities and relatively secluded location abutting Horsetooth Reservoir, almost half of Foothills Campus survey respondents reported in the 2019 Parking & Transportation Services survey that they travel between the Foothills and Main campuses at least weekly.

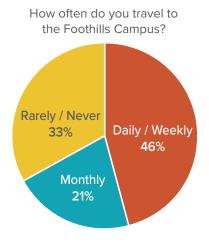


Figure 12: 2019 Foothills Campus Transportation Survey Results



The Foothills bus route aims to meet this demand for intercampus travel by running every 15 minutes on weekdays and Saturdays and connecting to the 32 and 2 bus routes that can take riders to the CSU Transit Center. These routes present an alternative to driving and parking between the two campuses, although the need to transfer in an area with a lack of transit facilities like bus shelters means the current transit connection between the Foothills and Main campuses has room for improvement and struggles to compete with more costly options such as driving.

The consultant team identified a need for more GIS data for the Foothills Campus, which is lacking compared to the other campuses. Some maps in this document omit the Foothills campus in cases where no data was available.

Curb Space

Campus environments contain extensive street curb infrastructure that faces demand from a complex array of users. Curb space demand tends to concentrate in highly specific areas and at certain hours of the day, particularly on weekdays.

CSU seeks to better manage its complex curb assets by embracing dynamic uses that balance student, employee, departmental, and visitor needs. See Figure 13below.

Users

students, academic and administrative employees, Facilities Management staff, delivery drivers, Janitorial Services staff, rideshare drivers, Transfort drivers, emergency/first responders

Modes

driving/carpooling, transit, biking, micromobility, rideshare, walking

Designations

vehicle right of way, bike right of way, bus stop, on-street parking, loading zone (20-minutes), rideshare (dynamic), rideshare (all times), fire lane, curb cut, undesignated restricted

Figure 13: Curb Space Considerations

This Plan will address curb space as it relates to specific transportation services around the campuses in the individual Mode sections.

Recent Growth Trends & Commute Mode Share

Student Enrollment

CSU's Fort Collins campuses had enrollment totaling 27,939 on-campus students (undergraduate and graduate) in Fall 2022. This total was less than the 28,852 undergraduate Fall 2021 enrollment. However, the University welcomed 5,517 new freshmen in Fall 2022 due to the delay in incoming freshmen electing to start their first terms, which is a 7% increase compared to Fall 2021 and is the largest freshman class ever. CSU and peer universities around the country have seen enrollment fall out of line with projections in the wake of the COVID-19 pandemic and other compounding factors. The 35,000-student enrollment projection for 2024 that was provided in the CSU 2014 Master Plan did not account for these and other unforeseen challenges to CSU's traditional growth mechanisms.



¹ Compared to 28,446 total enrolled students in Fall 2017.

Figure 14: Total Student Enrollment - Fall 2018 to Fall 2022

However, these shifting dynamics present an opportunity to reorient planning efforts around priorities such as multi-modal transportation options, greenhouse gas emissions reductions, accessibility, and equitable infrastructure to prepare to sustainably accommodate more students in the future.



Faculty & Staff Employment

CSU employed almost 9,500 faculty and staff in Fall 2022, including over 2,100 graduate assistants. Table 3 shows the spread of faculty and staff home cities of residence for Larimer County residents.

About 82% of faculty and staff live within Fort Collins, with the remainder living within Larimer County, in the nearby cities of Laporte, Loveland, Timnath, Wellington, and Windsor.



¹ Compared to 9,329 total faculty and staff headcount in Fall 2017.

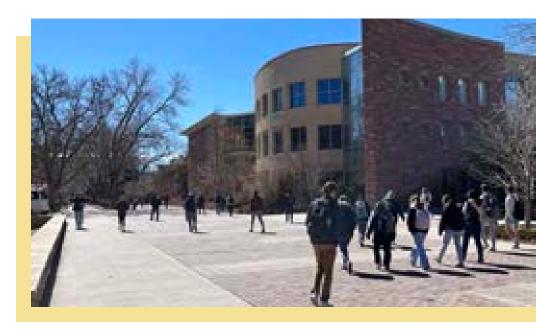
Figure 15: Academic Year Faculty & Staff Headcounts²

Fort Collins	Loveland	Wellington	Windsor	Timnath	Greenley	Laporte	Other Cities¹	Total²
4,891	471	235	220	117	65	54	444	6,497
75%	7%	4%	3%	2%	1%	1%	7%	100%

¹ Other cities have less than 50 CSU employee residents.

Table 3: Larimer County Faculty & Staff Home Cities of Residence

Ongoing cost-of-living increases, especially in terms of housing costs in Fort Collins proper, were common concerns amongst employees participating in the TDMP stakeholder focus groups. Many participants said it is becoming increasingly difficult to afford living close to CSU campuses, which limits their transportation options. Campus land resources are committed to student housing. Along with a multitude of other university priorities.

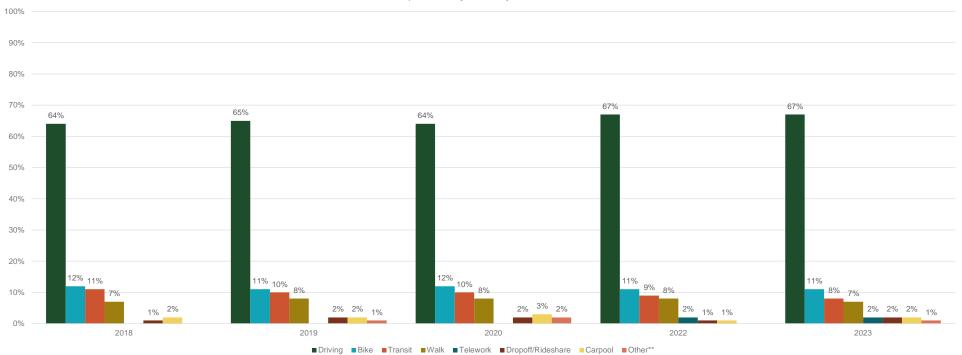


² Does not include worker groups such as: student employees, hourly employees, etc.

² Does not include worker groups such as: graduate students, student employees, hourly workers, etc.







^{*} The Mode Split Survey, which is performed in February each year, was not distributed in 2021 due to COVID-19 campus disruptions.

Figure 16: Mode Split Survey Primary Modes — 2018-2023 (From Neon Global)

The primary respondent pool in 2014-2017 was students. Since students are more likely to live close to campus and use non-SOV modes due to convenience, cost, and other factors, this high proportion of student responses in 2014-2017 confounded the mode split data for those years. For this reason, 2014-2017 results have been omitted from Figure 16.

In general, driving alone for commuting purposes amongst all groups has increased slightly, while telecommuting has emerged as a primary commute mode for at least 1% of University staff for the first time. 2% of 2022 Mode Split Survey respondents (presumably all administrative staff) said they telecommute the majority of the time. Active modes such as walking and biking, as well as transit, have stalled or dropped slightly in popularity for primary commuting.

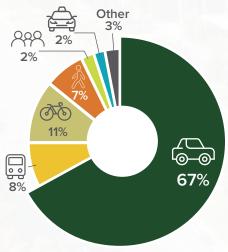
^{**} Scooter, skateboard, University vehicle (excluding 2020), etc.



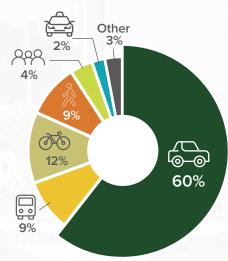


Mode: Driving/SOV

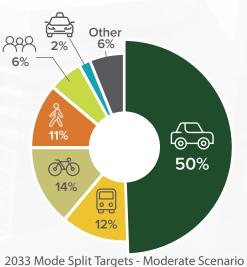
Students, faculty, and staff at CSU enjoy driving to and from the campuses for flexibility and comfort. Cold and snowy winters on the Northern Front Range make driving one's personal vehicle from door to door a particularly attractive option. These drivers desire thoughtful parking permit types to suit their variable on-campus needs, especially as work and academic environments become more hybrid.



Mode Split Survey Primary Modes Strategies



2025 Mode Split Targets



	LEGEND			Objective Campus Context					ext				
	DRIVING RIDESHARE FLEET BIKING WALKING TRANSIT MICROMOBILITY CARPOOL CARSHARE O INFRASTRUCTURE & CONNECTIVITY STRATEGIES POLICIES, PROGRAMS & INITIATIVES STRATEGY				omote Access Affordability	rsue Vision ro/Safety	Reduce Fransportation Carbon Emissions	ίΞ	South	West	Foothills	Implementation Horizon	Estimated Cost
	Strategy	Mode(s)		Spli	P. 8	Pu Ze	S T S T	Main	So	×	Ŗ	트운	ES
α	Improve and expand intersection + mid-block crosswalks	€ & Å ₽Å		/	✓	✓	✓	•	•		•	00	\$\$
Œ	Add on-street pullouts			/	/	✓		•	•			() ()	\$\$\$
\mathbb{Q}	Install dynamic loading signage system			/	/	/		•				()	\$
\mathbb{Q}	Add strategic EV charging locations				/		✓	•	•	•	•	00	\$\$
Q	Decentralize motor rental pool			/	/		✓	•	•		•	()	\$\$
Œ	Create more parking permit types/stalls for carpoolers and early/ late workers	\$\frac{1}{2} \text{?}			✓			•	•	•	•	()	\$
\mathbb{Q}	Lower parking ratios to raise parking utilization				✓			•	•			000	\$
Œ	Transition vehicle parking supply to garages			/	/			•	•			000	\$\$\$



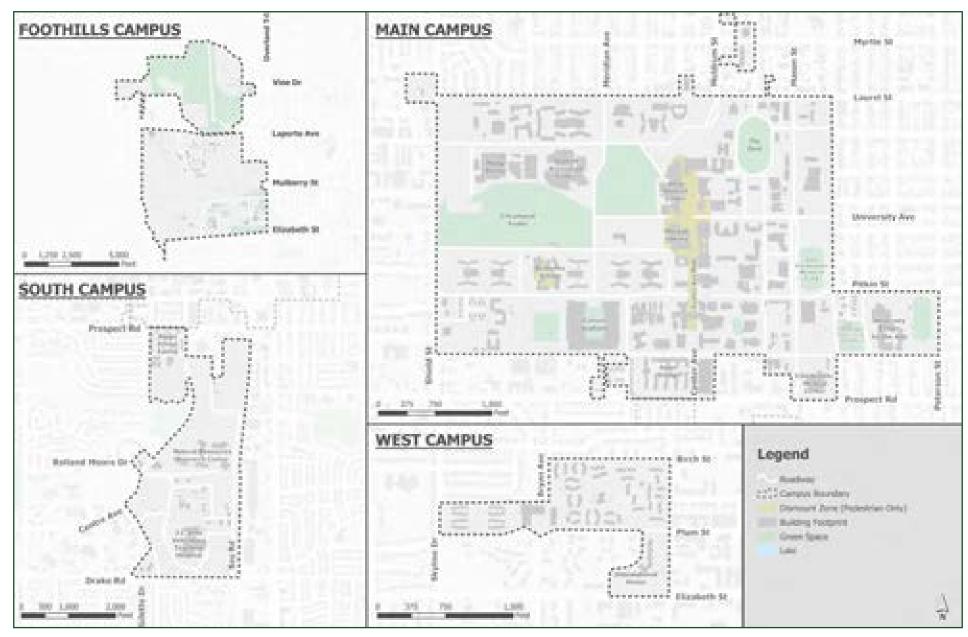


Figure 17: Main + South + West Campus Buildings & Street Accesses



Since its earlier days as a commuter campus, both CSU students and employees have tended to travel by personal vehicle more than other modes. The campus resident population has become a fixture of campus life and culture, and so too have bike lanes, bus routes, micromobility options, and the like, but driving remains a popular commute option for students, faculty, and staff.

Participants in the campuswide stakeholder outreach eforts for this TDMP cited the following as some of the primary benefits of commuting by car:

1. Family / Errands

Parents often rely on the ability to chain their trips to perform childcare, dropping off and picking up their kids before and after work. Similarly, many drivers highly value being able to efficiently complete daily errands (work or personal) on the way to/from campus, which becomes more cumbersome and time-consuming with other travel modes.

2. Weather

Northern Front Range weather variability (summer heat, winter cold and snow/ice) is a challenge, and climate-controlled vehicles mitigate these extremes. Personal vehicles feel comfortable and familiar.

3. Reliability

Driving a personal vehicle typically involves fewer unknown factors, such as a late bus, a carpool partner who doesn't arrive, extreme weather, etc., which has immense habit-forming value for commuters.

4. Distance

Whether by choice or by necessity (due to cost-of-living factors), some drivers said they live too far from the campuses to commute by any other mode than car. Long and dangerous cycling routes, lack of bus service, and other factors were mentioned.

CSU intends to maintain driving and parking on campus as a high-quality and reliable option for students, staff, and employees. The paid parking system stabilizes demand for the limited capacity and allows Parking & Transportation Services (PTS) to fund parking capital projects such as parking garages, which are more space-efficient (i.e., can increase parking space capacity within a smaller land area) than surface lots.

PTS is an auxiliary unit of the University and as such its service offerings must be self-funded, including staffing as well as physical (parking lots and garages) and digital infrastructure. As PTS and the University have shifted their focus to multimodal campus transportation options, PTS revenue has also begun funding many of the active transportation initiatives and outreach programs that make walking, rolling, cycling, and scooting to and around campus safer and more inviting for students and employees.

There are approximately **13,518** vehicle parking spaces across the Main, South, and West campuses.

In addition, the Foothills Campus has roughly 1,500 parking spaces spread across about 650,000 sq. ft. of paved parking area. However, as a research-focused campus with unique onsite activities that depend on facilities access, permitted vehicles are allowed to park anywhere within the facilities to suit their academic and business needs, so the exact number of usable parking spaces at this campus is not tracked.

Spaces per student (27,939 undergraduate and graduate students as of Fall 2023)	Employee-Designated Spaces		Other Spaces (includes Remote + Daily/Hourly for students, employees, visitors)
0.37	2,618	6,507	4,393

Table 4: Spring 2023 Main + South + West Campus Parking Spaces/Total Pop. Ratio



Parking Utilization

Approximately 65% of the total Main and South Campus parking capacity was utilized in peak weekday conditions during a February 2023 parking inventory count. PTS performs these inventories every fall and spring semester to track parking demand.

Utilization rates varied widely from lot to lot depending on convenience to nearby activity zones, as shown in the parking utilization heat map in Figure 19 on the next page. Significant excess supply exists at the Moby Lot, South Campus remote lots, and lot 240 west of Canvas Stadium.

Historic peak parking lot utilization rates are shown in Figure 18 to the right.

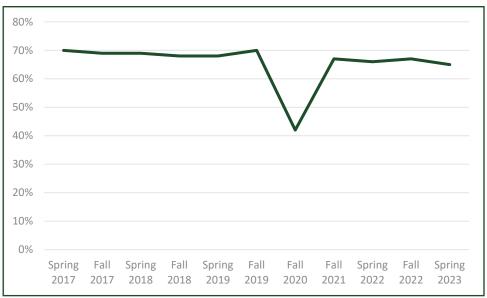


Figure 18: Campus-Wide Standard Stall Utilization Rate 2017-2023





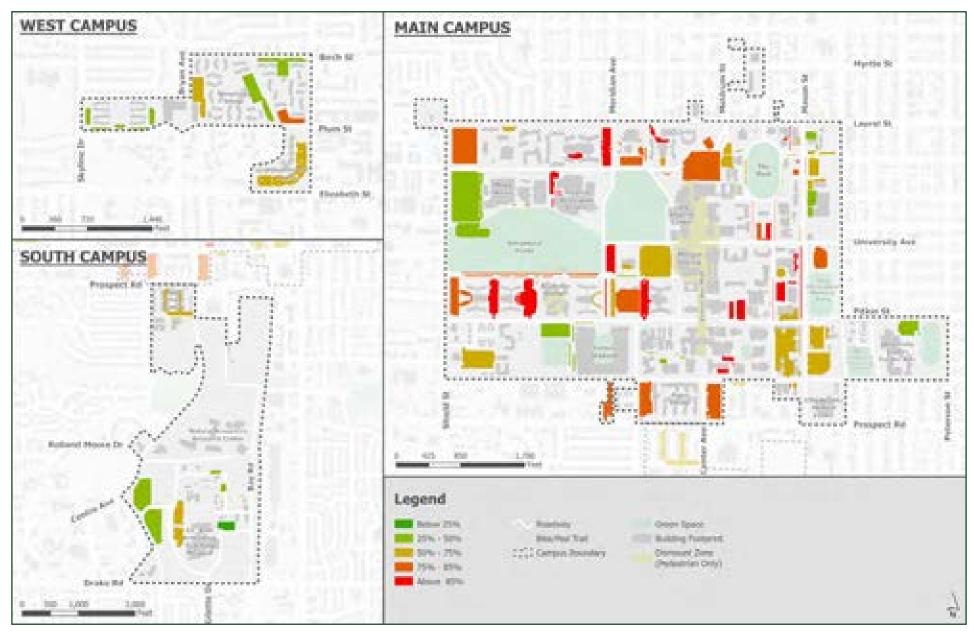


Figure 19: Main + South + West Campus Peak Weekday Parking Lot Utilization - Spring 2023



Permits

PTS structures the permit system to offer maximum flexibility to meet the wide-ranging needs of students and employees. Table 5 below shows PTS' vehicle parking permits sales since 2018.

The limited campus activity during the COVID-19 response in Fall 2020 is evident in permit sales. Annual employee permits have declined slightly as more employees who have the option to telework for a portion of the week opt for partial week permits (see "Other" type). Student annual and monthly permits have declined moderately since Academic Year permits launched in Fall 2022. Overall permit sales have been climbing as drivers find more permit options that fit their schedules and allow them to save more money on total personal transportation costs. Data for "Daily" and "Hourly" parking permits was not available and is not included in Table 5.

	Fall	2018	Fall	2019	Fall	2020	Fall	2021	Fall 2022		
Permit Type	Student	Employee	Student Employee Student Employee		Student	Employee	Student	Employee			
Annual	4,755	4,374	4,730	4,455	2,684	2,684 1,689		4,823 3,764		3,918	
Other ¹	19	6	-			170 282		3,707	506		
Monthly	137	46	164			193	78	87	48		
Semester	1,281	161	1,685	173	173 1,648 183		2,456 350		1,576	256	
Totals	10	,779	11,3	265	6,	6,511		,116	12,	543	

¹ "Other" category includes academic year permits launched in Fall 2022

Table 5: Parking Permit Sales 2018-2022

Driving / Parking Challenges

- O Desirable and convenient parking spaces are expensive and inefficient to provide for all students, employees, and visitors who want them
- O CSU exists in a city, region, and country that will likely continue to prioritize the conveniences of vehicular travel for the foreseeable future, even as other modes gain funding and momentum and CSU's transportation priorities shift
- O Driving (and SOV travel) is often the only viable travel mode option for people due to a variety of factors, which raises equity, land use, and environmental/GHG emissions concerns
- O Special events such as Move-in Day present uniquely high parking demand in resident hall areas as students bring larger vehicles with furniture onto campus and vie for limited on-street space that is not currently designed for their use





VISION ZERO & SAFETY

Motor vehicles are the second most prevalent transportation mode involved in crashes on campus (50%) which is unsurprising given their prevalence as the most common transportation mode for both students and employees as evidenced by the annual CSU cordon studies (see Appendix C). Opportunities to improve street conflict zones should be targeted toward crash "problem areas" and areas with known design issues. Toole Design Group provided CSU with spot improvement concepts in 2022 to address six problem areas around Main Campus, which can be found in Appendix F.

Figure 20 to the right shows major and fatal transportation-related crashes on campus since 2017, which are actively tracked as part of CSU's participation in the national Vision Zero initiative to aim for zero major or fatal transportation injuries. Crash and injury problem areas will be explored more in the Mode: Bikes section.

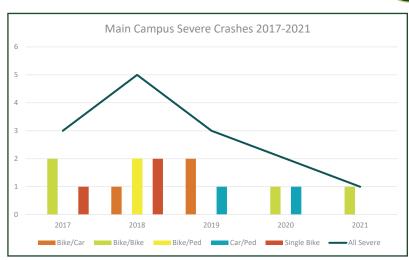


Figure 20: Reported Major + Fatal Main/South Campus Crashes 2018-2023





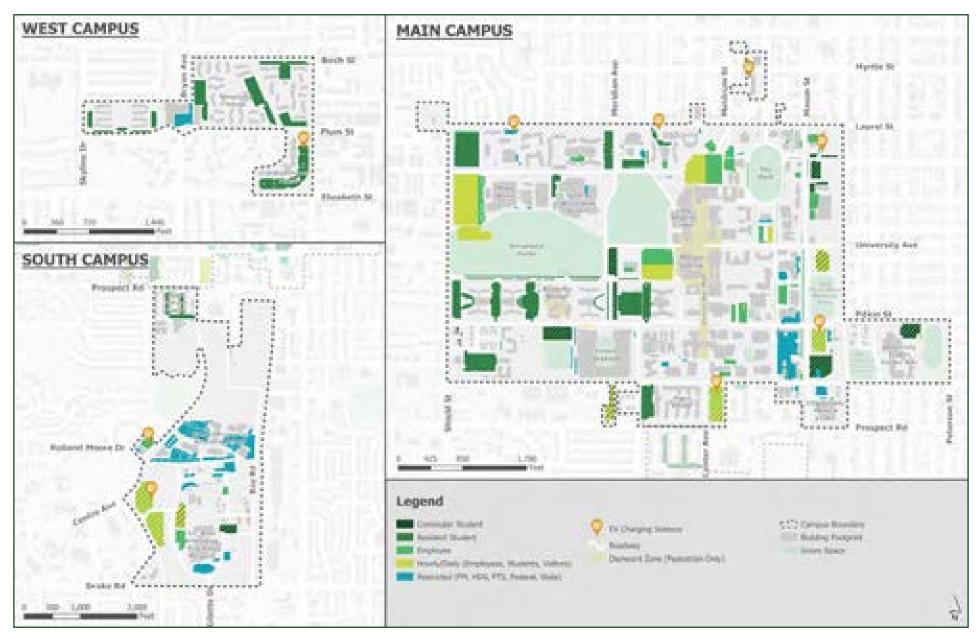


Figure 21: Main + South + West Campus Parking Lot Designations



Driving / Parking Strategies

Infrastructure & Connectivity

Parking Space Ratios for Long-term Master Planning

This Plan establishes a new parking ratio target for 2023-2033 based on the following factors:

- O 80% average peak parking space utilization target, up from 65% observed in Spring 2023
- O 50% driving commute mode share target, down from 67% reported in the Spring 2022 Mode Split Survey
- O 0.6% YoY student enrollment growth

The current ratio of total parking spaces per total student enrollment is 0.47, which is based on an inventory of 13,518 parking spaces and 28,837 students enrolled at CSU Fort Collins campuses in 2022-23. A consistent 80% parking space utilization goal and a gradual YoY reduction to a 50% driving commute rate would result in a parking spaces-to-students ratio of 0.44 by 2033, assuming a static parking inventory. This ratio would be sufficient to meet expected student and employee demand, and a supply buffer of 20% that could accommodate some additional parking demand resulting from expansion of academic facilities on campus is also projected. Any changes to the parking supply should consider this baseline ratio.

Strategic parking garage placement decisions should consider the additional transportation (parking) demands created by new academic and housing structures so that the garages can help meet new demand generated after new buildings are built out.

On-street Pullouts

Move-in Day, as well as daily activities such as carpooling pickup/dropoff and quick Facilities deliveries, challenge the existing infrastructure on streets such as Plum Street, Lake Street, and Hughes Way. PTS has identified key locations where vehicle pullouts could be located along these streets to accommodate these vehicles uses. Priority zones that do not require the removal of mature trees are shown in Figure 22.

Hughes Way was identified frequently in the stakeholder outreach activities as a problem area due to the right of way being too narrow for one-lane bidirectional vehicle traffic next to the recently added angled parking stalls. Not only is this a difficult driving environment, it is also a safety issue for pedestrians since drivers' line-of-sight to adjacent pedestrians can be obscured. PTS and partner departments may consider alternative parking configurations, such as parallel stalls. Parallel loading spaces along Hughes Way are already set up temporarily during Move-In Day activities.

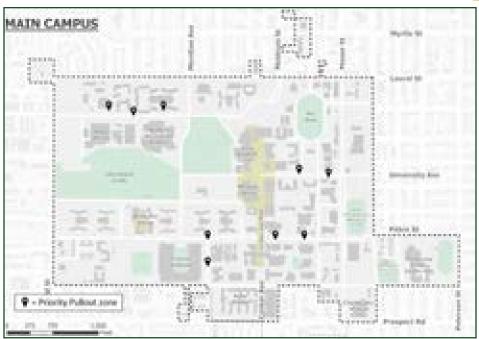


Figure 22: Recommended Priority Main Campus Pullout Zones

EV Charging

There are 19 total public charging stations with 38 charging ports in the locations shown in Table 6 below.

Anyone with a CSU permit (regardless of type and including hourly parking) can use an EV charger in any lot since the chargers are funded by state and federal grant money. Charger placement should always consider this intended dual purpose to best meet the public's EV charging needs.

There is a need for more chargers in central parking areas of the Main Campus such as in Lot 310 and lot 425. Opportunities exist for dispersed EV vehicles in the rental pool to utilize the public charging network overnight instead of returning the vehicle to a centralized fleet area.

Campus	# Charging Ports
Main	26
Foothills	4
West	2
South	6

Table 6: Existing CSU Campus EV Chargers



Significant growth in student/employee/visitor demand for EVs is highly likely in the coming decade as technology further develops and new EV subsidies continue—so all lots should be considered for charging installations as funding becomes available.

Lots 310, 145, 115, and 195, which are more accessible from the periphery of Main Campus, are examples of recommended locations to propose for the newly announced fast charger funding through the DC Fast-Charging Plazas grant program. This program allocates funding for fast chargers (150kW+ output) in areas near U.S. 287, for which CSU qualifies. Commuter students, resident students, and employees would all benefit from the availability of these fast chargers, in addition to serving demand from general travelers along U.S. 287. The West and South campuses are in areas eligible for enhanced incentives as disproportionately impacted communities.

Parking Garages

PTS seeks to position parking garages in strategic areas around the Main Campus perimeter. Two of the eight proposed parking garages are built and operational: the Lake Street Garage and the South College Parking Garage indicated in Figure 23.

The remaining slated garages are delayed in the funding phase and have yet to be planned or constructed.

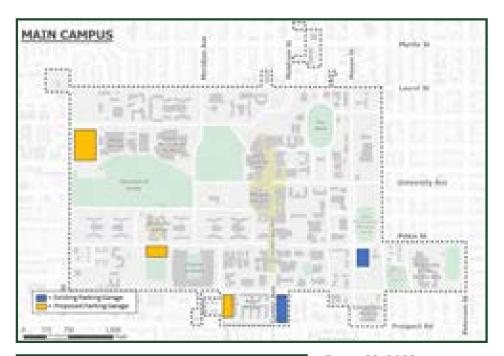
PTS and CSU leadership should prioritize planning and funding for these garages, which can lower the land area footprint of parking resources on the campuses by adding vertical capacity. Structured parking is also more amenable to customercentric parking technologies that students, employees, and visitors appreciate, such as real-time parking space vacancy widgets.

Curb Space/Curb Management

Loading areas for departmental deliveries are distributed across the Main Campus and are primarily off-street. Curbside loading spaces are typically adjacent to buildings for convenient access.

Loading/Delivery Best Practices

- O Negotiate with vendors and departments to establish delivery windows outside peak campus commute and transition times to reduce conflicts with other travelers
- O Install signage to allow dynamic usage of select curbside loading spaces during peak commute and transition times for activities such as:
 - Food delivery
 - O Rideshare and carpooling pickup/dropoff
- O Align building loading space capacity with demand over time
 - Some buildings have very high loading demand, but not all loading spaces are clearly allocated to individual buildings and users may compete for limited use



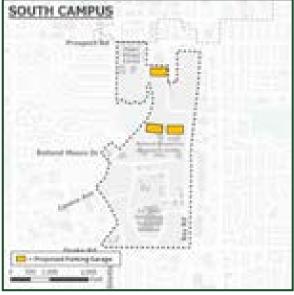


Figure 23: 2023 Completed and Proposed Main + South Campus Parking Garages





Note: Curbside Loading zones are highlighted in yellow. 20-minute max loading times

Figure 24: Main & West Campus Loading Zones

Some universities and other large institutions have experimented with dynamic parking rules that allow short-term loading in spaces designated as hourly and daily parking spaces. Although the vast majority of hourly and daily parking spaces on the Main Campus are not located conveniently close to campus buildings to adequately meet loading needs, there are specific opportunities to allow loading at the following hourly lots:

- O Pitkins St on-street aisle north of Canvas Stadium
- O Lot 425 (Library Lot)
- O Lot 310 (Lory Student Union/Engineering)

PTS can review appropriate dynamic loading and hourly parking areas in the event that the inventory of hourly parking areas is revised. Management can independently determine the preferred maximum loading time limit for these dynamic spaces, but maintaining a maximum loading time campus-wide, such as 20 minutes, provides more predictability for staff and vendors.

It is important to note that the most convenient hourly/daily/visitor parking spaces are more likely to be occupied by students, employees, and visitors, so they may not be reliable parking options for delivery drivers, especially during peak daytime hours. Therefore, these additional loading spaces should be considered a supplement to the campuses' loading space supply, the majority of which will continue to be dedicated stalls or dynamic pickup/dropoff and loading spaces.

Policies, Programs, & Initiatives

The TDMP public engagement efforts revealed a demand for more flexible parking permit types to allow drivers to affordably drive to campus according to their unique lifestyles. PTS will need to continually listen to customer feedback and design its permit offerings to meet the needs of its business model in balance with its diverse customer base.

Informal carpooling amongst students and employees is relatively common, accounting for 2% of reported primary commute modes in the 2023 Mode Split Survey. These habits should continue to be encouraged through flexible permit options such as the existing multi-vehicle shared permit option offered by PTS.

Peers like Oregon State University use a zone-based permitting system that emphasizes fewer permit types and prices lots based on historic demand and/or proximity to key campus areas. PTS should explore alternative pricing structures such as this. Diverse stakeholder focus groups can be a useful and equitable tool for brainstorming and testing these types of new systems.



੍ਰਿ $^\circ$ Technology

PTS has a webpage dashboard that shows parking garage inventory in real time. Features like this are valuable in today's mobile app-oriented world. PTS should explore more of these convenient tools to add value to drivers' investment in parking permits and distribute parking demand around campus efficiently. Automated parking guidance systems (see Figure 21) are an additional capital expense that should be considered for all existing and new parking garages.

In addition, a Commuter Management Platform could enable employee permit buyers to manage their permit on the same platform as their other transportation options. It is highly recommended that PTS offer a Commuter Management Platform to allow employees to manage all their commute options from one place. Many of these platforms have communication features that will allow automated reminders about permit renewals. These reminders provide convenience to users while encouraging them to consider alternatives. Employees could receive an email that their annual permit renews soon so they can log in to take action to renew or switch to another permit type or travel mode accordingly.

The market for commuter management platforms is relatively new. Vendor offerings are generally limited to employee-facing systems managed by Human Resources departments, particularly because options like carpool matching services and Commuter Benefit Accounts are more suited to employees. However, PTS should stay up-to-date on innovative platforms that allow access and specific features for student users, too.

Equity & Access

Progressive parking permit pricing that is more affordable for students and especially student employees, Facilities Management staff, and HDS staff, many of whom work early and late hours outside transit service hours and daylight hours, is an ongoing request among many of the stakeholders who participated in this Plan's outreach. Behind much of this concern about permit costs is a frustration with the viability of other transportation modes and the challenges presented by inclement weather events such as heavy snow and extreme cold. PTS should consider opportunities to alleviate parking and permit frustrations as complementary to one another. Permit cost structures, flexible permit types, and high-quality alternatives to driving are all interconnected factors that affect individual travel choices.

ADA-ACCESSIBLE SPACES

The 294 ADA parking spaces across Main, South, and West Campus exceed the ADA minimum of 146 parking spaces, which is based on the overall parking supply of 13,500+ spaces. These spaces can be located on the interactive campus map online to provide convenience to people with disabilities. However, accessible spaces should also be tracked and made available in the interactive campus map for those with mobility devices that require van stall access.

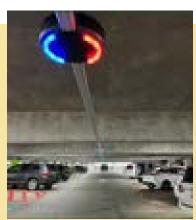
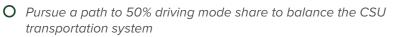


Figure 25: Example of Automated Parking Guidance System.

Credit: Kimley-Horn.

Driving/SOV Key Takeaways



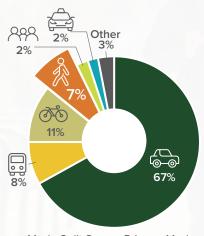


- O Identify and build more on-street pullouts to facilitate deliveries, carpooling pickup/dropoff, rideshare pickup-dropoff, and Move-in Day activities
- O Continue pursuing long-term parking garage strategy, which has land use density benefits and allows for parking technologies that users seek
- O Monitor demand and phase in more EV chargers in central areas of campus such as Lot 310 and Lot 425
 - O Mix of Level 3 (480-volt) chargers and Level 2 (240-volt) chargers
- O Place FM and similar spaces closer to building entrances when possible
- O Integrate parking permit buying into a Commuter Management Platform
- O Engage with parking permit customers to design more flexible and shared parking permit types that save customers money

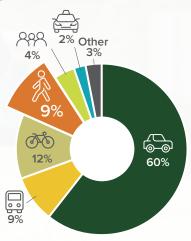


Mode: Walking

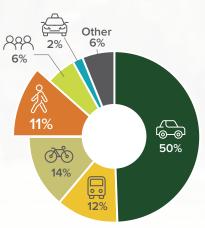
Everyone becomes a pedestrian at some point during their time on campus, so a safe and inviting walking environment is paramount. Walkability on the Fort Collins campuses is variable, from the dense and highly walkable Main Campus to the less developed Foothills Campus. Pedestrians want high-quality sidewalks, close-by destinations, and a safe environment that separates them from other modes like motor vehicles, bikes, and scooters whenever possible.



Mode Split Survey Primary Modes



2025 Mode Split Targets



2033 Mode Split Targets - Moderate Scenario

	LEGEND											
	C		Objective					ampus	Cont	ext		
	DRIVING RIDESHARE FLEET BIKING WALKING TRANSIT MICROMOBILITY CARPOR INFRASTRUCTURE & CONNECTIVITY STRATEGIES POLICIES, PROGRAMS & INITI	DL CARSHARE ATIVES STRATEGY	Balance Mode Split	Promote Access & Affordability	rsue Vision ro/Safety	Reduce Fransportation Carbon Emissions	Main	South	West	Foothills	Implementation Horizon	Estimated Cost
	Strategy	Mode(s)	Ba Sp	Pro 8	Pur Zer	S T S T	Σ	So	We	Ē	Impl Hori	ES.
0	Implement Mobility Hubs		/	✓	✓	✓	•	•		•	000	\$\$\$
0	Improve and expand intersection + mid-block crosswalks	₽ ₩	/	✓	✓	✓	•	•		•	00	\$\$
\otimes	Pursue proposed complete streets redesigns	<i>ૹ</i> ૽૾૾ૣ૽ૺ૽૾ૺ	✓	✓	✓	✓	•	•	•	•	00	\$\$\$
0	Install signage and infrastructure to separate ped/bike in problem areas	ૹ ૽૾૾૽ૣ૾ૻ૽ૺ	/	/	✓	✓	•	•			00	\$\$\$
\bigcirc	Implement West Elizabeth BRT	<i>ૹ</i> ૽૾૾ૣ૽૽૽ૣ	✓	✓		✓	•		•	•	00	\$\$\$
0	Expand Foothills sidewalk and bike trail network	ØŠ Å	/	/	/	✓				•	() ()	\$\$\$
\otimes	Encourage affordable housing in walking distance	Ø® Å	/	✓		✓	•	•	•		000	\$\$\$
	Add accessible classroom layer to Interactive Campus Map	À		✓			•	•		•	()	\$



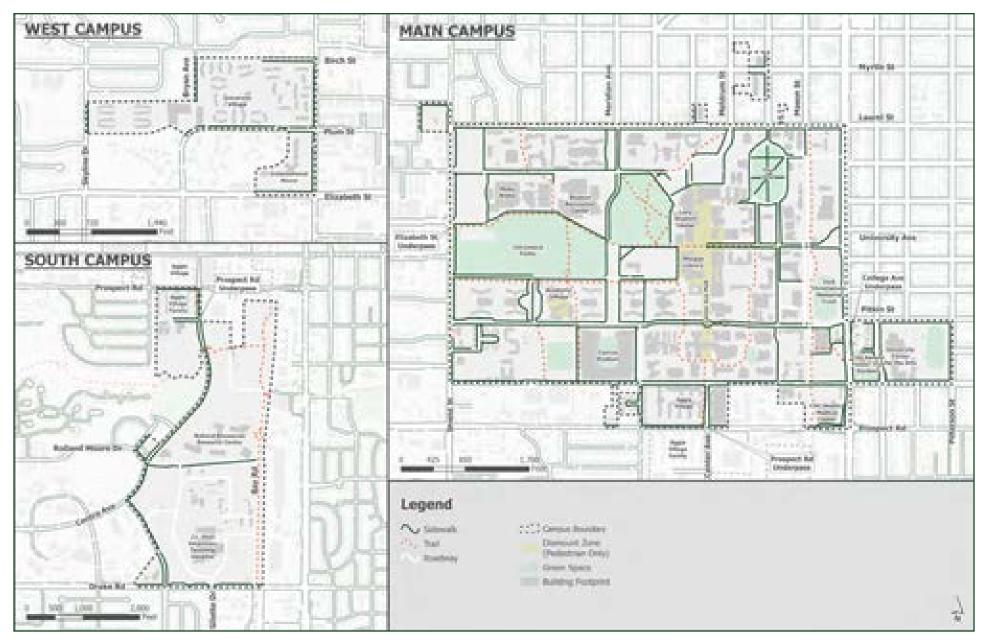


Figure 26: Main + South + West Campus Sidewalks & Multi-Use Trails



CSU has made great strides in transforming the Main Campus into a pedestrianoriented environment with a high resident population and near-ubiquitous sidewalk and paved walkway infrastructure, as shown in Fig 26 on the previous page.

Student/Faculty/Staff Total Households = 18,067 % of Total Households # Households Transit (≤0.25 mi. from route. no transfers to Main Campus)1 12.039 67% Walk (≤ 0.5 mi. from Main Campus) 34% 6.144 Bike (≤ 3 mi. from Main Campus) 14.951 Direct routes include Transfort routes (2, 3, 5, 6, 7, 10, 14, 19, 31, 32, 92, Flex, Around the Horn, MAX), Poudre Express, and Bustang North route Legend CSU Household Bus Route Billio Lavin Trud. **CSU Main Campus** SECTION AND VALUE OF STREET

Figure 27: Alternative Modes Travel Shed Analysis

Dismount zones that are pedestrian-only (for people on foot or using an assistive mobility device like a manual or electric wheelchair or walker) are strategically located in areas like the Center Avenue Mall. Dismount zones are an increasingly common feature on campuses that promote safety for pedestrians, a highly vulnerable group, during high-activity periods throughout the day.

Walking Challenges

Despite measures such as dismount zones and dedicated modal infrastructure, conflict areas between pedestrians and other modes (particularly bikes and cars) persist. Adherence to the dismount zones, particularly along the Center Avenue Mall, a central campus artery, can be low at both peak and off-peak times.

Walkability at the South and Foothills Campus is lacking due to insufficient infrastructure (incomplete sidewalks, missing mid-block crossings, no north-south connector trail, and high motor vehicle travel speeds) and dispersed buildings.

Pedestrians and people who use mobility devices such as wheelchairs are at an increased risk of transportation-related serious injury, which is a core concern in the Vision Zero movement.

34% of CSU students and employees live within 1/2 mile from campus, as shown in Figure 27. Nonetheless, there is a widely voiced housing availability and affordability crisis in Fort Collins, largely predicated on proximity to the campuses, that presents access and commuting challenges for upperclassmen students, graduate students, and employees. These circumstances disproportionately affect lower income students and employees.

Furthermore, a harsh winter climate makes walking uncomfortable and potentially dangerous for part of the year. Icy sidewalk conditions may persist in certain areas for many days at a time.

Walking Strategies

All people on CSU campuses become pedestrians at some point. Methods for improving the pedestrian environment on CSU campuses must acknowledge this transportation maxim. As the most vulnerable transportation mode, walking should be a central focus of Vision Zero efforts to make streets and multi-use paths safer and more inviting.



\bigcirc

) Infrastructure & Connectivity

All Campuses

- O Install additional signage and separated infrastructure for other modes where feasible to mitigate conflicts and accidents with pedestrians
 - O Focus on six identified Complete Streets corridors (Appendix F) and multi-use paths where crashes have been reported
- O Make lighting improvements in underserved areas and in areas where FM and HDS staff frequently work, which has historically received less priority
 - O Consider promoting a "safe walking routes" map highlighting walking routes with contiguously-lit sidewalks and doorways.
- O Maintain crosswalk paint for visibility and expand to new areas such as midblocks on long roadway thoroughfares like Plum St.

Some street crosswalks can be observed with degraded paint that reduces driver awareness of pedestrians within the right of way. These street elements are important safety features that should not be neglected.

Streets such as Plum St have a lack of crosswalks along significant stretches, which creates access barriers for pedestrians. Signalized crosswalks with traffic-calming features in these areas would improve campus navigability for pedestrians. Speed bumps may also be considered to regulate vehicle speeds and make drivers more aware of potential pedestrians in the area.

Main Campus

The Center Avenue Mall provides direct access to many key buildings on campus and thus gets significant cross-traffic from cyclists and skateboarders trying to reach their final destinations. Many users can be observed disregarding the dismount zone, which the stakeholder outreach efforts for this Plan also revealed. CSU can consider the following best practices applied to pedestrian malls in similar contexts:

- O Continue active enforcement of dismount zones
 - O Focus on education-based enforcement and incentives
- O Use Vision Zero crash data to continuously identify areas where improved signage or spot treatments are needed
- O Emphasize alternative, high-quality bike routes for cyclists that minimize the urge to travel along the mall without dismounting to get to/from destinations quickly

Foothills Campus

The Foothills Campus area is newer and has historically been less oriented around pedestrian connections between buildings than a traditional university campus environment. Sidewalk infrastructure linking buildings and other facilities to one another is lacking, which many students and employees noted in the stakeholder engagement. Some participants voiced safety concerns created by this lack of dedicated walking infrastructure.

Foothills has what many users refer to as a northern and southern section, divided by Rampart Road. A desire for improved bike and pedestrian links between the two areas were frequently mentioned during TDMP public engagement events.

Considerations

O Identify new opportunities for upperclassman housing on and off campus and advocate for more rental and for-sale housing options in Fort Collins for employees

Fort Collins' housing crisis is not unique by U.S. standards. However, this does not preclude CSU and other city leaders and organizations from approaching this complex issue uniquely. The rental housing developments CSU is pursuing on Timberline Road and Ziegler Road to provide more in-town options for employees are exemplary, creative housing solutions.

Longboards & Skateboards

Manual (unmotorized) longboards and skateboards must ride on sidewalks and other pedestrian areas only (excluding



Skateboard Rack at Durrell Center



Center Avenue Mall, Looking South



CSU dismount zones), according to Fort Collins rules. Electric longboards and skateboards, meanwhile, must use bike lanes and streets. CSU must consider safe and intuitive paths of travel of these mobility devices in the midst of other modes, especially within the Main Campus where they are particularly popular for students who want fast internal campus transportation in highly pedestrianized areas.

Safe boarding education programs are also important methods spreading awareness among current and incoming students of local on-street and off-street riding laws.

ब Equity & Access

The accessibility features included in the interactive campus map are excellent resources for people walking and rolling on the Main, South, and West campuses. CSU can expand this resource by incorporating an accessible classroom layer. This layer would be invaluable for students trying to determine whether individual academic facilities will be accessible to them so they can make course arrangements accordingly. Sidewalk surface quality and continuity and curb ramps are another campus accessibility feature that must be continually considered as the CSU campuses age and expand.

Walking Key Takeaways

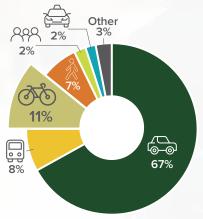
- O Install additional signage and separated infrastructure for other modes where feasible to mitigate conflicts and accidents with vulnerable pedestrians
 - O Focus on 6 Toole Design Group complete streets corridors and multi-use paths where multiple modes interact.
- O Make lighting improvements in less obvious areas and in areas where FM and HDS staff frequently work, which has historically received less priority
- O Maintain crosswalk paint for visibility and expand to new areas such as mid-blocks on long roadway thoroughfares like Plum St
- O Expand sidewalk infrastructure at Foothills Campus
- O Prioritize on-campus housing so that more students have the option to commute to campus by foot
- O Develop an ADA-accessible classroom layer for the Interactive Campus Map



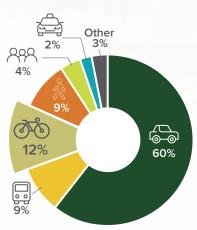


Mode: Bikes

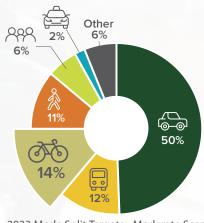
CSU and the City of Fort Collins have focused significant investment in their dedicated cycling infrastructure over the years. There is a large community of both serious and casual cyclists who can park at one of over 18,000 bike rack spaces spread across the Main and South campuses. Efforts to build and retrofit more bike lanes and safety features into the existing campus environment are ongoing.



Mode Split Survey Primary Modes



2025 Mode Split Targets



2033 Mode Split Targets - Moderate Scenario

		LEGEND											
		LEGEND O			Objective					Cont	ext		
		DRIVING RIDESHARE FLEET BIKING WALKING TRANSIT MICROMOBILITY CARPOR		Balance Mode Split	Promote Access & Affordability	ue Vision /Safety	Reduce Fransportation Carbon Emissions	_	£	+	Foothills	Implementation Horizon	Estimated Cost
		Strategy	Mode(s)	Bala	Pror & At	Pursue Zero/Sa	Red Trar Carl Emi	Main	South	West	Foo	lmp Hori	Estii
d	0	Implement Mobility Hubs		ş	/	/	~	•	•		•	000	\$\$\$
ij.	0	Improve and expand intersection + mid-block crosswalks	\$\d\$\\\\$\\\$\\\$\\\$\\\$\\\$\\\$\\\$\\\$\\\$\\\$\\	/	/	/	✓	•	•		•	00	\$\$
Ī	\bigcirc	Pursue proposed complete streets redesigns	<i>ૹ</i> ૽૾૾ૣ૽ ૄૼ૾૽ૺ		/	/	✓	•	•	•	•	00	\$\$\$
Ē	\bigcirc	Install signage and infrastructure to separate ped/bike in problem areas	ૹ ૽૾૾ૣ૽૽ૼૺૺૺ૾૽		/	/	/	•	•			00	\$\$\$
Ē	0	Implement West Elizabeth BRT	ॐ Â 🗒		/		/	•		•	•	00	\$\$\$
ij	0	Increase connected + protected bike network	<i>3</i> 5 €\$		/	✓	/	•	•	•	•	00	\$\$
	\bigcirc	Improve bike lane snow removal	<i>₫</i> ₺ 🕏		/	✓	✓	•	•			00	\$\$
	\bigcirc	Expand Foothills sidewalk and bike trail network	♂ も 🖟		/	/	✓				•	() ()	\$\$\$
	\bigcirc	Encourage affordable housing in walking distance	₫ ₺		/		✓	•	•	•		000	\$\$\$
Ä	\bigcirc	Add physical/digital drop zones for Spin devices	<i>®</i> 6 ₽6		/			•				()	\$
		Create employee commuter management platform	ॐ \$\bar{\pi} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\	/	/		/	•	•		•	()	\$\$
		Expand bike route planning options and outreach	<i>ক</i> ত		/	✓	/	•	•	•	•	()	\$\$
		Promote bike registration and lock education to deter bike theft	₫ 		/			•	•	•	•	()	\$



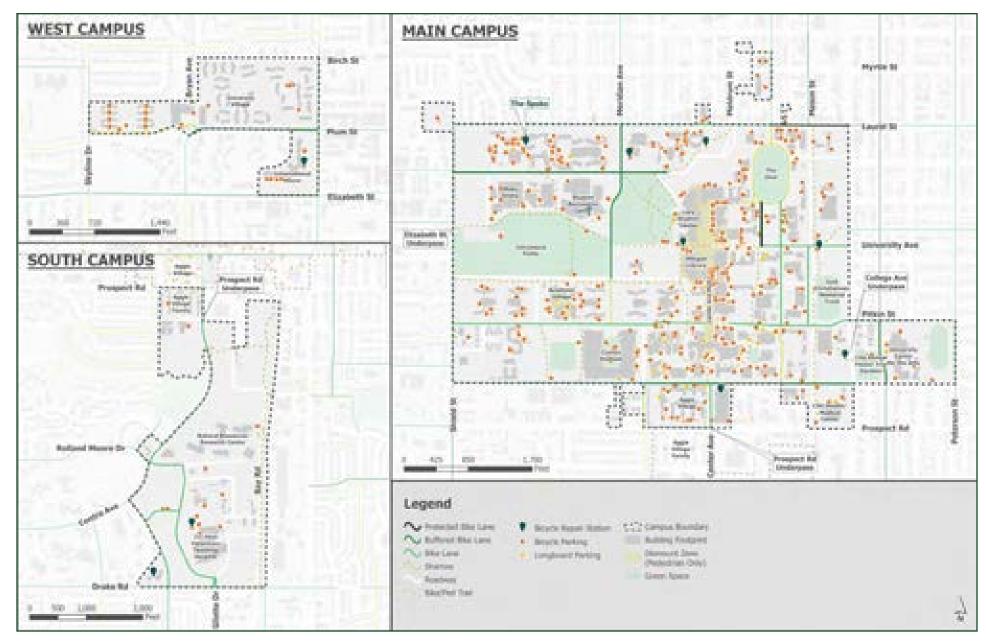
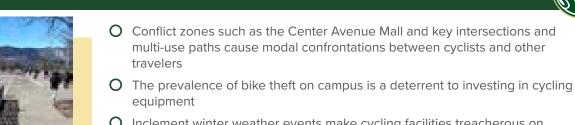


Figure 28: Main + South + West Campus Biking Infrastructure



O Inclement winter weather events make cycling facilities treacherous on certain days





University Avenue Bikeway, Looking West

Fort Collins and CSU have a well-established cycling culture and a sustained dedication to expanding bike infrastructure for all skill levels. Separated bike lanes and multi-use paths cover most areas of the Main Campus, and 83% of students and employees live within 3 miles of Main Campus (shown in Figure 28 on the previous page), which is a very high bike travel shed population that suggests potential.

As of the 2022-2023 academic year, there are 1,812 bike racks providing a total of 18,696 bike parking spaces across the Main and South Campuses. These racks are maintained by Parking & Transportation Services and Housing & Dining Services, which split ownership of these bike parking assets.

Fort Collins continues to expand the 2020 Low Stress Bike Network laid out in the 2014 Fort Collins Bicycle Master Plan. As of Spring 2023, approximately 34% of the city-wide low-stress network laid out in the plan is built, along with 33% of bike spot improvements and 38% of the full-buildout bike network. This network provides high-quality and safer bike routes for all cyclists and in particular appeals to riders referred to as "interested but concerned," or those individuals who are open to cycling and may commute by bike some of the time on certain routes but who are wary of the safety and/or logistical implications of cycling regularly on-street and especially in mixed traffic. Once completed, this cycling infrastructure will improve safety and help more cyclists to feel comfortable riding regularly.

Cycling Challenges

Stakeholders expressed concerns about the following characteristics of the CSU multi-campus biking environment

O Biking infrastructure and roadway conditions, especially outside the Main Campus, can be perceived as dangerous and/or intimidating for potential cyclists, especially those who fall into the "interested but concerned" rider category

VISION ZERO & SAFETY

Since 2018, 75% of reported serious transportation crashes on the CSU campuses involve one or more bicycles, and crashes involving serious injury or death disproportionately affect cyclists because of the amount of physical exposure they have on roadways. Bike infrastructure design choices and educational outreach are two areas where CSU and partners should focus their efforts to improve the safety and comfort of cycling at all ability levels in and around the campuses.

Figure 27 shows minor, severe, and fatal crashes between 2018-2022 on Main Campus, indicating problem areas and intersections.

Many of the spot treatments and Complete Street improvements recommended in the corridor redesign concepts provided by Toole Design Group (see Appendix F) directly address the problems that arise in some of these high crash rate areas.

Cycling Strategies

Infrastructure & Connectivity

- O Focus on building out more protected and well-connected facilities, safe crossings on streets and paths, and wayfinding features/signage
- O Consider Toole Design Group's 2022 corridor redesigns for campus and adjacent areas to improve safety and separation of cycling facilities to reduce conflict with other modes like pedestrians
- O Connect Foothills Campus with multi-use trails for better internal bike access

Route Connectivity & Conflict Zones

CSU manages its own streets, sidewalks, and mixed-use paths, but its interior infrastructure should still be thoughtfully integrated into the local area. The on-street and off-street facilities need to be consistent with Fort Collins' 2014 Bicycle Master Plan and 2022 Active Modes Plan priorities. CSU is positioned to be an advocate for community-wide desires for high-quality, continuous bike lanes and paths.



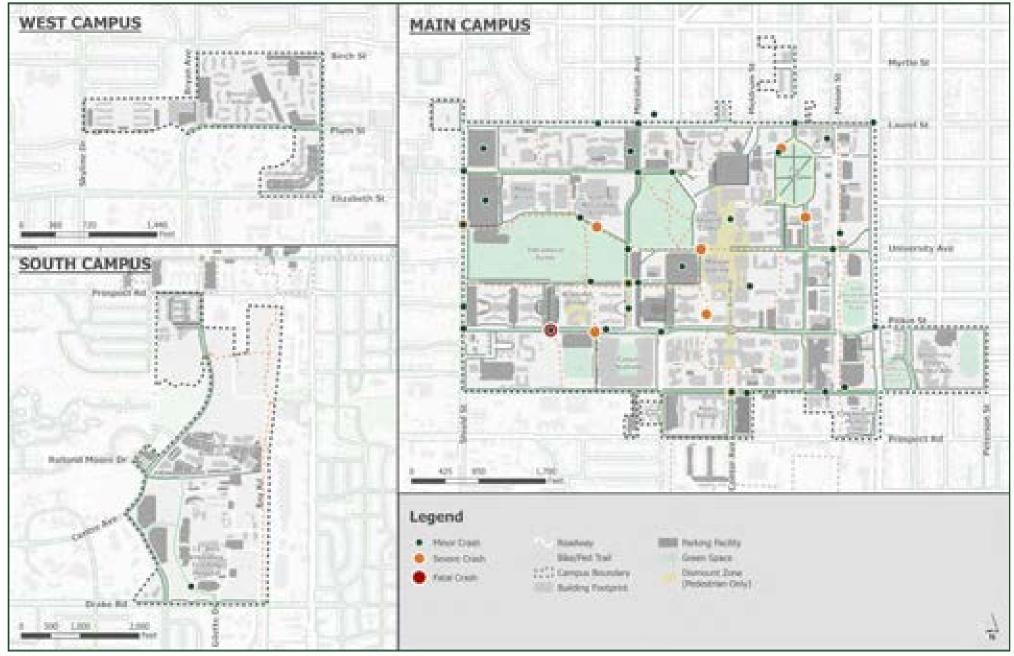


Figure 29: Main + South + West Campus Crashes Reported 2018-2022



Protected intersections, protected roundabouts, mid-block crossings, and other junctions should employ Complete Street design measures and other best practices to ensure cyclist path of travel is just one of the many modal considerations embedded into the overall design of corridors.

Snow Removal

Fort Collins experiences regular snow events throughout the winter season that create a challenging environment on local streets, especially for cyclists who are more exposed to the elements than motorists, transit riders, etc. Stakeholders identified a need to ensure bike lanes and multi-use paths are better prioritized in the campus and City snow removal efforts on a consistent basis so that safe cycling facilities remain usable in the event that snow accumulation lingers on streets for an extended period of time.

Components of effective bike facility snow removal programs include:

Prioritization levels

Urban design

Frequency

Communication

Equipment

The City of Fort Collins and CSU both have publicly available snow removal route maps (See Appendix D, Mode: Bikes). Fort Collins also establishes four priority tiers to organize its limited plowing resources, with main streets and arterials at the top and residential streets at the bottom.

Like sidewalk infrastructure, the City and CSU should ensure bike lane snow removal priorities are strategically synchronized between connecting on-campus and off-campus routes so that cyclists have a reliable commute from start to finish.

Residents should be able to look up, understand, and anticipate the minimum snow accumulation necessary to trigger snow removal within a specified timeframe and according to reasonable City and campus policies (e.g., protected bike lanes will be plowed four hours after 1 inch of snow accumulation).

Snow removal tools and motorized vehicles appropriate for effective bike lane clearance differ significantly from that of vehicle lanes. Specific equipment that suits the unique environment of all bike facility types under the jurisdiction of the University and the City, such as protected bike lanes and shared-use paths, should be considered during the equipment acquisition and replacement process.

The designing and dimensions of bike lanes, especially those adjacent to vehicle lanes, should consider the need to displace snow safely into a reservoir area out of the bicycle right of way or that of other transportation modes, consistent with Complete Street practices.

Policies should be communicated to the public with mechanisms for the public to provide feedback about areas within the existing snow removal network that are not being cleared according to the defined standards. These steps, when well-executed, will support CSU's bike community and cyclist satisfaction.



Bike Racks at Ram's Horn





Policies, Programs, & Initiatives

- O Acknowledge a multi-pronged approach to bike theft prevention
- O Promote a range of bike route planning options
 - O Integrate route planning into outreach and educational events

CSU and PTS offer an extensive program of cycling safety, education, and outreach events and communication throughout the year to attract new riders and ensure the CSU cycling community follows the rules of the road.

Along with these efforts, CSU should promote a wide range of bike route-planning tools such as Google Maps, Transit App, Komoot, RidewithGPS, etc. in order to introduce cyclists to the quickest and most efficient and safe route option for where they live and to encourage habit building. It should be very readily apparent to interested cyclists, including key groups such as incoming freshmen, new employees, and anyone relocating to a new home address that there are many modern, easy options for route planning that do not require the individual to manually plan their route on a map.

Registration & Theft Prevention

Campus bike theft emerged as a common campus cycling concern during the TDMP stakeholder engagement process. Bike thefts have increased globally in the past several years as the value of bikes and bike parts have increased as a result of supply chain issues. CSU can take steps to deter bike thefts so that more people are willing to invest in cycling gear.

CSU students and employees are encouraged to register their bikes through the CSU Police Department in order to facilitate the return and management of lost, abandoned, and stolen bikes. Registration costs \$10 and is available year round, but CSUPD hosts pop-up events to reach new students particularly during fall intake. CSUPD uses grant money to distribute free U-locks, which are a more secure type of bike lock. New registrants can pick up their registration stickers at the CSUPD office on Plum St or The Spoke bike shop. It is recommended to expand the number of locations where registrants can show photo ID and pick up these stickers so that the process is more convenient for cyclists. New locations should consider student population centers and may include:

- O Lake Street Garage (PTS office)
- O Lory Student Center
- O West Campus

ASCSU may also consider covering bike registration fees with student fees.

CSUPD uses Central Square, a registration database that is shared between many university and municipal police departments around the U.S. and is not accessible to the general public, individual bike owners, or other university departments. Universities and other organizations are moving toward more open and universal databases to maximize the pool of organizations who can participate in bike registration, identification, and recovery. Options like 529 Garage emphasize easy, app-based registration that is amenable to pop-up events. These modern databases allow shared administrator access for partners of CSUPD, such as CSU PTS, to see bike registration information that is relevant to their departmental work. Some, such as Bike Index, also use social media platforms like Twitter for outreach.

Table 7 below shows highlights of CSU and peer universities' bike registration processes for comparison.

University	Registration Platform	Open to User Account Management	Open Database	Administrative Department
CSU	Central Square	No	No	CSU Police Dept.
Oregon State	529 Garage	Yes	Yes	Public Safety
Boise State	Bike Index	Yes Yes		Transportation & Parking
UC Davis	Bike Index	Yes	Yes	Transportation Services
U Michigan	Internal system	No	No	Division of Public Safety & Security

Table 7: CSU + Peer University Approaches To Bike Registration & Administration



Secure bike racks, another type of bike theft prevention measure, are located at the University MAX station and the Lake Street parking garage for cyclists to access with a valid permit. Permits range from \$38 (summer) to \$80 (annual). Despite a drop in secure bike storage utilization rates (shown in Table 9 below) at the University MAX station related to COVID-19 and reduced MAX bus service in 2020, utilization was previously high and is expected to return to these levels when bus frequency returns. CSU and PTS may consider installing more secure bike parking at the University MAX station and other central areas of campus, especially the following high-theft areas (according to CSUPD data):

- O Corbett Hall
- O Summit Hall
- O Newsom Hall
- O Cottonwood Hall
- O Parmelee Hall

Table 22 in Appendix D shows campus bike theft rates in recent years. An average of over 200 bikes have been reported stolen annually at CSU since 2018, some of which involving bikes stored within the secure bike structures.

Table 8 below shows secure bike storage utilization rates across Main Campus.

Permit Year	Location	Capacity	Permits Sold	Utilization
2017	University Max Station	35	23	66%
2018	University Max Station	35	28	80%
2019	University Max Station	35	38	109%
2020	University Max Station	35	11	31%
2020	Lake Street Garage	60	3	5%
2021	University Max Station	35	18	51%
2021	Lake Street Garage	60	23	38%
2022	University Max Station	35	7	20%
2022	Lake Street Garage	60	15	25%

Table 8: Secure Bike Storage Utilization 2017-2022

In summary, two factors remain the most cost-effective bike theft prevention techniques for the majority of cyclists:

- 1. Education and encouragement for using bike lock best practices
- 2. Maintaining a robust bike registration database with the ability for owners to update their own personal information.
- 3. Secure bike structures are a costly secondary theft prevention measure capable of reaching a small number of cyclists who can afford them.

$\,\,\,\,\,\,\,\,\,$ Technology

- O Evaluate bike registration software compatibility with large, open national bike registration databases to maximize opportunities to return stolen bikes to owners and to deter thieves over time
 - User-facing account access to update personal information and continue access beyond CSU is also a highly recommended feature
- O Registration software should allow access by other departments (such as Parking & Transportation Services) and integrate with other platforms such as Commuter Management Platform where possible

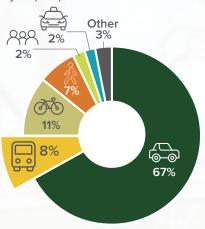
Biking Key Takeaways

- O Focus on building out more protected and well-connected facilities, safe crossings on streets and paths, and wayfinding features/signage
 - O Prioritize problem areas based on Vision Zero data
- O Consider Toole Design Group's 2022 corridor redesigns for campus and adjacent areas to improve safety and separation of cycling facilities to reduce conflict with other modes like pedestrians
- O Connect Foothills Campus with multi-use trails for better internal bike access
- O Ensure the bike lane snow removal program follows best practices and is consistently executed after inclement weather events
- O Deter bike theft through bike registration best practices:
 - Open, national database
 - O Customer-side profile and bike management capabilities

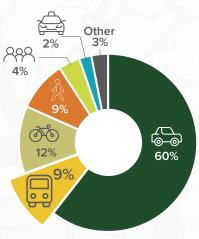


Mode: Transit

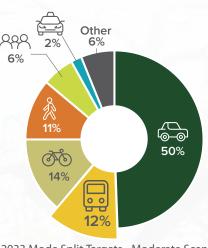
Local Transfort buses, including the MAX bus with its dedicated lanes and other bus rapid transit features, provide daytime service to and from the campuses. Around the Horn serves as the Main Campus circulator. Main Campus areas like the CSU Transit Center have high transit coverage. Students and employees ride Transfort free with their RamCard, although fare collection has been suspended since the onset of the COVID-19 pandemic. Regional routes like Flex, Bustang, SkiSU, the Poudre Express, and private Denver International Airport shuttles also exist. Transfort, CSU, and partners face challenges in restoring bus frequency to pre-pandemic levels.



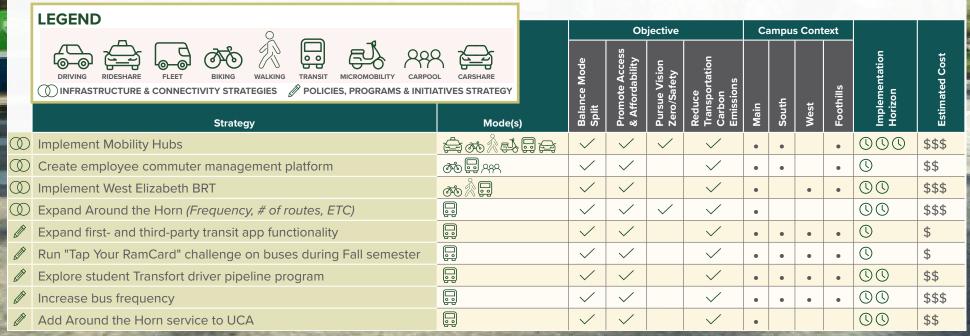
Mode Split Survey Primary Modes



2025 Mode Split Targets



2033 Mode Split Targets - Moderate Scenario



Transfort, the Fort Collins and CSU transit agency, operates 23 routes within the city. Two of these routes are suspended due to ongoing staffing shortages that have led Transfort to consolidate its resources.

Roughly 60% of Transfort's ridership is students and employees of CSU, and certain routes like the Foothills Shuttle, Around the Horn, and 31 bus have routes and schedules that specifically serve campus needs. As of 2023, 67% of student and employee households within Fort Collins city limits were within 0.25 miles of a bus route (shown in Figure 26 in **Walking**), revealing a potential ridership base that is significantly greater than 2023 transit mode share data. However, despite this relatively broad transit coverage, low route frequencies on most bus routes limit the usefulness of proximate transit stations for the average traveler.

There were approximately 192,000 boardings in October 2022, the busiest ridership month for Transfort. More detailed ridership information for CSU students and employees is no longer available because Transfort stopped enforcing rider transit card taps for boarding purposes as an early COVID-19 mitigation measure in 2020. This policy is still in effect, and there are plans for the system to go fare-free, so this granular information may be lost indefinitely unless Transfort determines an alternative method for analyzing boardings.

Buses are wheelchair-accessible and can accommodate bikes. Most of the bus fleet can store two bikes on a rack on the front exterior of the bus, but the MAX buses can store up to four bikes inside the bus for greater rider convenience and speed. Service has been free to all users since the onset of the COVID-19 pandemic. Previously, students and employees could ride Transfort and Dial-a-Ride free with their ID cards through ASCSU subsidies.

The CSU Transit Center on the north side of Main Campus provides an origin and destination point for multiple local and regional transit lines.

Transfort maps and headways are included in the Appendix D, Mode: Transit.

Private shuttle services associated with two student-oriented apartment complexes, The Outpost and The Cottages, are permitted to enter the CSU Transit Center for pickup and dropoff. These small shuttles provide a free connection to campus for students who are car-free and car-lite and are an effective supplement to regular transit service in areas where transit is unfeasible.

The apartment shuttles run weekdays from 7:00am to 7:00pm with 30-minute headways throughout the academic year.

Regional Transit

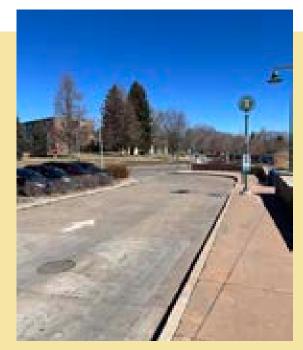
Regional transit options allow students and employees to travel affordably around Northern Colorado. Some of these services are free to RamCard holders.

Flex

The Flex bus is operated by Transfort and runs between the CSU Transit Center and the University of Colorado in Boulder with stops in Fort Collins, Loveland, and Longmont. Flex is free for RamCard holders.

Bustang

Offered through the Colorado Department of Transportation, the Bustang service runs between Fort Collins and downtown Denver Monday-Friday with 8 daily departures and weekdays/holidays with two daily departures from the Fort Collins Downtown Transit Center. Single rides are \$10, and volume discounts are available for 10-, 20-, and 40-ride ticket books.



Poudre Express Bus Terminal at the CSU Transit Center



SkiSU

CSU offers a shuttle from the CSU Transit Center to various Colorado ski resorts on 12 weekend days throughout the winter ski season. Round-trip tickets are \$25 for students and \$34 for employees and must be purchased in advance based on availability.

DIA Shuttles

Groome Transportation and Landline provide service between the CSU Transit Center and Denver International Airport for \$35-\$40 each way. Riders must book their tickets ahead of time.

Poudre Express

The Poudre Express bus runs Monday-Friday between the CSU Transit Center and the Greeley Regional Transportation Center with stops at the University of Northern Colorado, West Greeley, Windsor, and East Fort Collins. This service is free for RamCard holders.

2021 TRANSFORT ONBOARD SURVEY

According to the 2021 Transfort Onboard Survey, the most prevalent service concern amongst respondents (10%) was getting bus/route information from the Transfort website or Ride Transfort mobile app.

The most common concerns amongst the student respondent subgroup were 1. bus frequency and 2. bus nighttime availability, both of which relate to Transfort's driver resources and route scheduling constraints. These concerns are mirrored in the transit service satisfaction question included in the 2023 CSU Mode Split Survey.

Student and non-student survey participants reported an average one-way trip distance of 2.5 miles.



Figure 30: Transfort and Regional Transit Routes



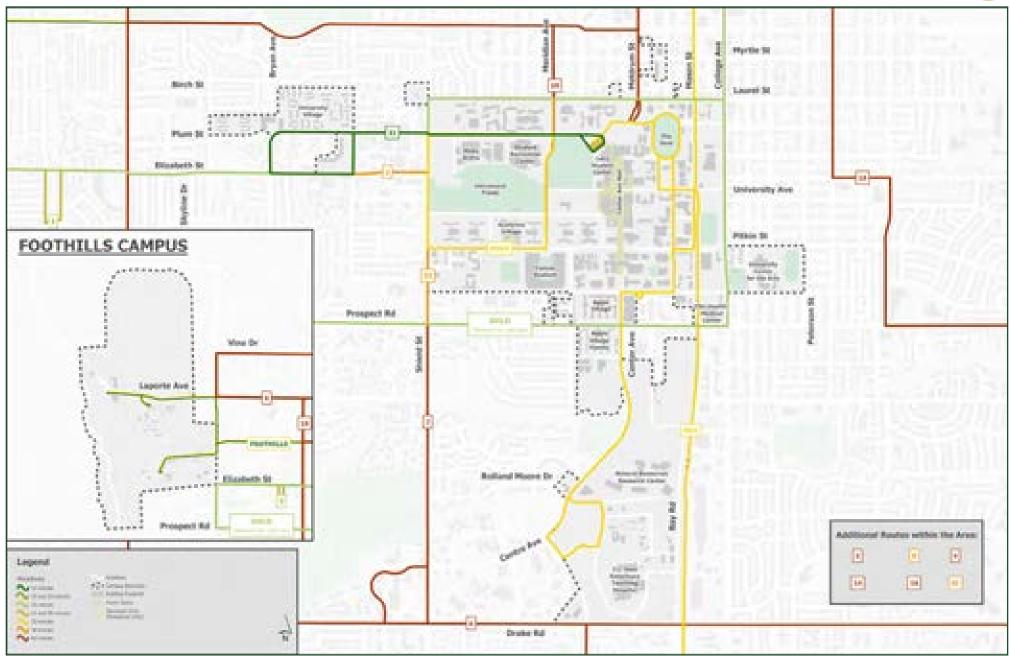


Figure 31: Transfort Frequency Map



Transit Challenges

One of the most common stakeholder concerns throughout the outreach effort was the frequency and hours of operation of local Transfort buses.

Primary Transfort challenges expressed include:

- O Frequency, shown in Figure 31 in the previous page.
 - Most routes run infrequently, including the MAX bus, which was purposebuilt as a BRT (bus rapid transit) route with high-quality service every 10-15 minutes
 - Service is especially limited in the evenings and on weekends; these hours have been cut further in recent months to shore up the Transfort staffing shortage
- O Route planning and location tracking
 - O Real-time location tracking is limited to the Transfort app
 - O Transfort app is not user-friendly
- O Availability of stops near home, especially further from campuses
- No direct connections to University Center for the Arts, ARDEC, Wellington, or Denver International Airport

Transit Strategies

Infrastructure & Connectivity

- O Long-term: Consider alternative/expanded Around the Horn route(s)
 - O Provide service between UCA, Main Campus, and remote lots
- O Continue working with Transfort to plan West Elizabeth BRT route and W Elizabeth St/S Overland Tr and Drake Rd/College Ave Mobility Hubs and identify more amenable locations

The City of Fort Collins began planning a framework for multimodal transportation hubs in key areas around the city in its 2019 Transit Master Plan. The existing CSU Transit Center and the slated Drake Rd/College Ave and Elizabeth/Overland Mobility Hubs are highlighted as some of these newly imagined mobility centers. CSU should continue partnering with the City to plan and build these hubs so that transit riders, cyclists, carshare users, and other travelers can more easily switch modes and get the transportation resources they need to commute more conveniently, affordably, and sustainably. This revamped mobility hub concept constitutes a significant upgrade for the current CSU Transit Center, which primarily accommodates connections between buses, shuttles, and private vehicles and does not provide access to micromobility, carshare, multimodal trip planning resources, or other important elements found at high-quality mobility hubs.

The TDMP consultant's recommendations for siting these CSU-centric mobility

hubs are shown in Figure 32.

Around the Horn launched in 2014 after persistent demand for an internal circulator bus to serve Main Campus. CSU and Transfort should revisit the current route over the next decade to ensure it is still serving Main and South Campus circulation needs, including for access between parking lots, parking garages, and campus academic and employment centers. Stakeholders who have classes and business at the UCA on the east campus expressed concerns that the Around the Horn does not serve this area of Main Campus.

Policies, Programs, & Initiatives

- O Collaborate with Transfort to find ways to restore bus route frequency across the system
 - O Consider shifting Around the Horn, Gold, and/or 32 routes to CSU management and operation to enable new routing and frequency possibilities
 - Consider employing students as bus drivers with CDL attainment assistance to further

- support rider demand for greater frequency and mitigate Transfort driver shortage
- O Launch a "Tap Your RamCard!" challenge for a specific period each Fall to continue collecting valuable student/employee ridership data that was lost when Transfort ceased fare collection in 2020
 - O Identify and advertise a prize as an incentive

Some of CSU's peers have found great success by thinking creatively about transit operations and staffing. The University of Michigan has a multi-route campus bus system with a driver team made up of current students. Davis, California's entire fixed-route bus system, including multiple campus-centric routes, are staffed by students from the University of California, Davis. These systems maintain high-frequency routes to meet rider needs and have exemplary driver safety statistics.

CSU already has a history of engaging with student drivers through its long-running RamRide program as well as Safe Ride and Courtesy Shuttle programs. See Figure 51 in **Appendix D, Mode: Transit** for an alternative routes analysis for the Around the Horn circulator shuttle at Main Campus.

Technology

Transfort should utilize the open GTFS (general transit feed specification) Realtime standard to make real-time bus locations, arrival times, and disruptions available for use in third-party transit apps so that users, especially technology-oriented students, can have more choices for bus route planning and location tracking. A full list of these third-party apps should be provided on both the Transfort and PTS websites so users can make informed transit planning decisions accordingly. Currently, only the Transfort web app provides GTFS services, but it does not also offer modern trip planning functionality.



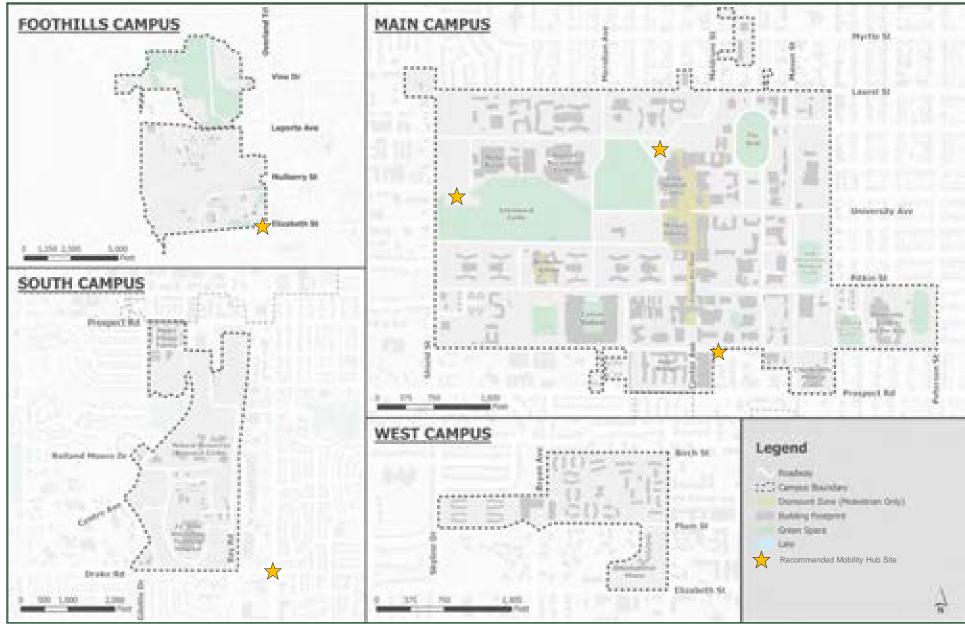


Figure 32: Recommended Mobility Hub Sites



Equity & Access

As a federally-funded municipal transit agency, Transfort and its services are compliant with all Americans with Disabilities Act (ADA) statutes. The Transfort website has broad language translation and text-to-speech functionality and buses have standard wheelchair accessibility.

CSU, Transfort, and the City of Fort Collins should continually assess bus stops to ensure they have adequate paved surfaces for boarding and deboarding buses safely without assistance. More bus shelters at strategic locations on campus should be included in funding considerations.

Looking ahead to further program improvement, PTS should consider accepting temporary disabilities as a qualification for Courtesy Shuttle access to better align with public paratransit services that accept riders with ADA-defined temporary disabilities as a general best practice.

Transit Key Takeaways

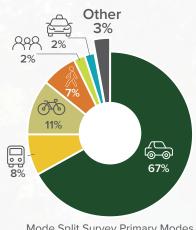
- O Consider alternative/expanded Around the Horn route to better serve UCA, Main Campus connections, and remote parking lots
- O Collaborate with Transfort to find ways to restore bus frequency, which was a key concern raised in stakeholder feedback
 - Consider shifting Around the Horn, Gold, and/or 32 routes to CSU management and operation to enable new routing and frequency possibilities
 - O Consider employing students as bus drivers with CDL attainment assistance, which is a successful model used at some peer universities
- O Advocate for real-time Transfort bus location info availability for thirdparty transit apps so that riders have more choices for trip planning
- O Prioritize multimodal mobility hubs and bus shelters as funding becomes available



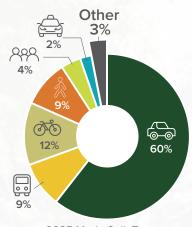


Mode: Micromobility

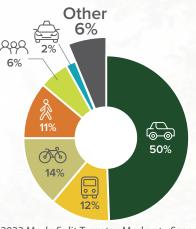
Manual and electric scooters and bikes have emerged in the past decade as a popular and efficient transportation mode and first-/last-mile connector. Spin, a national micromobility service, manages 450 dockless e-bikes and e-scooters spread across the Main Campus. These devices are new to City and university authorities who must balance embracing their utility with organizing them safely and conveniently within complex campus streetscapes.



Mode Split Survey Primary Modes



2025 Mode Split Targets



2033 Mode Split Targets - Moderate Scenario

	LEGEND													
					Ob	jective		Ca	mpus	s Cont	ext			
	DRIVING RIDESHARE FLEET BIKING WALKING TRANSIT MICROMOBILITY CARPOCO INFRASTRUCTURE & CONNECTIVITY STRATEGIES POLICIES, PROGRAMS & INITIAL	CARSHARE ATIVES STRATEGY	nce Mode		note Access ordability	ue Vision /Safety	teduce ransportation carbon missions		4		hills	Implementation Horizon	nated Cost	
	Strategy	Mode(s)		Baland Split	Pron & Aff	Purs Zero	Reduc Trans Carbo Emiss	Main	South	West	Foothills	Impl Hori;	Estimate	
0	Implement Mobility Hubs		⊋	/	✓	/	✓	•	•		•	000	\$\$\$	
\bigcirc	Improve and expand intersection + mid-block crosswalks	₸ፙ₺₽₺		✓	✓	✓	✓	•	•		•	() ()	\$\$	
\bigcirc	Pursue proposed complete streets redesigns	<i>ૹ</i> ૽૾૾ૣ૽ <i>ૻ</i> ૾		/	✓	/	✓	•	•	•	•	() ()	\$\$\$	
0	Install signage and infrastructure to separate ped/bike in problem areas	ૐ Å₽₺		✓	✓	✓	✓	•	•			00	\$\$\$	
0	Increase connected + protected bike network	₹		/	✓	/	✓	•	•	•	•	() ()	\$\$	
\bigcirc	Improve bike lane snow removal	<i>ॐ</i> ₽		/	✓	✓	✓	•	•			() ()	\$\$	
\bigcirc	Add physical/digital drop zones for Spin devices	ॐ ₽₺		/	/		✓	•				()	\$	
	Offer e-device safety and on-campus storage education	탕		/	/		/	•	•			()	\$	



CSU has partnered with several micromobility providers since 2020 as the technological viability and public interest in these programs has grown. The Pace bikeshare pilot program went out of business in 2020 in response to COVID-19 lockdown measures. Then, Bird ended a yearlong e-scooter pilot in April 2021. Bird provided public data from this pilot program that shows valuable insights about rider habits. Many providers have been open and active in sharing ridership data with local governments and the public, an encouraging trend for this oftencompetitive industry.

The current Spin micromobility pilot program was launched in July 2021 to provide a managed e-bike and e-scooter system throughout CSU and the City of Fort Collins.

Usage peaked in Fall 2021 when promotion of the new program was at its highest. Riders tend to favor scooters over bikes, partially due to the greater prevalence of the scooters. E-scooters are cheaper to maintain than e-bikes, so they are preferred by most micromobility companies.

Additional Spin program data can be found in Appendix D, Mode: Micromobility.

In accordance with the pilot program contract, Spin maintains and distributes the following inventory of dockless e-scooters and e-bikes:

Spin Device	CSU Campus Inventory	Fort Collins Inventory									
E-scooter	250	250									
E-bike	200	200									
Subtotal	450	450									
Total	900										

Table 9: Spin Device Inventory

Since its inception, the Spin program has facilitated more than 185,000 e-scooter and e-bike trips starting or ending on the CSU campus.

There is also a growing market for personal electric-assisted scooters and bikes appealing to various campus commuters, especially those living close to campus like students.





Micromobility Challenges

- O Campus resident students do not have clear options to charge and store their e-devices; charging infrastructure does not exist in outdoor bike rack areas, and meanwhile e-devices are not permitted inside academic buildings or residence halls
- O Common lithium-ion batteries function best at room temperature and can be hazardous at extreme temperatures, but appropriate and safe indoor building space for these devices does not currently exist on campus and would be expensive to construct
- O The distribution of Spin devices can be inconsistent throughout the day, so users may not be able to count on them when they want/need them
- O Safe use of e-devices in accordance with local street laws is an ongoing educational effort that causes confusion
 - O Spin devices should be parked at bike racks on CSU campus but may be parked anywhere on sidewalks and in designated locations on city streets out of pedestrian and vehicle rights of way throughout the rest of Fort Collins
- O There is a lack of appropriate mobility hub-style locations to transfer between e-devices and other modes

Micromobility Strategies

Infrastructure & Connectivity

Spin

O Create more drop zones highlighted in-app and with pavement paint to encourage distribution of e-devices in specific areas and to provide organization that better distinguishes between rentable Spin e-devices and personal bikes and scooters

Personal E-devices

Personal battery-assisted bikes, scooters, skateboards, and the like are growing in popularity, especially amongst the student-aged population. However, on-campus residents face challenges storing and charging their devices because e-devices, which are potential fire hazards and can damage building facilities during transport, are not allowed in CSU residence halls. There are no clearly appropriate storage locations in residence hall areas for these devices.

CSU must consider the pros and cons of offering dedicated e-device storage and charging facilities. These factors should be evaluated on an ongoing basis as battery technology and e-device ownership trends change.

Housing & Dining Services and university leadership should follow e-device storage/charging facility norms and best practices as they become established, although the associated costs would be high.

🥟 Policies, Programs, & Initiatives

Vision Zero & Safety

PTS, CSU PD, and partners must maintain a sustained marketing and education campaign to ensure new and returning students understand and adhere to campus and city street ordinances and safety best practices when riding personal and shared e-devices.

Personal E-devices

Rentable e-devices like the Spin devices around Fort Collins enable multimodal transportation habits amongst students, employees, and visitors to CSU, but their novelty in the market necessitates thoughtful policies and programs to make them successful and to create organization within the network.

The University is well-positioned to provide guidance to incoming and current students about e-device buying guides and best practices, such as highlighting brands with known reliability ratings and/or otherwise encourage buyers to "shop smart."

There is also an opportunity to engage the Fort Collins Fire Department in e-device education and outreach efforts specific to building charging issues. News sources like SOURCE should also be partners in e-device safety communications.

်[္] Technology

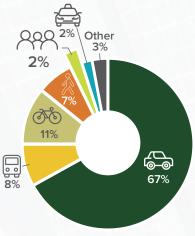
As commuter management platforms expand to include student users, CSU can explore incorporating a Spin device map and rental flow to the mobile app.

Micromobility Key Takeaways

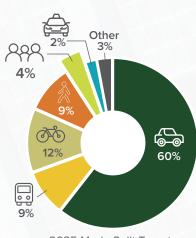
- O Work with Spin to establish defined Spin device parking zones on campus for improved organization and to keep sidewalks clear
- O Consider Spin credits or incentives for incoming students and/or campus residents with ATFAB funds
- O Expand education and awareness of personal e-device building/ charging policies for safety
- Follow e-device storage/charging facility norms and best practices as they become established, although costs will be high

Mode: Carpool & Vanpool

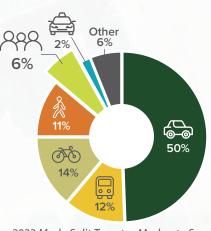
Organized carpool/vanpool services and participation are very low at CSU. However, with adequate support and promotion, carpool and vanpool programs present a promising, cost-effective option for employees with regular schedules.



Mode Split Survey Primary Modes



2025 Mode Split Targets



2033 Mode Split Targets - Moderate Scenario

Strategies

LEGEND Objective **Campus Context** POLICIES, PROGRAMS & INITIATIVES STRATEGY INFRASTRUCTURE & CONNECTIVITY STRATEGIES Foothills Strategy Mode(s) **₹** Create employee commuter management platform \$\$ 282 \$\$ Establish and promote carpool/vanpool matching program



According to current rider and driver data from VanGo, the official vanpooling program operating in the NFRMPO area, there are no regularly scheduled trips originating or ending at the CSU campus. Additionally, there has been no significant use of VanGo (<5 users) in the CSU user group since at least 2014, showing it is not just a COVID-19-era drop in shared ride interest. CSU previously hosted an internal carpool/vanpool matching program for students and employees in the VanGo area and sold specialized vanpool permits, but it is no longer active.

Similarly, current data from the Denver Regional Council of Governments' Way To Go vanpool program shows there are no users within the CSU network.

There is a clear opportunity to expand the reach of vanpooling as a viable, affordable, and attractive option amongst the CSU community, particularly for staff with predictable weekly schedules. Easy-to-use rider matching and payment tools can remove barriers to trying out carpooling as a primary commute mode. Financial incentives can further nudge employees to try this option.

Some stakeholder outreach participants expressed skepticism that they would be able to rely on a formal carpooling arrangement on a regular basis because of last-minute plans, family care, and other daily activities that require flexibility.



North Front Range MPO VanGo Vanpool Vehicle

Informal carpooling arrangements between acquainted students and/or employees are a relatively prevalent mode choice (2% of total commuters, according to the 2023 Mode Split Survey). Although these arrangements should be highly encouraged for their transportation network efficiency and cost savings benefits, they are fundamentally different from formal, organized carpool/vanpool programs, which are often arranged amongst strangers with similar home addresses and schedules.

Carpool & Vanpool Challenges

- O Awareness of programs and structures to match carpoolers and vanpoolers with one another is low
- O No in-house CSU option exists for potentially interested carpool/vanpool users who trust the CSU brand
- O Employees are unsure of how to navigate unforeseen events that could disrupt their planned carpooling arrangements, which causes trepidation

Carpool & Vanpool Strategies

() Infrastructure & Connectivity

O Consider restricting strategically located, convenient parking spaces for "Vanpool/Carpool Only" use

Policies, Programs, & Initiatives

- Offer internal carpool- and vanpool-matching events and/or a user-friendly digital platform to assist interested users in finding fellow riders who share common routes, work schedules, and other common interests
 - Digital platform ideally should integrate with the Commuter Management Platform
- O Carpool/vanpool matching platform should be prominently marketed to new and existing employees
- O CSU/PTS should spread awareness of its guaranteed ride home option for vanpool/carpool users whose group ride is interrupted by driver emergencies and similar circumstances



ි ී Technology

CSU and PTS should review software platforms that can manage commuter vanpool services and allow registered users to self-manage account details such as: manage their own profiles and conduct account activities like:

- O Payment
- O Route matching and scheduling
- O Personal information updates

Many modern Commuter Management Platforms have options to manage this carpool/vanpool service as both a program administrator and a user.

Equity & Access

Carpool/vanpool arrangements are already cost-competitive by virtue of the shared nature of this mode. Participants typically share the cost of gas, maintenance, and insurance. Nevertheless, municipal and Metropolitan Planning Organization (MPO) subsidies and other grant programs exist to help bring down the cost of carpool and vanpool services for individual participants even further. CSU should seek out these opportunities as they become available.

To ensure the CSU vanpool program is inclusive and accessible, CSU should actively seek out vanpool vehicles that are equipped with lifts for riders with mobility challenges.

Carpool/Vanpool Key Takeaways



- O Consider restricting strategically located, convenient parking spaces for "Vanpool/Carpool Only" use
- Offer internal carpool- and vanpool-matching events and/or a userfriendly digital platform to assist interested users in finding fellow riders who share common routes, work schedules, and other common interests
 - Digital platform ideally should integrate with the Commuter Management Platform
- O Carpool/vanpool matching platform should be prominently marketed to new and existing employees
- O CSU/PTS should work with taxi services, Uber, and Lyft to offer a guaranteed ride home option for vanpool/carpool users whose group ride is interrupted by driver emergencies or similar circumstances



Mode: Rideshare

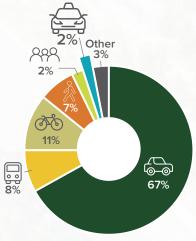
Uber, Lyft, RamRide, RamRide Secure, and RamRide X Lyft operate on campus to provide on-demand rides, expanding multimodal transportation opportunities for students and employees. Dedicated pickup/dropoff areas have been established in key areas, with the opportunity to establish even more rideshare and/ or dual rideshare/delivery spaces where needed.

Other

₫®

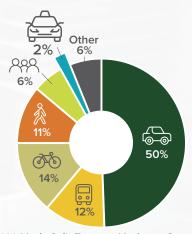
12%

60%



Mode Split Survey Primary Modes

2025 Mode Split Targets



2033 Mode Split Targets - Moderate Scenario

Ž.	LEGEND											
2	9 0		Objective					mpus	Conte	ext		8
Ē		2 🖨	Mode	Access bility	sion Y	tion					tation	Cost
	DRIVING RIDESHARE FLEET BIKING WALKING TRANSIT MICROMOBILITY CARPOO INFRASTRUCTURE & CONNECTIVITY STRATEGIES POLICIES, PROGRAMS & INITIA	OL CARSHARE IATIVES STRATEGY	alance M plit	omote A Affordak	sue Vis ɔ/Safet	uce nsporta bon ssions	_	th	ta	Foothills	Implementation Horizon	Estimated
	Strategy	Mode(s)	Bala Spli	Pro & Af	Purs	Red Trar Carl Emi	Main	South	West	Foo	Imp Hor	Esti
0	D Implement Mobility Hubs		/	✓	✓	/	•	•		•	000	\$\$\$
0	Add on-street pullouts		✓	✓	✓		•	•			() ()	\$\$\$
0	D Install dynamic loading signage system		/	✓	/		•				()	\$
	Prioritize rideshare curbside spaces over pull in/out spaces		/	✓	✓	✓	•				()	\$



Rideshare services such as Uber, Lyft (known in the industry as TNCs, or transportation network companies) and CSU's in-house RamRide program are a popular secondary transportation option at CSU and around Fort Collins, especially amongst students and visitors/tourists for leisure purposes.

While TNCs share limited ridership data, the most frequently used pickup and dropoff locations are provided to CSU officials to strategically place dedicated pickup signage. These locations across campus are shown in the map in Appendix D, Mode: Rideshare.

Personal dropoff ("kiss and ride") activity, which shares infrastructure needs with rideshare, is included in this section. Drop-off zones are shown in Figure 33.

RamRide x Lyft & RamRide Secure

RamRide began in 2003 as a fleet of volunteer student drivers offering safe, free rides home on weekend nights. Today, the volunteer model continues, with service available on Fridays and Saturdays 10pm-3am. Drivers use fleet vehicles maintained by the Fleet Services team.

On Thursdays, rides are provided through RamRide x Lyft. These rides are booked through the Lyft app and are eligible for more prominent physical signage generated by the RamRide app.

RamRide Secure is another partnership between RamRide and Lyft. Students with financial need can receive ten (10) \$12 Lyft credits. Subsidies are funded through ASCSU fees.



Note: Curbside spaces are highlighted in yellow. Spaces are restricted to rideshare 24/7 unless otherwise stated.

Figure 33: Main Campus Rideshare Pickup/Dropoff Zones

Rideshare Challenges

- O Stakeholders expressed interest in the standard RamRide service resuming on Thursdays
- O Existing curb space for safe rideshare and kiss and ride activity is limited

Rideshare Strategies

() Infrastructure & Connectivity

Curb uses for ridesharing, drop-offs, loading/unloading, and other time-limited uses like deliveries can expand through clear, dynamic signage and targeted technology. These tools will improve curb space productivity while ensuring safe interaction between vehicles and other modes.

- O Improve rideshare zone identification and wayfinding through coordination with TNCs
 - O More—and more prominent—physical signage
- O Expand rideshare curbside spaces, which encourage circulation and turnover compared to designated 'back in, back out' parking spaces and are safer and easier for riders and drivers to locate with the appropriate signage
- O Identify areas for dynamic TNC/taxi and kiss and ride activity

The PTS curb assessment completed in Fall 2022 identified key areas with potential for vehicle pullouts and other infrastructure to facilitate on-street vehicle activity to assist deliveries, pickup/dropoff, and other curb uses. In particular, more on-street access is needed along streets such as Plum, Pitkin, and Hughes.



Some key recommended Kiss and Ride/TNC locations are shown in Figure 34 on the next page. Many of these locations woulld require reconfigurations of existing curbs, sidewalks, bike lanes, and other infrastructure to accommodate new pullouts.



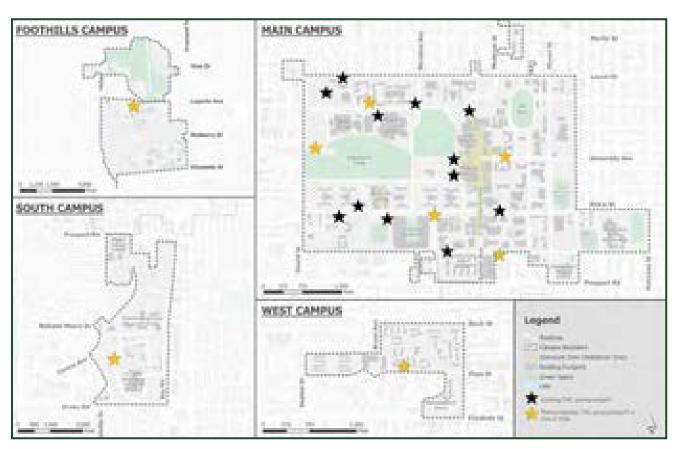


Figure 34: Existing + Recommended Kiss and Ride/TNC Locations

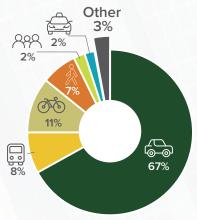
Rideshare Key Takeaways

- O Improve rideshare zone identification and wayfinding through coordination with TNCs
 - More—and more prominent—physical signage
- O Expand rideshare curbside spaces, which encourage circulation and turnover compared to designated 'back in, back out' parking spaces and are safer and easier for riders and drivers to locate with the appropriate signage
- O Identify new areas for dynamic TNC/taxi and kiss and ride activity
 - O CSU Transit Center
 - O Lake Street/Center Ave. Mall
 - Other areas as identified

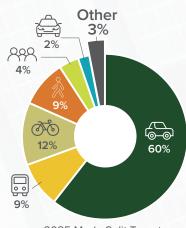


Mode: Carshare

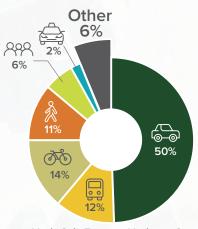
Zipcar's 5 locations on the Main and West Campus provide another tool in multi-modal travelers' belts. Good Zipcar service is defined by clean and useful vehicles, a vehicle fleet that is right-sized for proximate demand, and robust local marketing to ensure the new user funnel remains steady.



Mode Split Survey Primary Modes



2025 Mode Split Targets



2033 Mode Split Targets - Moderate Scenario

Ī		LEGEND			Ob	jective		Cá	ampus	s Cont	ext			ĺ
		DRIVING RIDESHARE FLEET BIKING WALKING TRANSIT MICROMOBILITY CARPOC	CARSHARE ATIVES STRATEGY	nce Mode	note Access fordability	ue Vision /Safety	uce sportation oon ssions	_	£		-oothills	ementation zon	stimated Cost	
		Strategy	Mode(s)	Balance Split	Pron & Af	Purs Zero	Redu Tran Cark Emis	Main	South	West	Foot	Impleme Horizon	Estir	
6	0	Implement Mobility Hubs		/	✓	✓	/	•	•		•	000	\$\$\$	Ī
		Explore Zipcar market potential at CTC, Foothills/South Campus, and new residences		/	/		/		•		•	()	\$	
		Increase Zipcar marketing and sign-up efforts/events		/	✓		/	•				0	\$\$	



The public carshare service on campus run by Zipcar has grown since its launch from 4 to 11 vehicles.

This service is not intended as primary commute mode to bring users to/from campus regularly. Rather, it facilitates a car-lite lifestyle amongst students, campus housing residents, and employees, lowering the demand for parking on campus compared to a scenario where each individual Zipcar user instead uses a resident or commuter parking permit instead. Users with occasional vehicle needs, such as for a grocery store run, can rent a Zipcar for one hour, unlock the vehicle with their phone, and then leave it for the next person to use when their trip is completed.

The current Zipcar vehicle inventory consists of 11 sedans and SUVs, some of which have all-wheel drive capabilities. The vehicles are spread across 5 locations on the west side of the Main Campus and within the West Campus student resident area. This program requires that all vehicles be returned to the same Zipcar-designated parking space/area at the end of each trip.

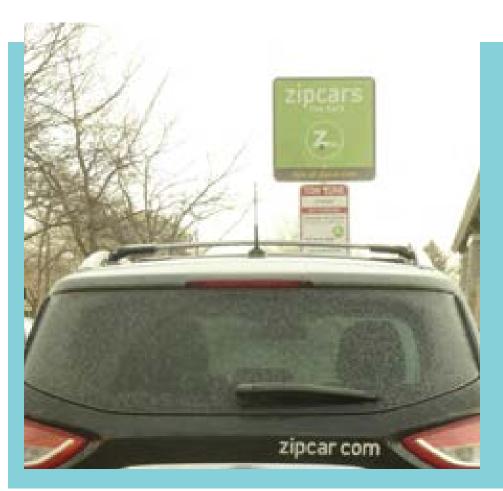


Figure 35: Existing Zipcar Campus Locations at Main/West Campus

User	Membership (Annual)	Hourly	Daily
Student/Faculty/ Staff	\$35¹	\$11.50	\$82.50
Alumni	\$45 ²	·	·

¹ Compared to \$90 for standard Zipcar members.

Table 10: Zipcar Student/Employee/Alumni Rates



² \$90 after first year.



Carshare Challenges

- O Incoming students and new employees may be unaware of Zipcar availability, leading them to plan for other transportation arrangements and form other habits
- O Those unfamiliar with carshare services may not know how carshare can factor into a multimodal lifestyle or contribute to monthly transportation budget savings
- O Stakeholders have expressed concerns that vehicles are unclean when they receive them
- O Vehicle availability and rental rates can fluctuate unpredictably; these dynamics are not directly within CSU's control



Carshare Strategies

Infrastructure & Connectivity

- O Monitor utilization rates and advocate for carshare space expansion in existing areas accordingly
- O Create a plan to include carshare spaces at new residential buildings at ratios aligned with the utilization per bedroom observed at existing carshare sites to ensure supply is right-sized and the process is streamlined
- O Explore potential for Zipcar spaces at South Campus and Foothills Campus, which would allow for errands and connections between campuses

🧷 Policies, Programs, & Initiatives

- O Increase marketing of Zipcar availability in new and prospective student materials
- O Engage with Zipcar to resume Zipcar marketing and sign-up kiosks at key events: CSU students/Rambassadors or PTS staff could co-host these events

Carshare Key Takeaways

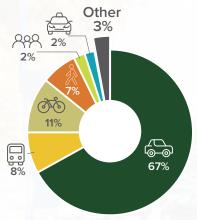


- O Monitor utilization rates and consider carshare space expansion in existing areas accordingly
- O Create a plan to include carshare spaces at new residential buildings at ratios aligned with the utilization per bedroom observed at existing carshare sites to ensure supply is right-sized and process is streamlined
- O Explore potential for Zipcar spaces at South Campus and Foothills Campus, which would allow for errands and connections between campuses
- O Increase marketing of Zipcar availability in new and prospective student materials
- O Engage with Zipcar to resume Zipcar marketing and sign-up kiosks at key events; CSU students/Rambassadors or PTS staff could co-host these events

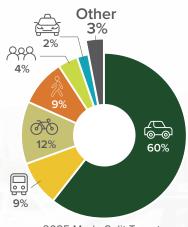


Mode: Fleet

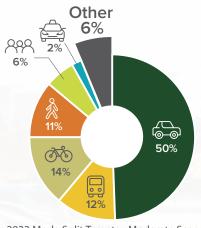
CSU's fleet of employee rental pool vehicles give staff access to appropriate vehicles for work purposes, freeing them to make commute decisions more independently. The location and check-in/check-out experience for this rental program heavily influences utilization.



Mode Split Survey Primary Modes



2025 Mode Split Targets



2033 Mode Split Targets - Moderate Scenario

Strategies

	LEGEND			Ob	jective		Ca	mpus	Cont	ext		
	DRIVING RIDESHARE FLEET BIKING WALKING TRANSIT MICROMOBILITY CAN INFRASTRUCTURE & CONNECTIVITY STRATEGIES POLICIES, PROGRAMS & IN	RPOOL CARSHARE NITIATIVES STRATEGY	ice Mode	ote Access ordability	safety	Reduce Transportation Carbon Emissions					Implementation Horizon	ated Cost
	Strategy	Mode(s)	Balance Split	Prom & Affc	Pursu Zero/	Reduc Trans Carbo Emiss	Main	South	West	Foothills	Imple Horiz	Estimated
0	Decentralize motor rental pool		/	✓		✓	•	•		•	()	\$\$
\otimes	Add strategic EV charging locations			✓		✓	•	•	•	•	() ()	\$\$
	Update motor pool rental process to digital		/	✓		✓	•	•		•	() ()	\$\$\$
	Right-size fleet vehicle supply and types					✓	•	•	•	•	000	\$
	Implement fleet management software					✓	•	•	•	•	() ()	\$\$
	Transition fleet to EVs as applicable					✓	•	•	•	•	$\bigcirc\bigcirc\bigcirc\bigcirc$	\$\$\$



Rental Motor Pool

CSU maintains a fleet of 74 light- and heavy-duty vehicles that can be rented by the day by any department upon approval. This rental option is an alternative to personal vehicle use for University business purposes and allows staff and faculty to use specialized vehicles for certain tasks, such as trucks and vans. Like Zipcar, the CSU rental pool offers users access to a shared, specialized vehicle as needed, which opens the door for employees who travel often on University business to consider alternative transportation modes for their commute to campus.

The University's rental pool vehicles are stored and maintained at the motor pool lot at 201 W. Pitkin, a prime location at the Main Campus. Renters must submit a manual form to PTS with departmental and other booking information in advance. The minimum age to check out the vehicles is 18, allowing students and younger employees to take advantage of this transportation resource.

Charter Buses

Unleaded	Hybrid	Electric	Total		
65	5	4	74		

Table 11: Rental Fleet Fuel Types

In addition, 8 charter buses that are available for departmental use are stored at the bus barn at 424 Cross Dr. at the South Campus. Renters follow the same form submission process with PTS to check out the buses.

These buses enable many transportation services such as SkiSU.



Table 12: Rental Fleet EPA Weight Class

Diesel	Heavy Duty (8,5001+ lb. GVWR)
8	8

Table 13: Charter Bus Full Type and EPA Weight Class

Critical & Departmental Fleets

PTS' Fleet Services team also maintains a current count of 326 critical fleet vehicles used by FM, HDS, CSUPD, and PTS, and hundreds more state, federal, and departmental vehicles of various types. These vehicles are stored all over campus and even in other states as needed. Local vehicles are maintained at the centralized fleet service facility at 201 W. Pitkin.

Fleet Challenges

- O Rental vehicles are in a centralized lot that is cumbersome to travel to for many employees who may otherwise be interested in using the service
- O The rental process is low-tech and manual; the checkout process is less seamless and convenient than Zipcars, for example

Fleet Strategies

Infrastructure & Connectivity

- O Transition to a decentralized rental pool dispersed throughout key Main Campus lots, see Figure 33
- O Consider suitable location for one additional maintenance facility in peripheral Main, South, or Foothills campus area to meet needs of rental vehicles as well as the 700+ critical and departmental fleet vehicles
- O Continue to right-size the vehicle fleets according to the 2019 Fleet Management Report provided by Mercury Associates, Inc.
 - Adjust for increased utilization rate resulting from improved motor pool rental process
- O Consider more EV vehicle adoption for appropriate vehicles as EV technologies mature
 - O Prioritize Level 2 EV chargers, which offer a balance between infrastructure cost and charging speed (can charge a typical vehicle overnight)
 - Motor pool fleet should primarily rely on public charging infrastructure in the parking lots where the dispersed fleet is located
- O Consider lighter-duty vehicles for certain needs. See Fig 36 below for examples of alternative vehicle options Some recommended locations for dispersed vehicles are shown in Figure 37 on page 77.



Figure 36: Light-Duty Vehicle EV Alternatives



NEW MAINTENANCE FACILITY

PTS and FM expressed a growing need to look at new sites for a fleet vehicle maintenance facility. The location of this potential facility will be based on many complex factors and University priorities, but the process should include best practices such as:

- O Referring to PTS and FM internal stakeholders to share expertise, institutional and local knowledge, and internal priorities for suitable locations
- O Placing the site in a relatively centralized location within the multi-campus system but avoiding the highest-value CSU land so that prime land can be preserved for core academic and residential purposes

Maintenance centralization is critical for achieving the economies of scale necessary to run a large fleet like CSU's. Departments should bring these considerations to the table during the ongoing Campus Master Plan process.

A new location on the periphery of campus, such as the border between Main and South Campus, could help the CSU fleet team optimize its operations while right-sizing its facility. Less fleet parking lot area would be needed as a result of relocating the motor pool rental vehicles to dispersed locations across the Main, South, and Foothills campuses, so the current fleet storage and maintenance facility at Facilities South on W Pitkin St and Libbie Coy Way may no longer but suitable for PTS' fleet operations needs in the future. This area has been identified as a prime academic or utilities redevelopment opportunity.

Facilities South currently has a gas tank that is centrally located and supports multiple customer/vehicle types. This is an important vehicle refueling station that should be maintained for continued departmental use.

Infrastructure & Connectivity

- O Launch mobile app for motor pool rentals, preferably one that can integrate with the proposed commuter management platform
- O Adopt modern fleet management software on the same platform as motor pool rentals

More specific software selection criteria can be found below and in Chapter 5: Technology Summary.

ိ**္** Technology

Renter interest and customer satisfaction is increasingly driven by convenience features such as mobile access. The CSU motor pool rental fleet check-out process is currently manual and cumbersome, which reduces its accessibility and appeal. PTS should move its rental check-out and check-in process to a mobile app with features that meet its internal vehicle management standards as well as the desires of its customers.

- O Mobile apps with in-vehicle hardware integrations will allow renters to easily locate vehicles in the dispersed parking lots
- O Key pickup/dropoff kiosks for these purposes typically cost \$10,000-\$20,000 but allow for after-hours, convenient check-in and check-out.
- O In-vehicle key systems like those in Zipcars allow for a more asset-light approach to these rentals, however.
- O Vehicle condition reports can be completed easily and accurately by using a smartphone camera.

Likewise, the fleets are currently not managed with modern fleet management and maintenance software. PTS should adopt this software in order to track vehicle usage, maintenance, depreciation, and turnover. Technology best practices and crucial features will be addressed in the Technology Summary section.

Fleet Key Takeaways

- O Transition to a decentralized rental pool dispersed throughout key Main Campus lots
- O Consider suitable location for one additional maintenance facility in peripheral Main, South, or Foothills campus area to meet needs of rental vehicles as well as the 700+ critical and departmental fleet vehicles
- O Continue to right-size the vehicle fleets according to the 2019 Fleet Management Report provided by Mercury Associates, Inc.
 - Adjust for increased utilization rate resulting from improved motor pool rental process
- O Consider more EV vehicle adoption for appropriate vehicles as EV technologies mature
- O Launch mobile app for motor pool rentals
- O Adopt modern fleet management software





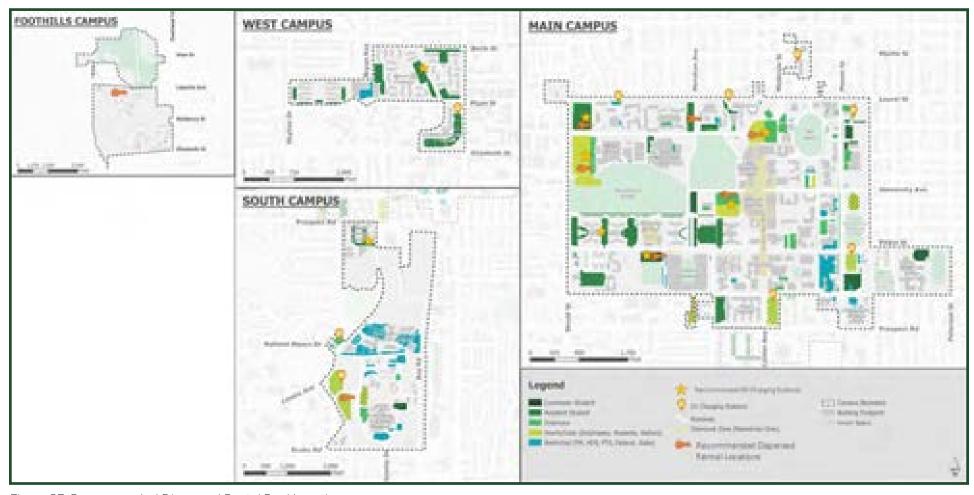


Figure 37: Recommended Dispersed Rental Pool Locations



Infrastructure & Connectivity Strategies Summary

LEGEND											
				jective		Ca	impus	Cont	ext		
DRIVING RIDESHARE FLEET BIKING WALKING TRANSIT MICROMOBILITY CA	RPOOL CARSHARE	Balance Mode Split	te Access rdability	Pursue Vision Zero/Safety	Reduce Transportation Carbon Emissions				s _{II}	Implementation Horizon	ited Cost
Strategy	Mode(s)	Baland Split	Promote A & Afforda	Pursue Zero/S	Reduce Transporta Carbon Emissions	Main	South	West	Foothills	Impleme Horizon	Estimated
Implement Mobility Hubs		/	✓	✓	✓	•	•		•	000	\$\$\$
Improve and expand intersection + mid-block crosswalks	₽ ₩	/	✓	✓	✓	•	•		•	00	\$\$
Pursue proposed complete streets redesigns	<u>ૹ૽૽૾</u> ૾૾ [®] ૄ૽ૺ	/	✓	✓	✓	•	•	•	•	00	\$\$\$
Install signage and infrastructure to separate ped/bike in problem areas	<i>ૹ</i> ૾૽૾ૣ૾ 🛂	/	✓	✓	✓	•	•			00	\$\$\$
Implement West Elizabeth BRT	<i>₫</i> ₺ 🖟 🛱	/	✓		✓	•		•	•	00	\$\$\$
Increase connected + protected bike network	<i>₫</i> ₺ 🕏	/	✓	✓	✓	•	•	•	•	00	\$\$
Improve bike lane snow removal	<i>₫</i> ₺ 🕏 🕏	/	✓	✓	✓	•	•			00	\$\$
Expand Foothills sidewalk and bike trail network	₫	/	✓	✓	✓				•	00	\$\$\$
Decentralize motor rental pool		/	✓		✓	•	•		•	0	\$\$
Encourage affordable housing in walking distance	₫	/	✓		✓	•	•	•		000	\$\$\$
Add on-street pullouts		/	✓	✓		•	•			00	\$\$\$
Install dynamic loading signage system		/	✓	✓		•				0	\$
Add physical/digital drop zones for Spin devices	<i>®</i> 5 € 6	/	✓		✓	•				0	\$
Add strategic EV charging locations			✓		✓	•	•	•	•	00	\$\$
Create more parking permit types/stalls for carpoolers and early/late workers	€ -		✓			•	•	•	•	()	\$
Prioritize rideshare curbside spaces over pull in/out spaces		/	✓	<u> </u>	✓	•				0	\$
Expand Around the Horn (Frequency, # of routes, ETC)		/	✓	✓	✓	•				00	\$\$\$
Add "carpool/vanpool" parking spaces in preferred locations	APA	/	✓		✓	•	•		•	0	\$
Add Around the Horn service to UCA		/	✓		✓	•				00	\$\$
Transition vehicle parking supply to garages		/	✓			•	•			000	\$\$\$
Lower parking ratios to raise parking utilization			✓			•	•			000	\$

Table 14: Infrastructure & Connectivity Strategies Summary



Policies, Programs & Initiatives Strategy Summary

LEGEND			Ob	jective		Ca	ampu	s Cont	ext		
DRIVING RIDESHARE FLEET BIKING WALKING TRANSIT MICROMOBILITY CA	RPOOL CARSHARE	Mode .	Promote Access & Affordability	Vision ifety	ortation ns				s	Implementation Horizon	ed Cost
Strategy	Mode(s)	Balance Mode Split	Promot & Afford	Pursue Vision Zero/Safety	Reduce Transporta Carbon Emissions	Main	South	West	Foothills	Implem	Estimated
Create employee commuter management platform		/	/		✓	•	•		•	()	\$\$
Expand bike route planning options and outreach	₫ ₺	/	✓	✓	✓	•	•	•	•	(U)	\$\$
Expand first- and third-party transit app functionality			✓		✓	•	•	•	•	(U)	\$
Run "Tap Your RamCard" challenge on buses during Fall semester			✓		✓	•	•	•	•	(U)	\$
Explore student Transfort driver pipeline program		/	✓		✓	•	•	•	•	00	\$\$
Increase bus frequency		/ /	✓		✓	•	•	•	•	00	\$\$\$
Establish and promote carpool/vanpool matching program	292	/	✓		✓	•	•	•	•	U	\$\$
Update motor pool rental process to digital		/	✓		✓	•	•		•	00	\$\$\$
Offer e-device safety and on-campus storage education	5	/	✓		✓	•	•			U	\$
Explore Zipcar market potential at CTC, Foothills/South Campus, and new residences		/	✓		✓		•		•	0	\$
Increase Zipcar marketing and sign-up efforts/events		/	✓		✓	•				0	\$\$
Promote bike registration and lock education to deter bike theft	<i>ক</i> ণ্ড	/	✓			•	•	•	•	0	\$
Right-size fleet vehicle supply and types	<u>_</u>				✓	•	•	•	•	000	\$
Implement fleet management software	[-3				✓	•	•	•	•	00	\$\$
Transition fleet to EVs as applicable					✓	•	•	•	•	000	\$\$\$
Add accessible classroom layer to Interactive Campus Map	Ŕ		✓			•	•		•	()	\$

Table 15: Policies, Programs & Initiatives Strategy Summary





Physical Accessibility for People with Disabilities

CSU adopted a comprehensive "Inclusive Physical & Virtual Campus" policy in 2017 that formally establishes the removal of barriers to accessing campus as essential to the core educational mission of the University. Departments like PTS have incorporated these policies and standards into their service delivery.

PTS recently launched its own paratransit service, the Courtesy Shuttle, which is available for students and employees with documented permanent disabilities in accordance with the ADA. A supplement to Transfort's Dial-A-Ride service, the Courtesy Shuttle is an excellent addition to CSU's transportation options that leverages university funding to provide timely accessible rides to and from campus (including Main, South, West, and Foothills).

CSU maintains an interactive accessibility map that displays ADA-accessible parking spaces, entrances with automated door openers, and preferred pathways but does not maintain a list of accessible classrooms. Students must determine the level of accessibility of an assigned classroom independently and then inquire to the Student Disability Center with concerns, at which point the course can be permanently relocated to an accessible classroom.

The Transfort website and RideTransfort mobile app provide accessibility features for students, employees, and visitors traveling by bus, like a full-text layout that allows the use of accessibility features for users with visual impairments.

Additionally, the website itself, with its built-in trip planning tool, allows users to Google Translate text into dozens of languages. The website also directs users to try Google Maps transit mode (available as a web app or mobile app) for an alternate trip planning experience. Translation into many different languages is available within Google Maps. Many companies and services rely on the deep resources and reach of Google apps to bring physical accessibility and foreign language capabilities to their offerings.

There are 294 ADA stalls across the Main, South, and West campuses out of 13,523 total spaces. The 2010 Americans with Disabilities Act requires 20 ADA-accessible stalls plus 1 stall for each 100 spaces over 1,000 total parking spaces. This requirement amounts to 146 ADA-accessible stalls for the 13,523 total stalls at CSU. The ADA stall supply is therefore significantly greater than the federal guideline minimum of 146 spaces. Nevertheless, ADA stall availability serving new building additions added in the coming years should remain a priority, as should the even spread of van-accessible stalls.

Curb Access

CSU has extensive curb assets and is early in the process of reimaging the benefits these street elements can have for overall campus access. Much of the current curb network on the main campus is dedicated to vehicle parking, vehicle right of way, or bike right of way. The current designations do not always meet the access needs of

other activities like deliveries and passenger pickup/dropoff.

Over the next decade, CSU, and its Main Campus in particular, has an opportunity to allocate more of this space to other pressing needs. The 2022 PTS/HDS curb assessment identified many opportunities to source these new elements, which align with CSU's longstanding emphasis on encouraging multimodal access and porousness between the on-campus vs. off-campus environments. New curb cuts are recommended in strategic locations to add necessary curb access adjacent to infrastructure such as bike lanes.

In a scenario where Around the Horn service is expanded, additional bus stops would also be necessary. Any curb use allocations should consider this medium to long-term possibility.

Incursions into bike lanes by motor vehicles parked for deliveries and drop-offs are frequent, especially on Main Campus.

Facilities Management Sites

In addition, many areas of the campuses, especially pedestrianized areas of Main Campus, have poor accessibility for Facilities Management and Central Receiving staff and their specialized work vehicles. Lighting coverage is often minimal in these non-public facing areas, which makes them less accessible to staff at night. A campus walk that identifies opportunities for small "FM/Central Receiving Only"-labeled stalls with special painting sized for light-duty vehicles in new areas to address these needs is highly recommended. If these identified locations are poorly lit, new lighting may be necessary.



CSU Courtesy Shuttle with rider



EQUITY & ACCESS SUMMARY OF STRATEGIES

- O Create inventory of wheelchair-accessible classrooms and add this layer to the Interactive Map.
- O Consider blind wayfinding features in overall wayfinding improvements
- O Track the quantity and geographic spread of van-accessible vehicle parking stalls as a proportion of overall accessible parking stalls to ensure ADA compliance
- O Prioritize the Main + South Campus curb assessment completed in 2022 to monitor and prioritize the path of travel, safety, maintenance, repair, and ADA accessibility of the sidewalk network within CSU's infrastructure jurisdiction
 - Coordinate and communicate this assessment and future construction pipeline with City of Fort Collins to ensure consistency and unity between on-campus and off-campus sidewalk quality
 - Continue curb assessments to monitor aging infrastructure at regular intervals, such as biannually
 - Add curb designations for deliveries and pickup/dropoff in select locations
- O Establish more dedicated Facilities Management work vehicle parking and remote area lighting across campuses

Figure 38: Potential New Main Campus Pullout Locations (From 2022 PTS/HDS Curb Assessment)



Potential curb cut locations with amenable street accesses and nearby activities are shown in Figure 38 on the left. Well-placed curb cuts can alleviate short-term parking pressures while also avoiding the need to focus on punitive measures to deter illegally parked vehicles, although right of way violation citations for valid offenses should not be ignored. CSU PD and partners like PTS and HDS can look to right of way violation information as an indicator of problem areas where more short-term vehicle access is needed. After all, streets such as Plum St have not been designed over the years to accommodate increased curb use

CSU's 2022 curb assessment identified potential curb redesigns in the areas shown in Figure 39 below.



Figure 39: Priority Pullout Street Redesigns (From 2022 PTS/HDS Curb Assessment)





PTS has steadily improved the usability of its parking payment offering in recent years, implementing mobile payment with Way To Park in 2016 and converting to ParkMobile in 2020 to stay ahead of the curve of customer expectations. Instead of using parking meters, which require ongoing service and maintenance, parkers can scan the nearest QR codes on simple branded signs in each lot to pay for parking through their mobile browser, without the need to download a separate mobile app. Additional functionality such as time limits, applicable lots, saved payment methods, etc. can be accessed by creating an account on the website or mobile app. ParkMobile is an excellent example of an asset-light transportation management solution since it relies primarily on the user's mobile device with which they are already familiar and comfortable.

PTS now utilizes an ALPR (automated license plate recognition) system with equipment distributed across the campus for parking permit enforcement. Sensor-mounted vehicles analyze individual vehicle adherence to permit rules throughout the daily enforcement period in sync with PTS' digital parking permit system. These increasingly popular digital systems greatly enhance the efficiency of parking adherence and enforcement on premises.

The Lake Street and South College parking garages have real-time occupancy counters that directly integrate with the public-facing parking garage occupancy dashboard on the PTS website, which help mitigate excess vehicle circulation and offers convenience to employees during their commutes. Future garages should also include this integration. PTS may also include instructions for adding mobile web bookmarks to the home screen of iOS and Android to assist users who are unfamiliar with this feature.

CSU's partnerships with tech-focused platforms like Zipcar, Spin, Uber, and Lyft are also examples of the University's successful push to actively incorporate modern technology solutions into its transportation network.

Building on these successful technology implementations, CSU organizations like PTS can adhere to key strategies in the coming years to glean the most benefits from new and emerging solutions.

Technology Key Strategies

- O Continue pursuing a blend of asset-light and customer-centric technology investments
- O Platforms and systems should provide convenience to customers and organizational efficiency to PTS and CSU

In addition, www.rent.colostate.edu has a price calculator feature that helps students estimate commute costs from multiple potential home addresses. This resource could be displayed on the student and employee landing pages of the PTS website and the suggested commuter management platform since transportation-related expenses are a crucial factor in living and commuting decision-making processes.

Recommendation	Modes Supported	Priority Features
Commuter Management Platform	్ తాం మీ గాగ లేసి	Carpool/vanpool matching, payment, management Parking permit payment/management Incentives (carpool, biking, walking, micromobility) Survey distribution Program statistics and real-time analysis Third-party app integrations Communications (events, initiatives, challenges) Real-time parking lot occupancy Gamification options
Automated Parking Guidance System		Data analysis and forecasting Automated sensor maintenance notifications Integration with wayfinding/occupancy signage Multi-space sensors (for cost efficiency) Automated license plate recognition integration
Motor Pool Rental Platform	MULTIMODAL ¹	Online/mobile app reservations App-based vehicle tracking and unlock for customers Automated mileage tracking and departmental billing Mobile condition reports (photos)
Fleet Vehicle Management Platform		Usage analytics and right-sizing insights Expenditure tracking (fuel, maintenance, life cycle, etc.) Asset tracking Safe driving telematics EV conversion insights
Bike Registration System	Þ	Owner-facing profiles Large, open database Student/employee deprecation on back-end Multi-departmental access/integration



Table 16: Technology Recommendations Priority Features

¹ The motor pool rental program is intended, among other benefits, to relieve employees of the need to use personal vehicles for work-related trips, and therefore enable employees to select from the full range of commute mode choices independent of workday interbuilding obligations.





Appendix A: Peer University Profiles

The following are transportation profiles of other large, public U.S. universities that are peers of CSU. Focus topics include TDM strategies, parking, and shared and active transportation alternatives. These institutions have innovative campus transportation departments that support a wide range of transportation choices. A common theme amongst these universities is a coordinated departmental effort to provide many attractive and affordable alternatives to single-occupancy vehicle commuting as a means of efficiently managing limited land, road, and parking capacity on and around their growing campuses. CSU faces these same challenges in balancing needs and resources.

Oregon State University Profile¹

Oregon State University - Corvallis, OR					
Student Pop. ¹	City Pop. ²				
23.111	59.864				

¹ 2022 undergraduate and graduate population as reported by 2021-2022 parking utilization study.

Oregon State's Corvallis campus is located immediately west of downtown and is well-integrated into the small community.

The SOV rate was 30% in 2019. Oregon State aims to cut that number by a third and reach and 20% SOV rate and 25% lower carbon emission rate by 2030 through targeted actions focused on:

- · Commuter programs and incentives
- Transit improvements
- Bike & pedestrian improvements

The Beaver Bus runs two simple, circular routes with areas of redundancy that can quickly move riders to their destinations around campus.

The following commute mode split data was reported by OSU in 2018:

2018 Mode Split						
Mode	Overall					
SOV	32%					
Walk	31%					
Bike	20%					
Transit/shuttle	7%					
Transit	8%					
Carpool/Vanpool	2%					
Telecommute	1%					

OSU saw a large jump in SOV usage as a result of the COVID-19 pandemic in 2020, reporting a 62% overall SOV rate in its December 2020 AASHE STARS sustainability report. However, the university foresees a return to pre-pandemic commute habits and has set its ambitious 20% overall SOV commute rate goal for year 2030 based on these pre-pandemic conditions.

The campus has the following resident parking inventory:

Resident Spaces	Residents	Ratio
1,317	5,000	0.26

The parking inventory is as follows:

Total Spaces	Students	Ratio
5,911	23,111	0.26

The Transportation Services department offers 3 annual commuter permit types with the following price scheme:

² U.S. Census Estimates 2021.

¹ Sources: OSU transportation services website, transportation services staff data, OSU 2030 Sustainable Transportation Strategy plan, AASHE STARS mode split report



	A Zones B Zones		
Annual Permits	(1, 2, 3)	(1, 2, 3)	C Zone
September 7 - October 31	\$639	\$432	\$135
1-Nov	\$586	\$396	\$124
1-Dec	\$533	\$360	\$113
1-Jan	\$480	\$324	\$102
1-Feb	\$427	\$288	\$91
1-Mar	\$374	\$252	\$80
1-Apr	\$321	\$216	\$69
1-May	\$268	\$180	\$58
1-Jun	\$215	\$144	\$47

This zonal parking system prices lots based on the centrality of their locations and allows permitted vehicles to "park down" and use assigned zones as well as any lowerpriced zones. There is no separation between employee and student spaces with the exception that student resident hall permits allow for exclusive use of resident hall lots to ensure availability.

University of California, Davis Profile²

University of California, Davis - Davis, CA		
Student Pop. ¹	City Pop. ²	
40,772	66,799	

²⁰²² undergraduate and graduate population as reported by Fall 2022 Budget and Institutional Analysis report.

Davis, California is compact and strongly oriented toward UC Davis-related activities a college town in every sense of the term. The city maintains 55 miles of bike trails and 50 miles of on-street bike lanes. The university heavily promotes sustainable transportation options. A biannual "Bike Auction" allows students to bid on thousands of abandoned and donated bikes that often sell for below-market rates. Transportation Services includes a commute cost calculator on its Commute Options webpage to help students and employees factor commute mode costs into their travel decisions.

UC Davis takes a unique approach to its transit offerings. The university transit service, Unitrans, is staffed by student bus drivers, mechanics, and dispatchers and is free to all undergraduates through student association fees. It is affiliated with the university and provides all local fixed-route bus service for the city while Davis Community Transit, affiliated with the City of Davis, provides on-demand paratransit services.

UCD reported commute mode split data to AASHE STARS just prior to the onset of the COVID-19 pandemic in 2020, which is shown below.

2020 Mode Split ²			
Overall			
43.3%			
37.4%			
4.9%			
13.1%			
Unreported			
0.5%			
Ji			

¹ 50% or more of regular hours.

Graduate students and employees can choose from the following affordable transit fare media:

Permit Pass	\$
Single Ride	\$ 1.25
Ten-Ride	\$ 7.50
Monthly	\$ 30.00
Quarterly	\$ 77.00
Annual	\$ 216.00

Seniors, riders with certified disabilities, local K-12 students, City employees, and Medicare recipients ride free by presenting the relevant ID.

² U.S. Census Estimates 2021.

The on-campus student resident population is high-- between 13,500 and 14,000.

² Remainder percentages are made up of zero-emission vehicle use (reported as 0.4% and 1.6% for students and employees, respectively), which is not indicated as part of or separate from SOV or carpool/vanpool use, so this mode has been omitted from this table.

² Sources: UCD transportation services website, transportation services staff-provided data.

Store !

Campus parking is limited. There are no student-specific lots except 3,063 spaces associated with non-freshman student housing.

Resident Spaces	Residents	Ratio (Range)
3,063	13,500-14,000	0.22-0.23

Freshmen in dorms and all other students must pay full-rate daily parking (\$15) through ParkMobile to park on campus.

UC Davis has the following ratio of parking spaces per student

Total Spaces	Students	Ratio
12,380	40,772	0.30

Employees have several monthly permit options:

Zone Type	\$		
A Zones	\$ 75.00		
C Zones	\$ 65.00		
L Zones	\$ 45.00		
CH Designated	\$ 200.00		
Electric Vehicle Charging	\$15.00 (in addition to base		
Spaces	permit cost)		

Boise State University Profile³

Boise State University - Boise, ID	
Student Pop. ¹ City Pop. ²	
26,162	237,446

¹ 2022 undergraduate and graduate population as reported by university enrollment profile.

Boise State has a relatively compact campus just south of downtown Boise. Students and employees can ride the ValleyRide bus system for free, and there is a two-route

campus circulator, the Bronco Bus, that also connects to downtown and provides frequent (8 minute) headways on weekdays. Biking resources such as parking, dedicated lanes and trails, and education are widely available and encouraged on campus and in the surrounding community.

The parking permit system consists of the following <u>annual</u> and daily options:

Zones/Area	Student	Employee	
Accessible	\$ 124	\$ 176	
East Commuter	\$ 124	\$ 176	
South Commuter	φ 12 4	φ 170	
West Commuter	\$ 148	\$ 204	
Central Reserve	N/A	\$ 472	
East Reserve	\$ 368	\$ 424	
South Reserve	φ 300	Φ 424	
West Reserve	\$ 380	\$ 436	
Brady Street Garage	\$ 388	\$ 444	
Lincoln Avenue Garage	\$ 344	\$ 408	
Resident Central	\$ 288	N/A	
Carpool	\$ 320	\$ 320	
DAILY - Garage, Reserve, or Commuter Lot	\$ 15	\$ 15	

BSU has the following ratio of parking spaces per student:

Total Spaces	Students	Ratio
7,845	26,162	0.30

University of Michigan Profile⁴

University of Michigan - Ann Arbor, MI		
Student Pop. ¹	City Pop. ²	
47,411	121,536	

¹ 2023 undergraduate and graduate population per university Office of the Registrar enrollment reports.

² U.S. Census Estimates 2021.

³ Sources: BSU transportation services website.

² U.S. Census Estimates 2021.

⁴ Sources: Permit and parking ratio data is from UMich transportation services website and directly from UMich transportation services staff. Mode split data is pulled from the AASHE STARS reporting system.





UMich's home of Ann Arbor is a quintessential college town with a unique urban form factor: there is a greenbelt around the city that encourages population density and supports the viability of alternative transportation options such as transit, biking, and walking.

Like other universities, UMich's commute mode split reporting process has been interrupted by the COVID-19 pandemic. Complete mode split information for all students and employees at the Ann Arbor campus could not be found. Below are the most recent, pre-pandemic (2018) mode split reports UMich submitted to AASHE STARS.

2018 Mode Split			
Mode	Students	Employees	Overall
SOV	12%	75%	44%
Walk/cycle/non-motor	55%	12%	34%
Vanpool/Carpool	2%	7%	5%
Transit	30%	6%	18%
Motorcycle/Motorized scooter/Moped	1%	0%	1%
Telecommute ¹	Unreported	Unreported	Unreported

¹ 50% or more of regular hours.

The University of Michigan's transportation services, including fleet, are organized within the Logistics, Transportation & Parking department. No single travel mode is given preference, but sustainable multimodal transportation options to suit student and employee needs are highly emphasized. The LTP department facilitates dozens of active carpool and vanpool groups, with pickup/dropoff locations and seat vacancy information displayed online. Participants can share the cost of the parking permit and gas. Divided permit costs can be deducted from payroll.

UMich operates 13 free campus-centric bus routes that are staffed by student bus drivers, similar to UC Davis. The Ann Arbor Area Transportation Authority also operates local and intercity bus service on 32 routes that are free to students and employees with ID.

Daily vehicle parking permits are only available for employees with the following pricing:

Daily Option Permits	Cost
Pre-paid park	\$5.50
Scratch off packages of 10	\$55.00

Annual permits are on a progressive pricing system that is costlier for employees. These prices are as follows:

Student Permits					
Permit Tier \$					
Storage	\$234				
Yellow/After Hours	\$237				
After Hours	\$70				
Orange	\$84				

Faculty and Staff Permits							
Permit Tier Annual Total University Contribution Subsidized C							
Gold	\$2,054	\$172	\$1,882				
Blue	\$938	\$172	\$766				
Yellow	\$339	\$172	\$167				
Orange	\$256	\$172	\$84				

¹ The university provides subsidies for tenure-track faculty.

Automated Vehicle Identification (AVI) devices are required for access to all parking structures in the central and medical campus areas. These devices are color-coded according to the lots they provide access to and can be obtained with a refundable \$20 security deposit.

With 47,659 undergraduate and graduate students and 23,118 parking spaces (excluding the School of Medicine spaces), the ratio of total parking spaces to undergraduate and graduate students (excluding School of Medicine students) is 0.49. Campus resident parking space information was unavailable.

Total Spaces	Students	Ratio	
23,118	47,411	0.49	



Appendix B: Inventory of Existing TDM Strategies (As of Spring 2022)

	Strategy Description		Target Commute Mode(s)	Target Audience(s)	Engagement Timeframe	
Profe	essional Development Institute and Housing and Dining Employee Education Sessions	Educational programming offered to employees annually each January. Topics can include anything from safe bicycling to teleworking to mapping out transit routes for individuals.	Multimodal	Employees	January	
	Employee Commute Options Road Shows	Presentations that typically take place during department meetings that introduce employees to all their commute options and provides them with high-level information regarding resources. Attendees are invited to schedule time for commute consultations or for additional sessions to be scheduled.	Multimodal	Employees	Year-Round	
	Orientation	Participate in orientation sessions for incoming students - specifically at resource fair to discuss transportation options on and to campus.	Multimodal	Students	Summer	
	Transfort Welcome Center	CSU provides a Transfort Welcome Center on the north side of the Lory Student Center. The Welcome Center serves as a place for people to get transportation-related information.	Multimodal	Students, Employees and Community Members	Year-Round	
	Bike to Work Day	CSU hosts one of the most successful breakfast stations in the city of Fort Collins to encourage bicycling as a form of transportation.	Bike	Students, Employees and Community Members	June	
	Winter Bike to Work Day	CSU hosts one of the most successful breakfast stations in the city of Fort Collins to encourage bicycling as a form of transportation year-round.	Bike	Students, Employees and Community Members	February	
	At the beginning of each academic year and also during Earth week CSU hosts Bike to Breakfast events where several on-campus partners work together to hand out free food to people rolling to campus to encourage sustainable transportation. Bike to Breakfast events are also used to educate participants who visit the stations about transportation-related lessons (e.g., safety, bike locking, etc.) Participate in Admissions events for prospective students with table at resource fair and breakout sessions to cover transportation options		Bike	Students and Employees	September and April	
			Multimodal	Students	Winter/Spring	
	Community Rides	Series of lunchtime bike rides for CSU employees on topics like "Tips and Tricks for Riding on Campus" and "Low Stress Routes to Old Town." Designed specifically for interested but concerned bicyclists, but all are welcome.	Bike, Scooter	Employees	Summer	
	Admissions and Move-in Bike Tours	Optional bike tours offered by the Admissions Office to prospective students considering CSU. Additional tours are offered by Parking and Transportation Services to new admitted students through "Ram Welcome" programming during move-in week. Provide students with a transportation-focused tour of campus on their personal bike or a free Spin vehicle, incorporate safety info. Distribute free helmets. Special sessions for international students and certain academic groups, as well as open sessions.	Bike, Scooter	Students	Summer/Fall	
	We Ride	Large festival-style event on the Saturday following move-in week (right before classes begin). Brings in community partners like Transfort, Bike Fort Collins, FC Moves, CSU Police, and The Spoke. Free helmets, bells, lights; teaches proper locking technique and other bike education and best practices.	Bike, Scooter	Students	Fall	
	Earth Week Events	Series of mode-specific events around Earth Week, including participation in campus Earth Day Fair, Bike to Breakfast, on-board transit survey, skateboard/longboard survey with incentives	Bike, Scooter, Board, Transit	Students and Employees	Spring	



Appendix B: Inventory of Existing TDM Strategies (As of Spring 2022) Continued

	Strategy	Description	Target Commute Mode(s)	Target Audience(s)	Engagement Timeframe
	Vanpool Formation Meetings	Service offered by Parking and Transportation Services where employees who live within select zip codes are invited to vanpool formation meetings. Currently vanpools would be run through VanGo.	Vanpool	Employees	Year-Round
	Rams Ride Right	Pop-up bike, scooter and skateboard safety campaign to "catch" people riding safely and lawfully and reward them with \$5 RamCash. Partner with CSUPD and funded by ATFAB.	Bike, Scooter, Board	Students and Employees	Fall/Spring
	Get Back On the Bike	Program for employees aimed at helping them overcome barriers to using bicycling as a form of transportation. Includes incentives and indepth education.	Bike	Employees	Year-Round
ote	CSU Moves	Online transportation education training for students; offered prior to and at the beginning of the school year, especially to first-year students. Covers transportation options, reasons to choose certain options, and safety.	Multimodal	Students	Summer/Fall
each - Remote	Rent.colostate.edu	Website resource that allows students to compare the time and monetary costs of various transportation options from different local addresses. Promoted around Housing Fair (early-Feb), when students are deciding on their housing for the next year.	Multimodal	Students	Winter
Outre	City of Fort Collins Partnership for Transportation Education	CSU partners with the City of Fort Collins to offer transportation- related education to all community members.	Multimodal	Students, Employees and Community Members	Year-Round
Education &	New Employee Emails and Commute Consultations	Emails are sent to every new or rehired employee that provides them with commuting-related resources and invites them to have a 1:1 conversation with an employee in the Transportation Department to help them optimize their commute options.	Multimodal	Employees	Year-Round
Ш	Incoming Student Mailer	Mailer to all incoming students prior to their arrival on campus to introduce transportation options and encourage them to take CSU Moves training.	Multimodal	Students	Summer/Winter
Evaluation	Annual Transportation Mode Split Survey	CSU conducts a survey with a statistically valid sample of students and employees each February to measure transportation behavior.	Multimodal	Students and Employees	February
Evalu	Eco-counters, Bike and Pedestrian Counts, Bike Rack utilization Counts	PTS uses stationary measurement devices and manual surveyors to track bike and pedestrian activity around the campuses.	Bike, Walk	Students and Employees	Year-Round, seasonal
	Campus Bicycle Advisory Committee	Interdisciplinary committee of CSU employees and students (along with a few local City and nonprofit partners) who weigh in on new infrastructure and programs related to biking at CSU. This group is responsible for submitting League of American Bicyclists application every four years. Meets monthly.	Bike	Students and Employees	Year-Round
ion	Vision Zero Task Force	CSU established a Vision Zero Task Force in 2019. The Task Force has since established committees that have identified needed projects, done on-site crash and intersection analysis, data synthesis, and conducted project prioritization based on safety concerns.	Multimodal	Students, Employees and Community Members	Year-Round
nizat	Monthly Utility Coordination Meeting	-	Multimodal	Students and Employees	Monthly
Organization	Transfort Monthly Coordination Meeting	-	Transit	Students, Employees and Community Members	Monthly
	West Elizabeth Design Group	-	Transit, Bike, Micromobility	Students, Employees and Community Members	Quarterly
	Annual City Department Capital Construction Coordination Meetings	-	Multimodal	Students, Employees and Community Members	Semi-Annually
	Quarterly Transportation Planning Meeting	-	Multimodal	Students and Employees	Quarterly
	Quarterly Planning Dept. Meeting		Multimodal	Students and Employees	Quarterly
	DARTAC (Dial-a-Ride) Meeting	-	Transit	Students and Employees	Bi-monthly



Appendix B: Inventory of Existing TDM Strategies (As of Spring 2022) Continued

	Strategy	Description	Target Commute Mode(s)	Target Audience(s)	Engagement Timeframe
	FLEX Meeting		Transit	Students and Employees	Bi-monthly
	Climate Action Plan and EV Roadmap Meeting	-	Driving/SOV	Students and Employees	Currently suspended
	City TDM Plan Technical Advisory Council	-	Multimodal	Students, Employees and Community Members	Project end 2023
	Northern Colorado Bicycle and Pedestrian Coalition / NFRMPO Technical Advisory Council	-	Multimodal	Students and Employees	Monthly
	NoCo Bike Ped Collaborative	CSU participates in the NoCo Bike Ped Collaborative, a regional group that meets several times a year to address and discuss funding for regional bicycle and pedestrian infrastructure.	Bike, Scooter, Board, Walk	Students, Employees and Community Members	Year-Round
	Flexible Parking Permit Options	CSU Transportation offers a variety of flexible parking permit options to support people who only need to travel to campus fewer than five days a week.	Driving/SOV, Multimodal	Students and Employees	Year-Round
	Free Transit Passes	CSU students and employees can ride unlimited local and regional transit at no additional cost using their RamCards.	Transit	Students and Employees	Year-Round
	Around the Horn	Around the Horn, a Main and South Campus circulator bus with CSU branding, runs every 20-30 minutes 7:00am-6:30pm in partnership with Transfort. The route is free and funded by Parking and Transportation Services.	Transit	Students, Employees and Community Members	Year-Round
	SkiSU	Bus to local ski resorts from CSU; 12 trips per season; \$23/student ticket, \$30/employee ticket (student tickets subsidized by ATFAB).	Transit	Students and Employees	Spring
	Telework Policy	Policy and training for employees and supervisors to establish and maintain teleworking setups that reduce the need to commute to campus daily.	Telecommute	Employees	Year-Round
	Development Review Checklist	Letter and checklist submitted to City development review team and developer with TDM recommendations specific to their property. First-year students are all trained to use bike, transit, etc. and will continue to use it in off-campus housing if those options are available.	Multimodal	Students	Year-Round
Program/Policy	Inclusive Design Standards and Geographic Maps	CSU has building standards that include inclusive amenities such as commuter showers, lactation rooms, reflection spaces, etc. in an effort to provide amenities so that people can avoid leaving campus (and thus taking another trip) for those needs.	Multimodal	Students and Employees	Year-Round
Pro	Bustang Rams Route	Special version of the Bustang North Line that picks up on campus on Friday afternoons and returns on Sunday afternoons - serves several stops in Denver.	Transit	Students and Employees	Year-Round
	Zipcar Contract	Exclusive agreement with carshare provider, Zipcar, to station cars at designated locations on CSU campus. Monthly utilization reporting provided.	Carshare	Students, Employees and Community Members	Year-Round
	Spin Contract	Exclusive agreement with e-scooter and e-bike share provider Spin to station vehicles on campus. Have parallel contract with the City of Fort Collins. Have regular check-in meetings and monthly reporting. Spin supports bike tours, etc. with free vehicle rentals.	Bike, Scooter	Students, Employees and Community Members	Year-Round
	Emergency Ride Home	Program for employees to utilize Zipcar or Ztrip for an emergency ride home on a day when they utilized non-SOV mode to get to work. Requires employees to submit receipt for reimbursement.	Multimodal	Employees	Year-Round
	Childcare Services	Both student and employee parents within the CSU community have access to on-campus childcare through the Early Childhood Center and the Sunshine House, which simplifies their commutes. Tuition-based financial assistance is available.	Multimodal	Students and Employees	Year-Round
	Flexible Work Hours	Employees in some departments can work flexible hours to help them plan commute transportation around family and personal needs.	Multimodal	Employees	Year-Round

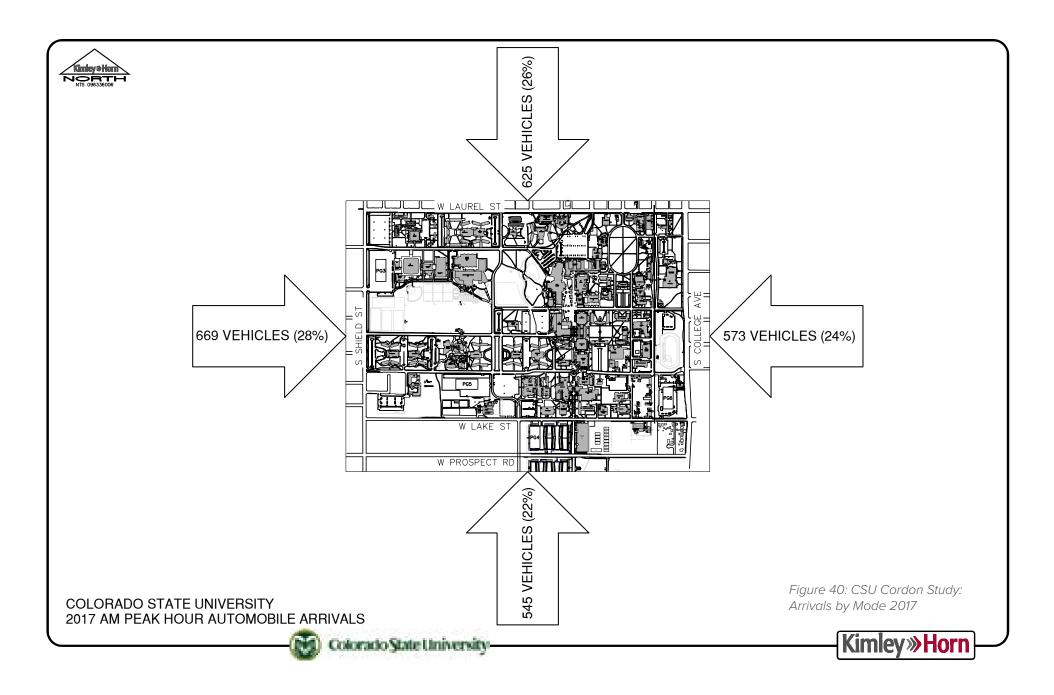


Appendix B: Inventory of Existing TDM Strategies (As of Spring 2022) Continued

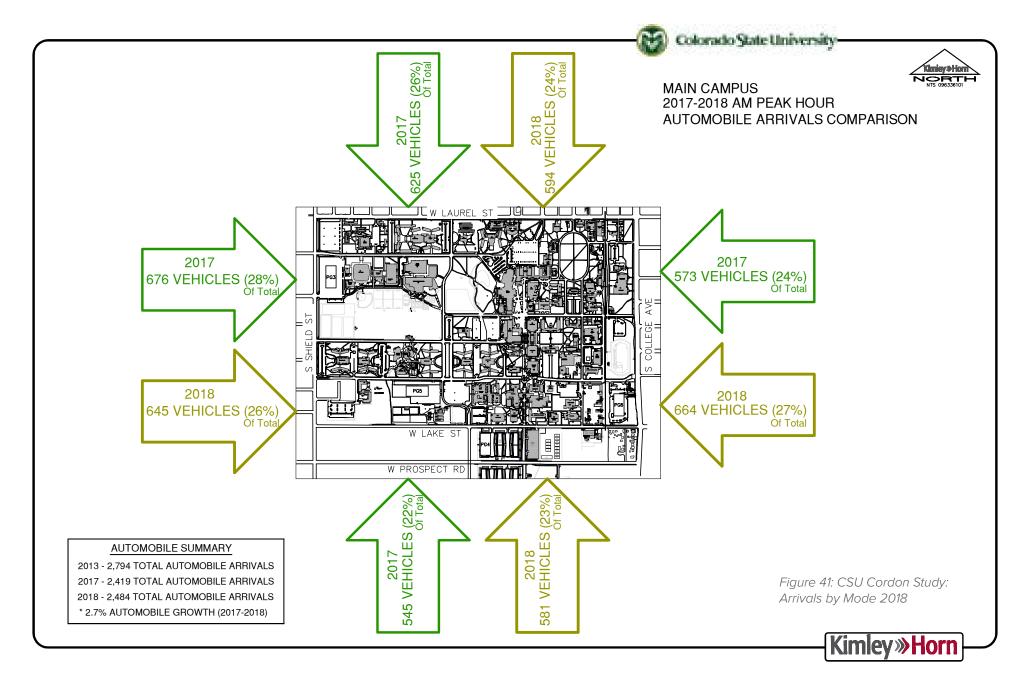
	Strategy Description		Target Commute Mode(s)	Target Audience(s)	Engagement Timeframe	
	VanGo	VanGo is a vanpool service provider run by the North Front Range MPO. VanGo provides \$50 to any vanpooler that recruits another member of a vanpool. Additionally, CSU offers to pay the first month of a riders' fees as an incentive to try vanpooling.	Vanpool	Employees	Year-Round	
	Way To Go	CSU directs people to WaytoGo for carpoo/vanpool trip matching. WaytoGo is DRCOG's trip matching tool. It is largely focused in the Denver region, however, people in Northern Colorado utilize it and it currently serves as the best place for trip matching in this area.	Carpool, Vanpool	Students, Employees and Community Members	Year-Round	
	Boulder Vanpool Incentive	Vanpools that start in Boulder County are eligible for incentives.	Vanpool	Employees	Year-Round	
	RamRide	Free, safe ride home for students on Thurs, Fri, Sat nights. Currently provided via Lyft credits; mix of student and Lyft drivers depending on availability. Operated by Off-Campus Life office.	Driving/SOV	Students	Year-Round	
	Private Airport Shuttle MOU	Agreement with Groome and Landline airport shuttle to access CSU transit center for a centralized connection to Denver International Airport.	Transit	Students and Employees	Year-Round	
	Private Resident Shuttle MOU	Agreement with off-campus, student-oriented apartment complexes that offer a private shuttle to campus to use the CSU Transit Center for pickup and dropoff.	Transit	Students	Year-Round	
	Charter Buses	Charter buses are available for departments to rent for efficient group transportation to remote activities.	Transit	Students and Employees	Year-Round	
	CSU has partnered with the City of Fort Collins to get grant funding to provide free e-bikes or Spin memberships, and bicycling accessories to income-qualified CSU employees. Bicycling education is also provided to employees who receive the e-bikes or Spin memberships.		Micromobility, Bike	Employees	Year-Round, 1-year grant timeframes	
	Fleet Vehicles for Workday Trips	CSU Fleet vehicles are available for employees to reserve and use for workday trips. CSU has a directive to transition this fleet to EVs over time.	Carshare	Employees	Year-Round	
	Biking Infrastructure	CSU designs and invests in infrastructure to make active modes (biking, walking, rolling) safer and easier to access and utilize. For example, CSU builds split trails to allow for bicycles, scooters, and boards to move quicker while avoiding conflicts with pedestrians. Additionally, CSU has more than 18,000 bike parking spaces and 40 longboard racks and positions racks close to building entrances for convenience.	Bike, Scooter, Board	Students, Employees and Community Members	Year-Round	
nfrastructure	Dismount Zones	Specific Main Campus pedestrian-oriented zones with high foot traffic have pavement paint instructing people biking, scooting, and boarding to dismount in order to avoid conflicts and collisions with pedestrians. Citations, including warnings or fines, may be issued to offenders. Current dismount zones include the Center Avenue Mall, Academic Village Commons, and Anderson Academic Center.	Bike, Scooter, Board, Walk	Students, Employees and Community Members	Year-Round	
Infras	Transfort Bus Bike Racks	All Transfort buses accommodate at least two bikes. Most buses can store two bikes on racks at the front of the bus. The MAX bus fleet, with its articulated design, allows 4 bikes onboard the bus two bikes in the standing area and 2 bikes on hanging racks at the rear of the bus for faster and more convenient boarding/deboarding and multimodal travel.	Multimodal	Students, Employees and Community Members	Year-Round	
	The Spoke & Bike Repair Stations	There are self-service bike repair stations dispersed across the Main, South, and West Campuses to provide free tire air and minor repair equipment. Additionally, The Spoke is a student-run, full-service bike repair and retail shop offering affordable bike resources within the Laurel Village resident area. The team also offers bike education and safety programs.	Bike	Students, Employees and Community Members	Academic Year	



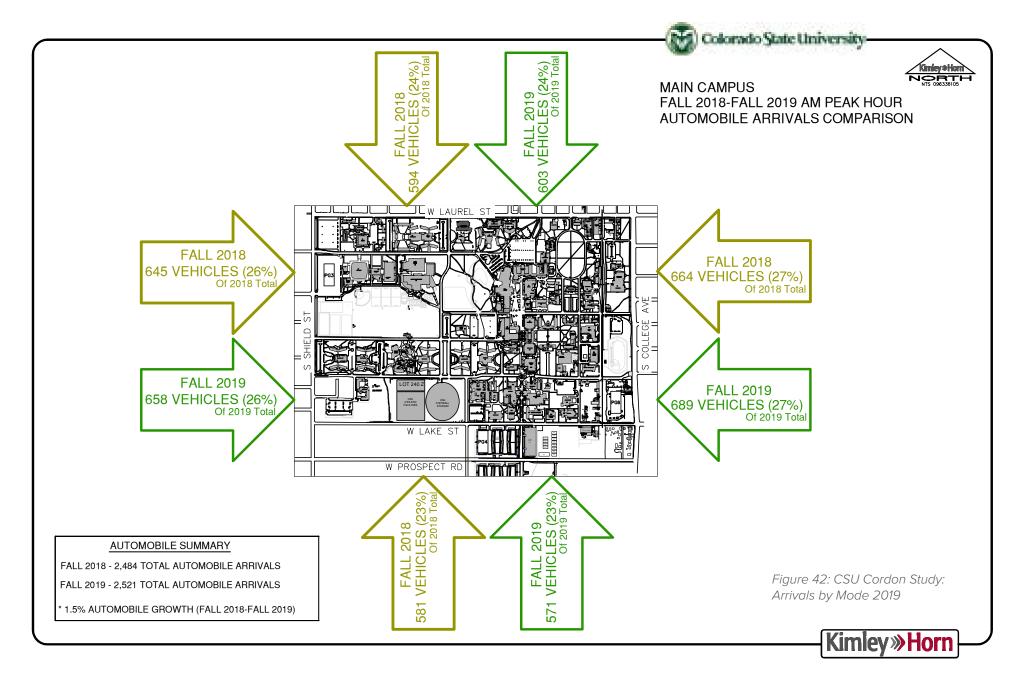
Appendix C: CSU Cordon Study: Arrivals & Departures by Mode 2017 - 2022



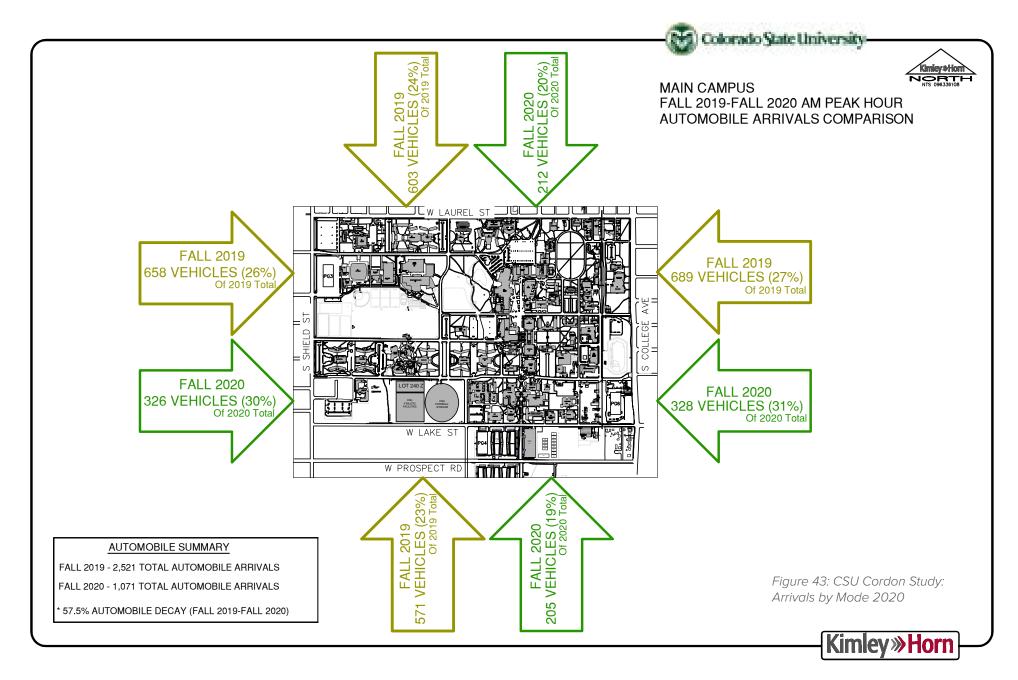




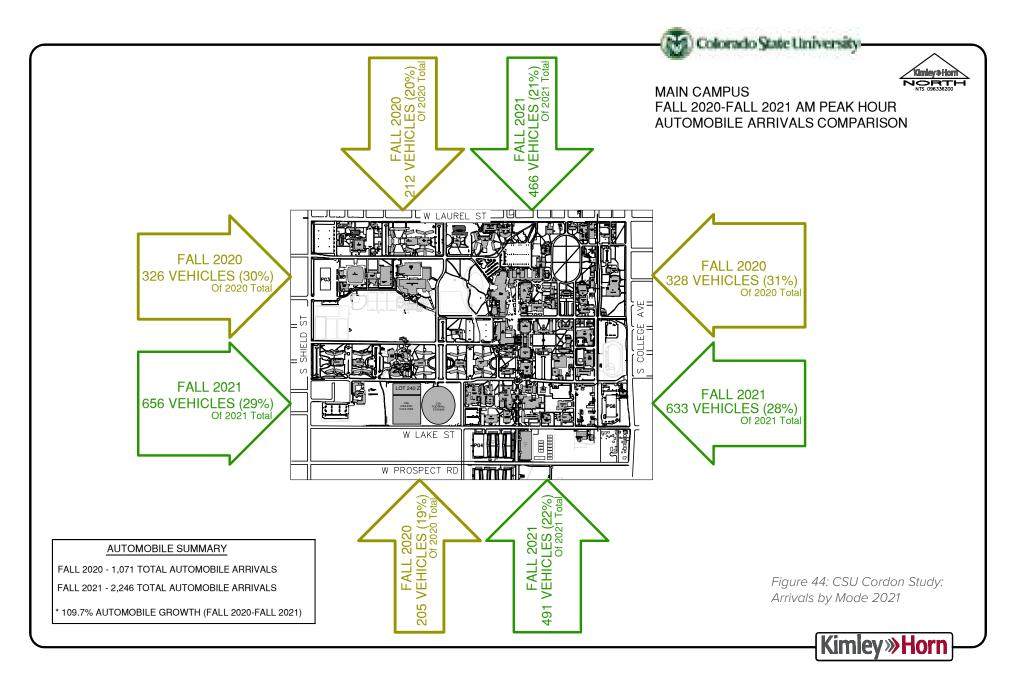






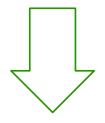




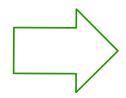




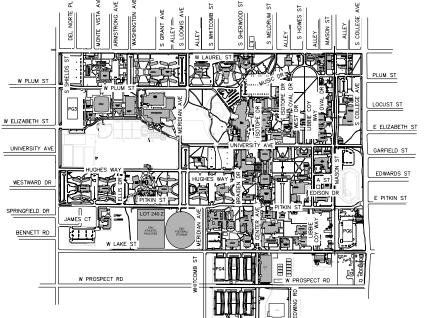


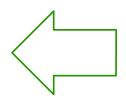


From North	Fall 2	021	Fall 2022		
	Volume	% of Mode	Volume	% of Mode	
Vehicles	466	21%	528	21%	
Bicycles	209	21%	187	21%	
Pedestrians	439	47%	444	49%	
Skateboards	11	19%	11	26%	



From West	Fall 2	:021	Fall 2022		
	Volume	% of Mode	Volume	% of Mode	
Vehicles	655	29%	712	29%	
Bicycles	394	40%	326	37%	
Pedestrians	287	31%	199	22%	
Skateboards	25	43%	19	45%	





From East	Fall 2	021	Fall 2022		
	Volume	% of Mode	Volume	% of Mode	
Vehicles	633	28%	674	27%	
Bicycles	142	14%	134	15%	
Pedestrians	82	9%	106	12%	
Skateboards	15	26%	5	12%	



From South	Fall 2	021	Fall 2022		
	Volume	% of Mode	Volume	% of Mode	
Vehicles	491	22%	551	22%	
Bicycles	239	24%	241	27%	
Pedestrians	126	13%	150	17%	
Skateboards	7	12%	7	17%	

Figure 45: CSU Cordon Study: Arrivals by Mode 2022

Mode Fall 2021 Fall 2022 % Growth 2,245 2,465 9.8% **Vehicles Bicycles** -9.8% 984 888 **Pedestrians** 934 899 -3.7% -27.6% 58 42 **Skateboards**

2021-2022 AM Arrivals Summary

MAIN CAMPUS - FIGURE 9

FALL 2021-FALL 2022 AM PEAK HOUR ARRIVALS COMPARISON

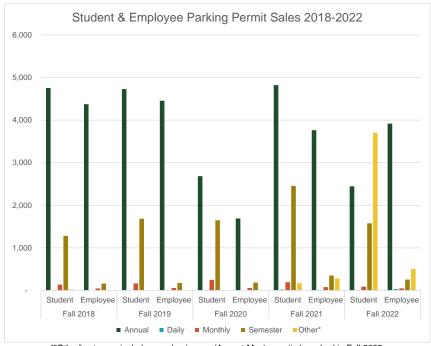






Appendix D: Supporting Modal Date

Mode: Driving / SOV



^{*&}quot;Other" category includes academic year (August-May) permits launched in Fall 2022.

Figure 46: Parking Permit Sales 2018-2022

	Fall 2018		Fall 2019		Fall 2020		Fall 2021		Fall 2022	
Permit Type	Student	Employee								
Annual	4,755	4,374	4,730	4,455	2,684	1,689	4,823	3,764	2,445	3,918
Daily	2	-	6	-	8	1	19	12	9	32
Monthly	137	46	164	58	249	58	193	78	87	48
Semester	1,281	161	1.685	173	1.648	183	2,456	350	1,576	256
Other*	19	6		_	-		170	282	3,707	506
Subtotals	6,194	4.587	6,585	4.686	4,589	1.931	7.661	4.486	7,824	4,760
Totals	,	,781		,271	,	520		,147		,584

Table 17: Parking Permit Sales 2018-2022

700	اکم
10 .	

Permit Type (unit)	User	Fee (per unit)			
Daily ¹	Residence Hall Student or Employee	\$13.00			
	Apartment Resident	\$4.25 to \$13.00			
	Employees - Other ²	\$13.00			
•	Employees - Athletics & Housing/Dining Services	\$13.00			
	<u> </u>	\$1.00			
Hourly	All	to			
		\$2.00			

Permit Type (unit) ¹	User	Fee Range (per unit) ²
(arrie)	3331	\$266
	Employee Commuter	to
		\$2.606 ³
		\$150
Annual	Employee Apartment Resident / Apartment	to
	Resident Student	\$685
		\$293
	Off-Campus Commuter Student	to
	•	\$584
		\$350
	Employee Commuter	to
Academic Year		\$574
	Danidan and Hall Charlents	\$198
	Residence Hall Students	to
		\$685
		\$350
	Off-Campus Commuter Student	to
		\$557
		\$62
	Employee Commuter	to
		\$343
	Employee Apartment Resident / Apartment	\$117
	Resident Student	to
Fall/Spring		\$407
Semester		\$153
	Residence Hall Students	to
		\$394
	01/10	\$153
	Off-Campus Commuter Student	to
		\$322
	Franksina Commutes	\$45
	Employee Commuter	to
		\$120
Monthly	Decidence Hell Students	\$42
Monthly	Residence Hall Students	to
		\$120
	Off Compus Commuter Student	\$42
	Off-Campus Commuter Student	to
		\$96

¹ Daily scratch-off tags available to students, faculty, and staff at bulk rates: \$13 ea. for 10-19 hangtag permits, \$9 ea. for 20-29 hangtag permits, \$8 ea. for 30-39 hangtag permits, and \$7 ea. for 40+ hangtag permits. A, Z, ZR, and R spaces only.

Table 18: CSU Parking Permit Prices

² \$6 and \$8 remote-only permits also available for Lot 195, Lot 740, and Pickett Equine Center.



Mode: Bikes



Figure 47: Current (2023) Fort Collins Bike Facility Snow Removal Routes

Table 19: CSU Reported Bike Thefts 2018-2022

Year	# Reported
2018	247
2019	195
2020	132
2021	187
2022	257

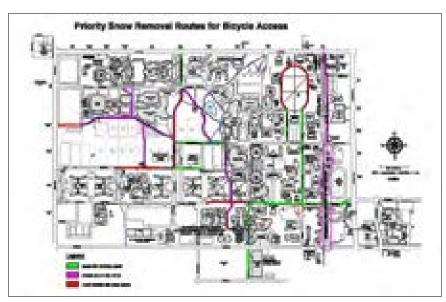


Figure 48: Current (2023) CSU Bike Facility Snow Removal Routes





Figure 49: Transfort Service Map



	Service Hours 3 12:00 AM 1:00 AM 2:00 AM 3:00 AM 4:00 AM 5:00 AM 6:00 AM 7:00 AM 8:00 AM 9:00 AM 9:00 AM 10:00 AM 11:00 AM 12:00 PM 1:00 PM 2:00 PM 3:00 PM 4:00 PM 5:00 PM 6:00 PM 7:00 PM 8:00 PM 9:00 PM 10:00 PM 11:00 PM 11																								
Route	12:00 AM	1:00 AM	2:00 AM	3:00 AM	4:00 AM	5:00 AM	6:00 AM	7:00 AM	8:00 AM	9:00 AM	10:00 AM	11:00 AM	12:00 PM	1:00 PM	2:00 PM	3:00 PM	4:00 PM	5:00 PM	6:00 PM	7:00 PM	8:00 PM	9:00 PM	10:00 PM	11:00 Pf	
MAX						Weekdays 8	Saturdays																		
Gold	Fridays & S	aturdays																					Fridays & S	days & Saturdays	
Horn								Weekdays																	
othills ¹								Weekdays																	
2						١	Neekdays -	& Saturdays	S																
3 ²								Weekdays	& Saturday	s															
5						١	Neekdays -	& Saturday:	S															L	
6						١	Neekdays																		
7							Neekdays																		
8						١		& Saturday																	
9						١		& Saturday:																	
10								& Saturday:																	
14								& Saturday	S																
16						Weekdays 8																		-	
18								& Saturday																-	
19								& Saturday:	5															-	
31							Weekdays																		
32						-	Neekdays																		
81	1						Neekdays														L			Ь	
eadway	_	,			hroughout	tne day.																			
	² Saturday h ³ As of 1/16	-	e 30 minuti	es.																					
	Additional																								
			urrently sus	pended an	d served by	on-demand	taxi servic	e Mon-Fri f	rom 5:30an	n to 8:00pm	& Sat-Sun	from 7:30an	n-5:00pm.												
30	Route 92, n	ot shown, is	a special a	fternoon ro	ute serving	the Poudre	School Dist	rict buildin	g to/from t	he Downto	wn Transit C	enter only o	during distric												
60	Routes with	service be	ginning fron	n any statio	n at any tim	ne >5 minute	s within th	e hour (e.g.	6:45 AM st	tart time fro	m Equine S	tation) are r	marked as h	aving servi	ce during th	at hour.									

Figure 50: Transfort Bus Network Service Hours Matrix



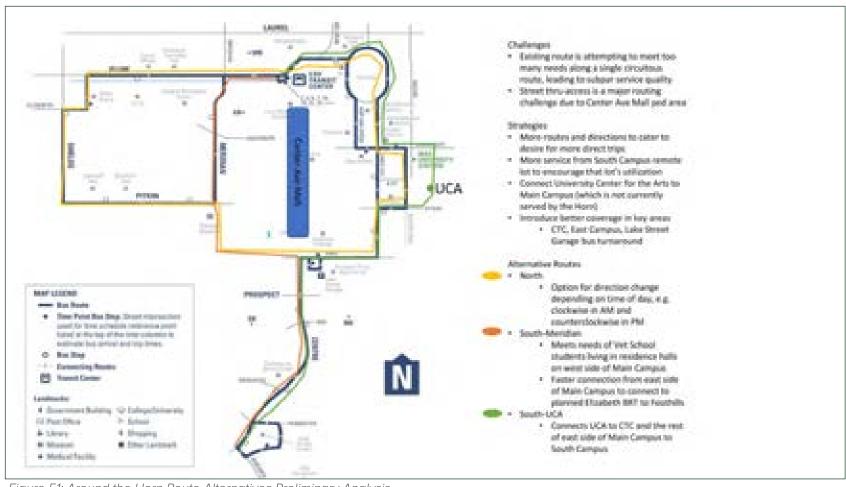


Figure 51: Around the Horn Route Alternatives Preliminary Analysis



Mode: Micromobility

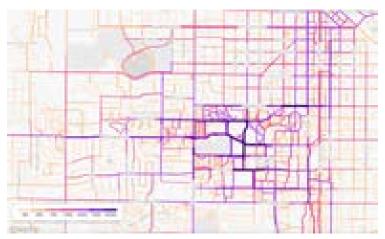


Figure 52: City-Wide Spin Trips September 2021 to January 2023

Users tend to ride in the afternoon and evening rush-hour periods before and after classes, with additional significant ridership in the late evening nightlife hours. Figure 44 below shows rides by time of day on-campus between January 2022 and January 2023.

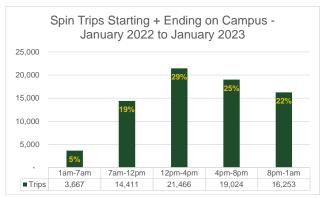


Figure 53: Spin Trips by Time of Day

Users show a greater preference for e-scooters relative to overall e-scooter and e-bike inventory.

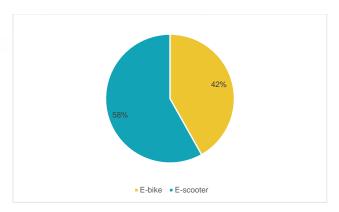


Figure 54: Spin Vehicle Inventory

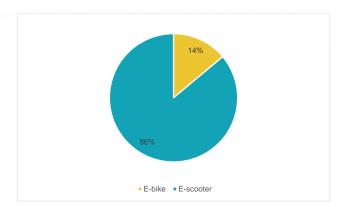


Figure 55: Device Ration for total Spin Trips Starting/ Ending on Campus

Source: Spin Data



Mode: Rideshare

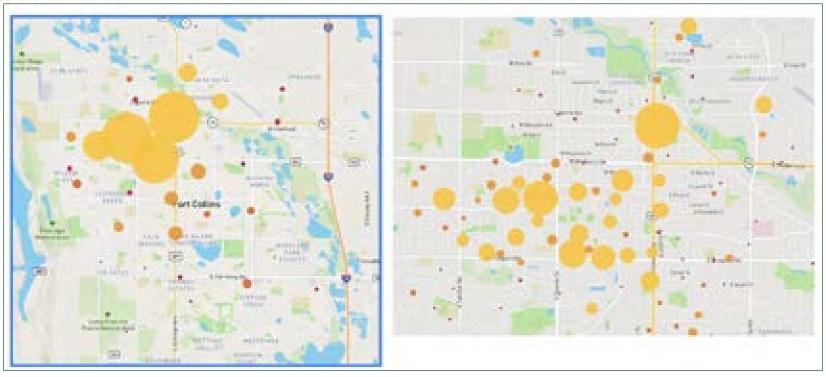


Figure 56: Fort Collins/CSU TNC Pickups

Source: CSU Student Life



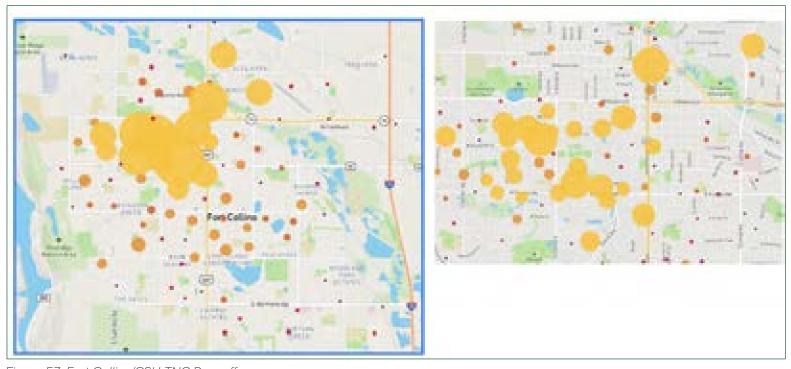


Figure 57: Fort Collins/CSU TNC Dropoffs

Source: CSU Student Life



Appendix E: Stakeholder Engagement

Feedback & Other Collected Data

Activity: If you had \$5,000 to invest in campus transportation, what areas of improvement and travel modes would you select? Choose 5 options from most to least important.

			Option			
Area of Improvement	1st	2nd	3rd	4th	5th	Response Insights
Safety	8%	13%	20%	17%	19%	Some participants combined safety and infrastructure concerns/suggestions
Infrastructure (Physical Improvements and Technology)	74%	56%	49%	49%	38%	Better separation between pedestrians, cyclists/boarders/scooters, and cars
Communication/Education/Engagement	13%	11%	7%	6%	23%	
Program/Policy	6%	20%	24%	29%	21%	More affordable permits
Mode						
Bicycling	20%	26%	23%	28%	18%	More separated bikeways
Driving a Motor Vehicle	35%	27%	26%	28%	27%	More affordable permits; some indicated affordability for specific groups (grad students, hourly workers)
Riding Transit	41%	39%	41%	30%	31%	More frequency, more routes
Scooters/Skateboarding	1%	1%	3%	1%	7%	
Walking	2%	7%	8%	13%	18%	

	Sample	
Student	52	58%
Staff	27	30%
Faculty	1	1%
Not specified	10	11%
	00	

>20% Priority
Highest Priority

Figure 58: Multi-Campus Investment Activity Results



Primary Mode	Percentage
Driving a personal vehicle alone	63%
Carpooling or vanpooling with others going to campus	1%
Getting a ride	1%
Biking	13%
Walking	3%
Skateboarding/longboarding	0%
Taking the bus	4%
Ride share (Uber, Lyft)	0%
E-scooters	0%
Other mode	0%
Telework	13%

Average distance from home to campus	
8.84 miles	

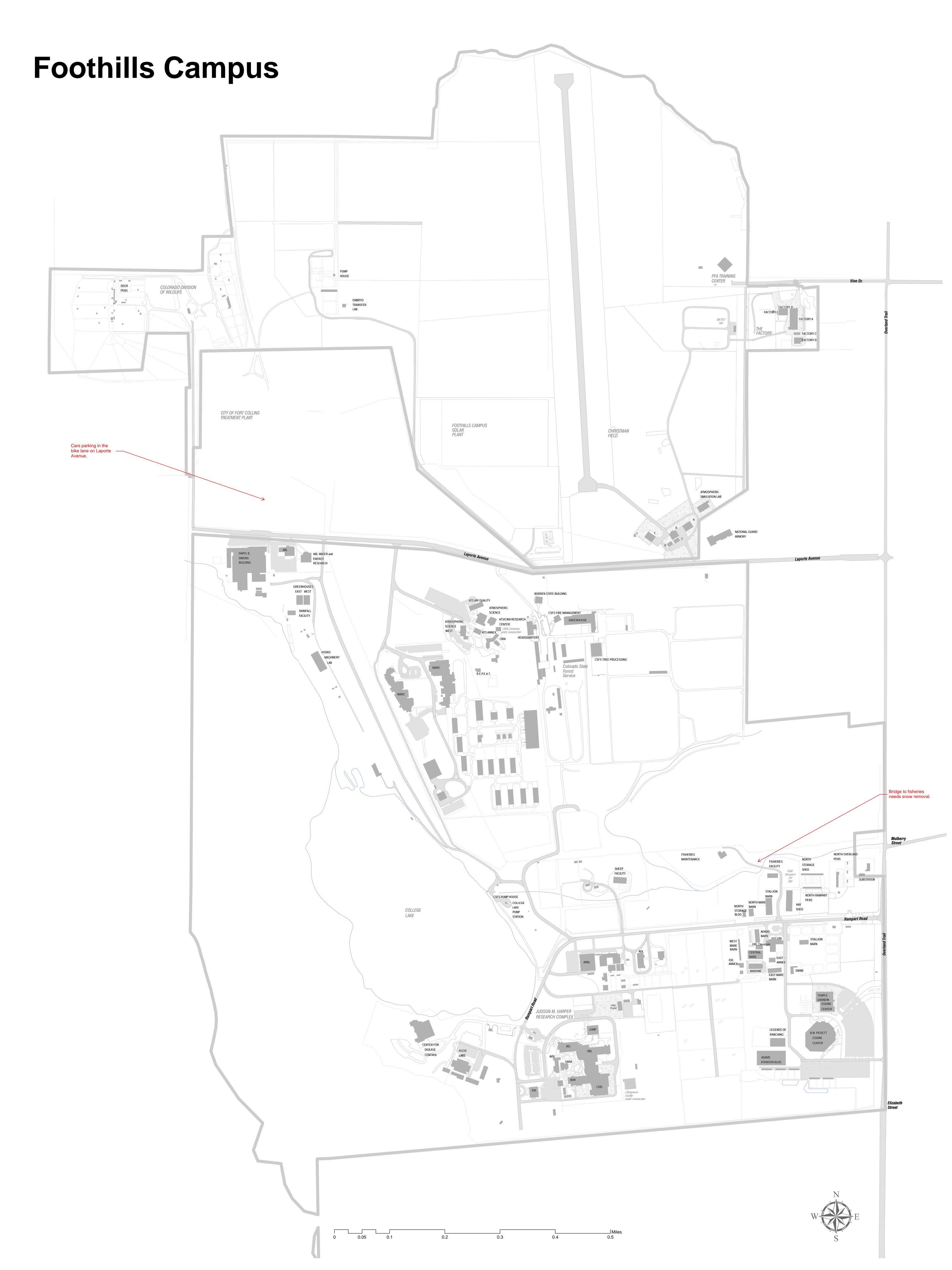
Status	Count	
Admin professional	52	47%
State classified employee	14	13%
Faculty	45	41%
Tota	al 111	-

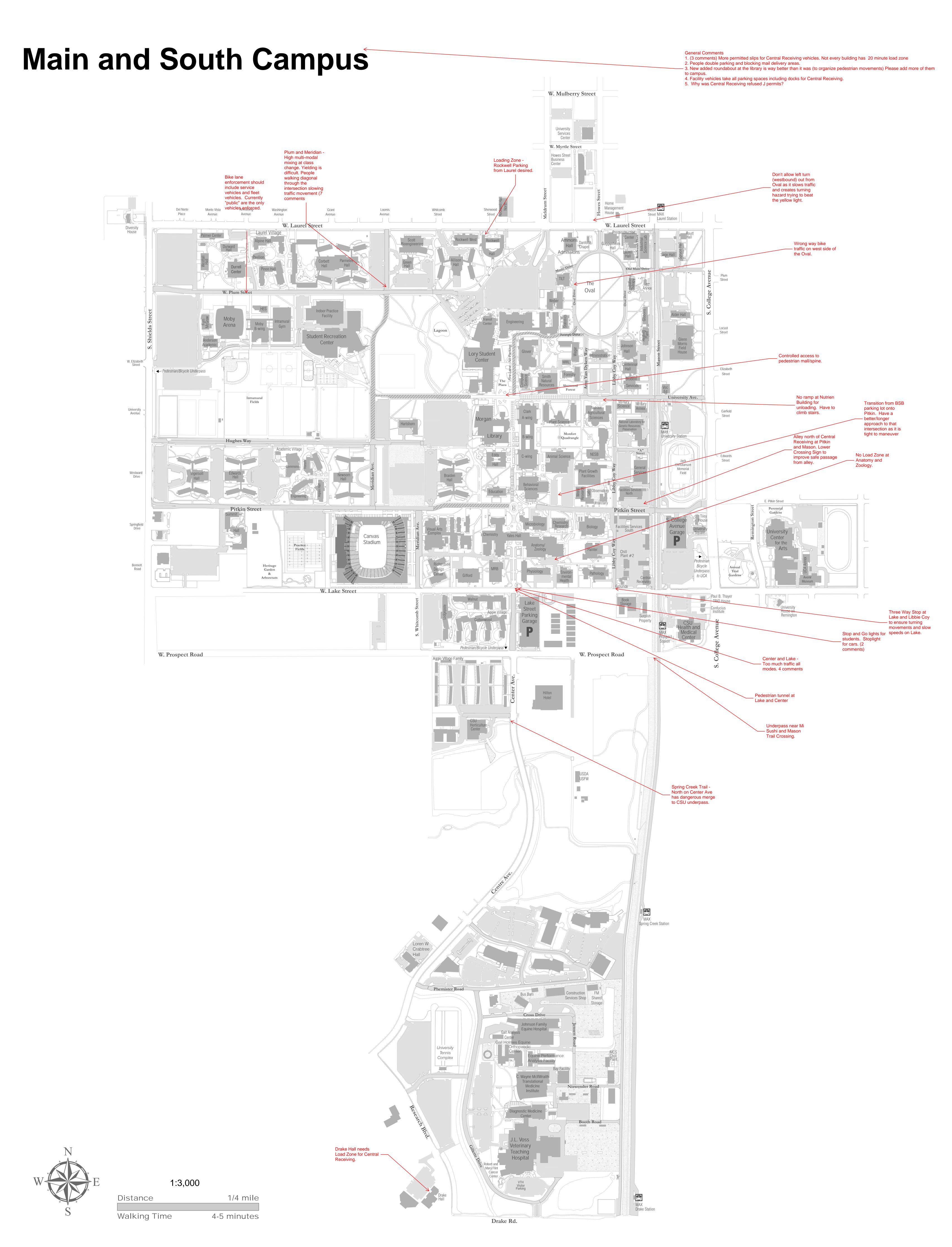
Figure 59: 2023 College of Business Mode Transportation Survey

30	اده
Idi	Val
100.0	ران مو

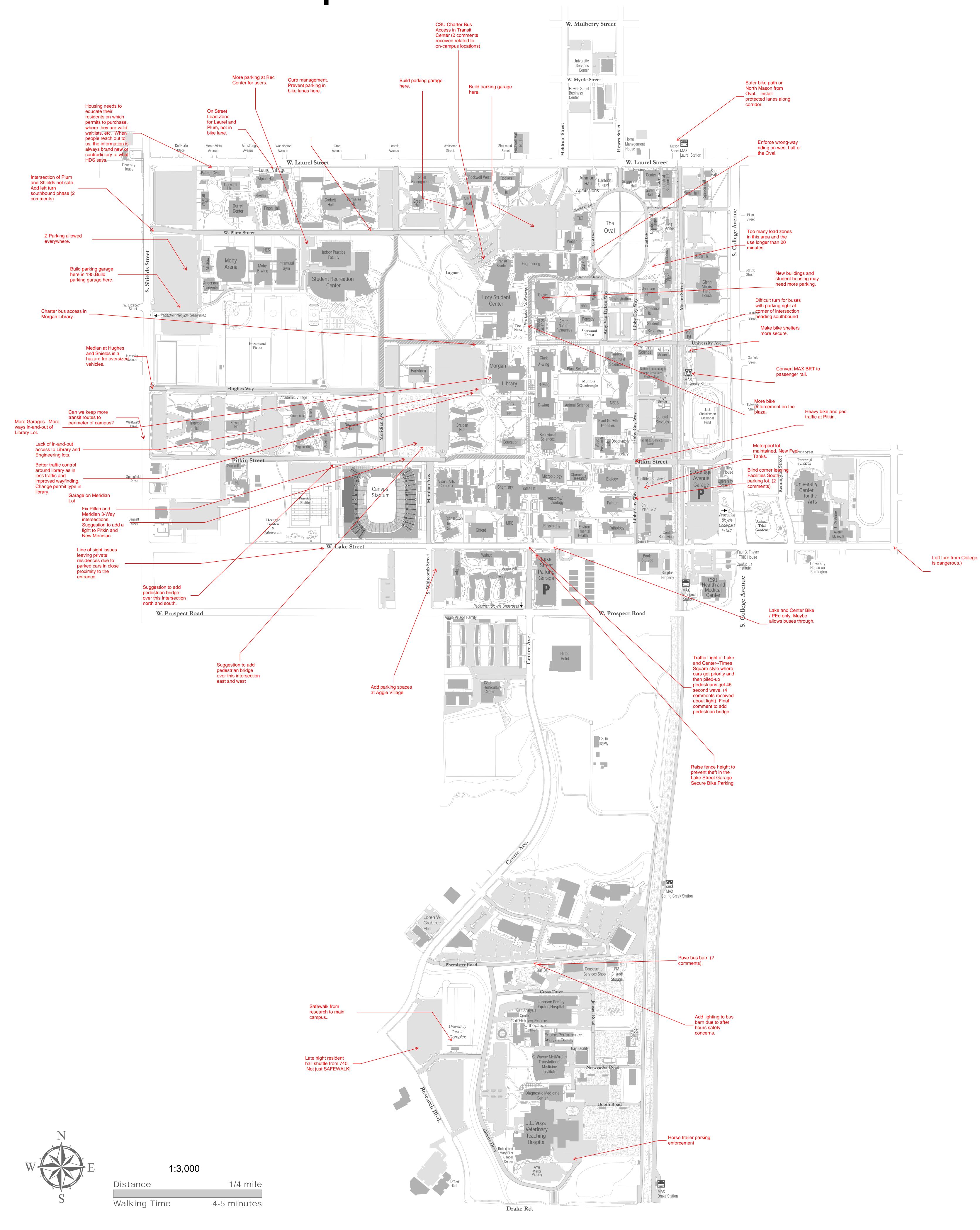
Pop Up Location	Date	Number of Participants			
		545			
Communication/Education/Engagement		Infrastructure (Physical Improvemant and Technology)		Totals by Category	
	Number of Dots		Number of Dots	Totals by Category	_
Walking	40	Walking	134	Communication/Education/En gagement 5	12
Bicycling	182	Bicycling	273	Infrastructure (Physical Improvemant and Technology) 8	98
Riding Transit	223	Riding Transit	310	Program/Policy 3	71
Driving a Motor Vehicle	50	Driving a Motor Vehicle	147	Safety 8	98
Other	17	Other	34	Other	93
Program/Policy		Safety		Totals by Mode	
	Number of Dots		Number of Dots		_
Walking	21	Walking	134	Walking 3	29
Bicycing	125	Bicycling	273	Bicycling 8	68
Riding Transit	141	Riding Transit	310	Riding Transit 10	24
Driving a Motor Vehicle	80	Driving a Motor Vehicle	147	Driving a Motor Vehicle 4	55
Other	4	Other	34	Other	96
Other					
	Number of Dots				
Walking	0				
Bicycling	15				
Riding Transit	40				
Driving a Motor Vehicle	31				
Other	7				

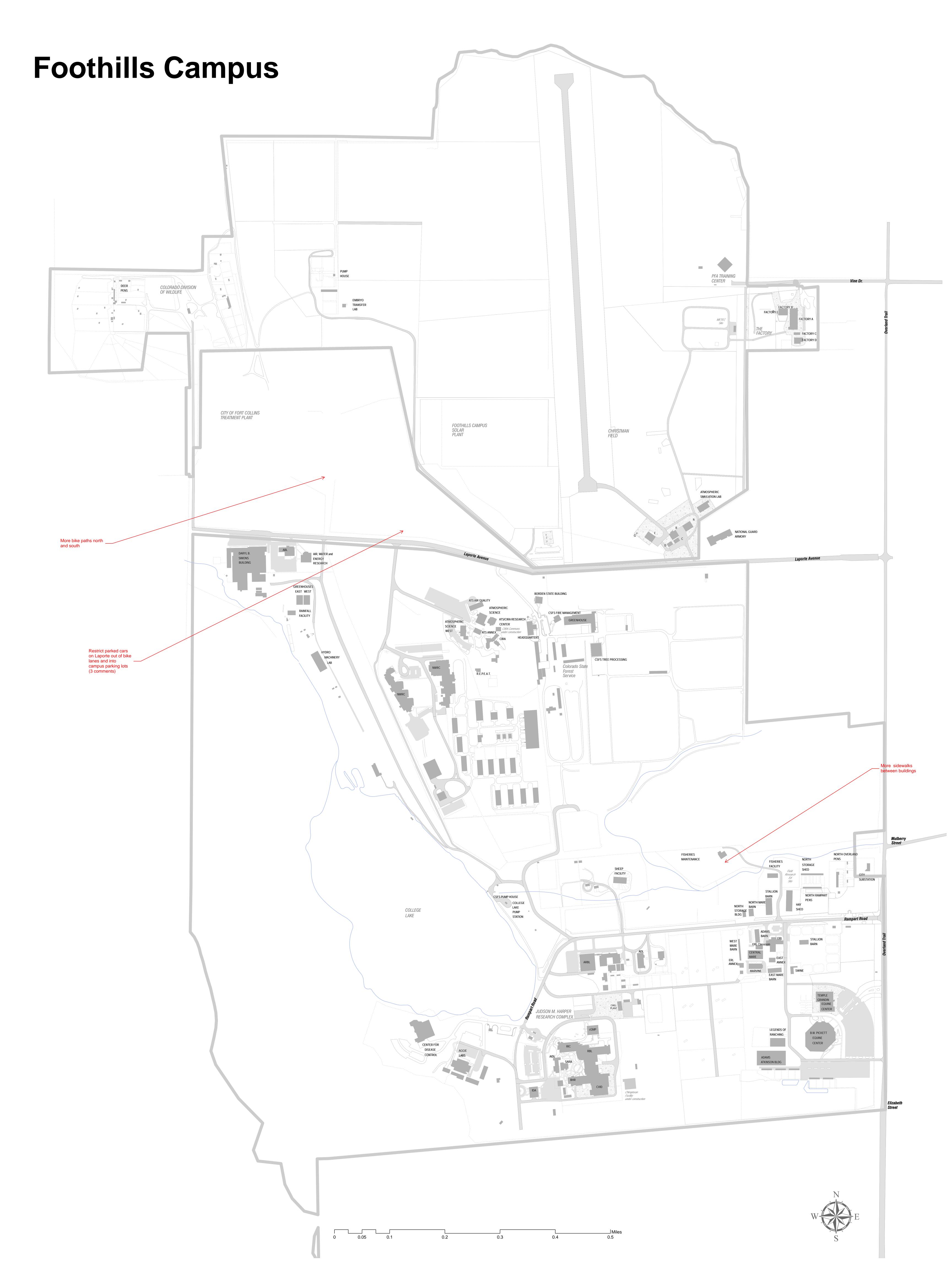
Figure 60: On-Campus Pop-up Investment Activity Results





Main and South Campus





Main-South Campus - TDMP - PTS All Staff.pdf Markup Summary

Callout (42)

Safer bike path on by the bike path on book like and on book like and on protected turner along carridor.

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 10:43:34 AM

Status: Color: Layer: Space: Safer bike path on North Mason from Oval. Install protected lanes along corridor.

Subject: Callout Page Label: 1

Author: fodge

Date: 2/6/2023 10:45:39 AM

Status: Color: Layer: Space: Enforce wrong-way riding on west half of the Oval.

Too many load cores to the ages and find the first and the first encodes Subject: Callout Page Label: 1

Author: fodge

Date: 2/6/2023 10:53:03 AM

Status: Color: Layer: Space: Too many load zones in this area and the use

longer than 20 minutes

Houseing needs to educate their needsens or which periods purchase, where they are valid, washing in the control of the contro

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 10:54:51 AM

Status: Color: Layer: Space: Housing needs to educate their residents on which permits to purchase, where they are valid, waitlists, etc. When people reach out to us, the information is always brand new or contradictory to what HDS

says.

On Street Load Zone for Laurel and Plum, not in bike lane. Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 10:55:44 AM

Status: Color: Layer: Space: On Street Load Zone for Laurel and Plum, not in bike lane.

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 10:59:14 AM

Status: Color: Layer: Space: Build parking garage here.

Subject: Callout Curb management. Prevent parking in bike lanes Page Label: 1 here. Author: fodge Date: 2/6/2023 10:58:59 AM Status: Color: Layer: Space: Subject: Callout Build parking garage here. Page Label: 1 Author: fodge Date: 2/6/2023 10:59:41 AM Status: Color: Layer: Space: Subject: Callout Build parking garage here in 195. Build parking Page Label: 1 garage here. Author: fodge Date: 2/6/2023 11:01:00 AM Status: Color: Layer: Space: Subject: Callout Z Parking allowed everywhere. Page Label: 1 Author: fodge Date: 2/6/2023 11:04:49 AM Status: Color: Layer: Space: Subject: Callout CSU Charter Bus Access in Transit Center (2 Page Label: 1 comments received related to on-campus Author: fodge locations) Date: 2/6/2023 11:03:32 AM Status: Color: Layer: Space: Subject: Callout More parking at Rec Center for users.

Page Label: 1 Author: fodge

Date: 2/6/2023 11:04:48 AM

Status: Color: Layer: Space:

Subject: Callout Page Label: 1

Author: fodge

Date: 2/7/2023 12:09:58 PM

Status:
Color: Layer:
Space:

Intersection of Plum and Shields not safe. Add left

turn southbound phase (2 comments)

Subject: Callout

Page Label: 1 Author: fodge

Date: 2/6/2023 11:07:08 AM

Status: Color: Layer: Space: Median at Hughes and Shields is a hazard fro

oversized vehicles.

Can we keep more transit routes to -

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:08:20 AM

Status: Color: Layer: Space: Can we keep more transit routes to perimeter of

campus?

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:09:12 AM

Status: Color: E Layer: Space: Lack of in-and-out access to Library and

Engineering lots.

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:10:29 AM

Status: Color: Layer: Space: Line of sight issues leaving private residences due to parked cars in close proximity to the entrance.

Subject: Callout Page Label: 1

Author: fodge **Date:** 2/6/2023 11:11:12 AM

Status: Color: Layer: Space: Safewalk from research to main campus..

Subject: Callout Convert MAX BRT to passenger rail. Page Label: 1 Author: fodge Date: 2/6/2023 11:12:58 AM Status: Color: Layer: Space: Subject: Callout Make bike shelters more secure. Page Label: 1 Author: fodge Date: 2/6/2023 11:13:49 AM Status: Color: Layer: Space: Subject: Callout New buildings and student housing may need Page Label: 1 more parking. Author: fodge Date: 2/6/2023 11:14:34 AM Status: Color: Layer: Space: Subject: Callout Better traffic control around library as in less traffic Page Label: 1 and improved wayfinding. Change permit type in Author: fodge library. Date: 2/6/2023 11:16:52 AM Status: Color: Layer: Space: Subject: Callout More Garages. More ways in-and-out of Library Page Label: 1 Lot. Author: fodge Date: 2/6/2023 11:17:39 AM Status: Color: Layer: Space:

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:18:30 AM

Status: Color: Layer: Space: Garage on Meridian Lot

.....

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:19:19 AM

Status: Color: Layer: Space: Difficult turn for buses with parking right at corner

of intersection heading southbound

......

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:20:09 AM

Status: Color: Layer: Space: More bike enforcement on the plaza.

......

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:27:28 AM

Status: Color: Layer: Space: Motorpool lot maintained. New Fuel Tanks.

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:22:11 AM

Status: Color: Layer: Space: Heavy bike and ped traffic at Pitkin.

.....

Subject: Callout Page Label: 1 Author: fodge

Date: 2/7/2023 11:57:04 AM

Status: Color: ■ Layer: Space: Fix Pitkin and Meridian 3-Way intersections. Suggestion to add a light to Pitkin and New

Meridian.

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:27:00 AM

Status: Color: Layer: Space: Blind corner leaving Facilities South parking lot. (2

comments)

.....

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:26:36 AM

Status: Color: Layer: Space: Lake and Center Bike / PEd only. Maybe allows

buses through.

.....

Subject: Callout Page Label: 1 Author: fodge

Date: 2/6/2023 11:28:20 AM

Status: Color: ■ Layer: Space: Left turn from College is dangerous.)

.....

Subject: Callout Page Label: 1 Author: fodge

Date: 2/7/2023 11:59:58 AM

Status: Color: Layer: Space: Traffic Light at Lake and Center--Times Square style where cars get priority and then piled-up pedestrians get 45 second wave. (4 comments received about light). Final comment to add

pedestrian bridge.

Subject: Callout Page Label: 1 Author: fodge

Date: 2/7/2023 11:58:14 AM

Status: Color: ■ Layer: Space: Suggestion to add pedestrian bridge over this

intersection east and west

.....

Subject: Callout Page Label: 1
Author: fodge

Date: 2/7/2023 11:59:21 AM

Status:
Color: Layer:
Space:

Suggestion to add pedestrian bridge over this

intersection north and south.

.....

Subject: Callout Page Label: 1 Author: fodge

Date: 2/7/2023 12:00:44 PM

Status: Color: Layer: Space: Add parking spaces at Aggie Village

Subject: Callout Raise fence height to prevent theft in the Lake Page Label: 1 Street Garage Secure Bike Parking Author: fodge Date: 2/7/2023 12:02:41 PM Status: Color: Layer: Space: Subject: Callout Charter bus access in Morgan Library. Page Label: 1 Author: fodge Date: 2/7/2023 12:03:20 PM Status: Color: Layer: Space: Subject: Callout Horse trailer parking enforcement Page Label: 1 Author: fodge Date: 2/7/2023 12:03:55 PM Status: Color: Layer: Space: Subject: Callout Late night resident hall shuttle from 740. Not just Page Label: 1 SAFEWALK! Author: fodge Date: 2/7/2023 12:05:34 PM Status: Color: Layer: Space: Subject: Callout Pave bus barn (2 comments). Page Label: 1

Author: fodge

Date: 2/7/2023 12:06:19 PM

Status: Color: Layer: Space:

Subject: Callout Page Label: 1 Author: fodge

Date: 2/7/2023 12:08:48 PM

Status: Color: Layer: Space:

Add lighting to bus barn due to after hours safety concerns.

Snapshot (1)



Subject: Snapshot Page Label: 1 Author: DHansen

Date: 1/18/2022 4:25:52 PM

Status: Color: Layer: Space:

Text Box (1)

Subject: Text Box Page Label: 1 Author: DHansen

Date: 2/5/2023 11:53:56 AM

Status: Color: ■ Layer: Space: Main and South Campus



Appendix F: Draft CSU Corridor Concepts (Toole Design Group 2022 Submittal)

See following pages for the deliverable report.



W Plum Street

Spot Treatments

- Add flexible delineators to bike lane on west leg of W Plum St at S Shields St intersection, 50 ft in advance of bike box, to prevent right turning traffic from encroaching.
- Add flexible delineators to bike lane on east leg of W Plum St at S Shields St intersection, on through-traffic side, to prevent late cut-over by right-turning traffic.
- **C** Remove Plum Street stop signs at parking lot entrances.
- Add curb cut at Aggie Trail on the south side of W Plum St to match curb cut on north side.
- Reconfigure diagonal trail north of Moby Pool to circumscribe area where pool building will be expanded.
- **F** Build a raised intersection at Meridian Ave and retain existing stop signs. Refer to Meridian Street for additional design details.

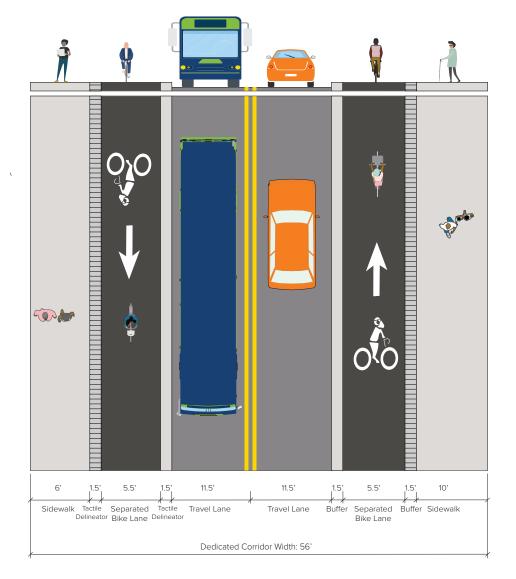
Cross Section

(Looking East)

S Shields St to CSU Transit Center

Convert existing buffered bike lane to a sidewalk-level separated bike lane.

Retain current sidewalk, bike lane, and travel lane measurements.





K

Scale is approximate; not suitable for cons

W. Pitkin Street

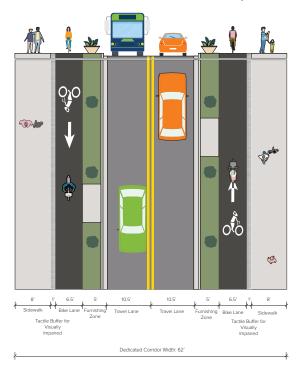
Spot Treatments

- At the S Shie
 - At the S Shields Intersection east of the median, paint the existing left-turn lane directing bicyclists onto the off-street trail green to resemble a two-stage bicycle turn box.
- Add a speed hump adjacent to Summit Hall to mitigate vehicle speeding. Throughout the corridor a crossing or traffic calming treatment should be placed roughly every 500 feet to attenuate opportunities to speed.
- Install a transit boarding island at the Horn bus stop adjacent to Canvas Stadium parking entrance. Relocate the crosswalk from Aspen Hall to match the trail crossing and improve visbility by having pedestrians cross in front of the bus stop (rather than behind).
- Build high visibillity decorative crosswalks at the entrance to Meridian Ave and install curb ramps north of the Stadium to provide accessible pedestrian crossing.
- Build a roundabout at Meridian Village just east of the Stadium. Close east leg of intersection to vehicles, and move Braiden Hall parking entrance to new Meridian Street.
- Remove marked crosswalks across portion closed to cars. This is funded to become a bicycle and pedestrian roundabout and crossing.
- (**G**) Improve signage for pick-up and drop-off.
- Ramp the existing separated bike lane on the south side of W Pitkin onto a 4 ft wide sidewalk extension to facilitate bicyclists turning left onto Campus Loop Trail.

S Shields St to Closure East of Meridian Ave

Build a sidewalk-level separated bike lane, separated from vehicle traffic by a furnishing zone with planters and benches.

Add intermittent concrete in the furnishing zone to allow for access to the curb and accomodate drop-offs.



Cross Sections

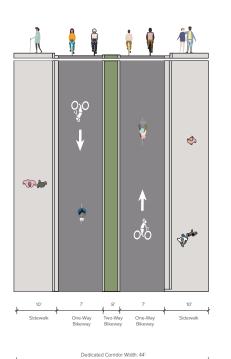
(Looking East)

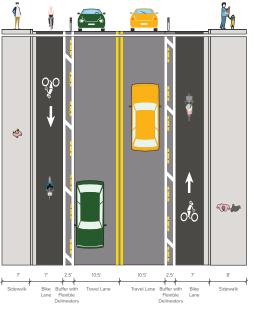
Meridian Ave to Newton Memorial

Build a center-running median with one-way bikeways and pedestrian walkways on edges, all at street grade.

Newton Memorial to S College Ave

Build a separated bike lane while maintaining existing curbline.





Dedicated Corridor Width: 55'



Meridian Ave



Spot Treatments

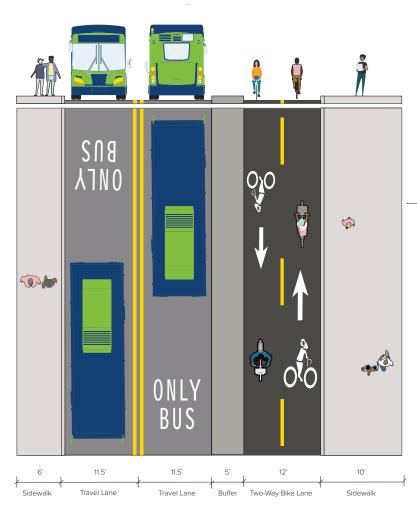
- Build a raised intersection at Meridian Ave and retain existing stop signs.

 Contruct a refuge island between the bikeway and transit lanes on Meridian to create an aperture for buses and discourage cars from entering.
- **B** Construct traffic circle to direct traffic that accomodates bus and bike facilities, including two-way bikeway proposed on the east side of Meridian Ave.
- Construct traffic circle to direct traffic that accomodates bus bike facilities, including two-way bikeway proposed on the east side of Meridian Ave.
- Build pedestrian gateway at the entrance to Meridian Ave and install curb ramps north of the Stadium to provide accessible pedestrian crossing across Pitkin.

Cross SectionHughes Way to W Plum St

(Looking North)

Add a two=way separated bike lane and a sidewalk to the east side of Meridian Ave.



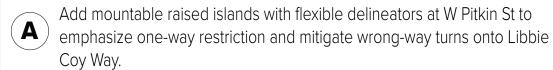
Dedicated Corridor Width: 52'

Proposed Sidewalk or _On-Street Pedestrian Walkway (No sidewalk on east side of street until adjacent parking lot is removed)

Libbie Coy Way



Spot Treatments



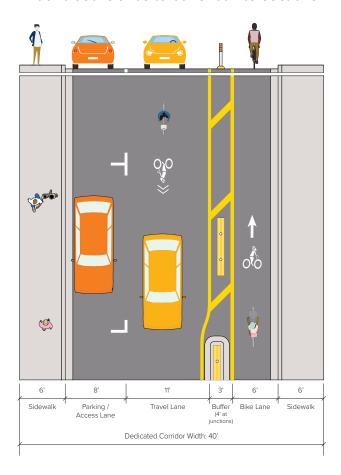
Install vertical delineators at A Street to discourage wrong-way turns onto Libbie Coy Way and reinforce contraflow bicycle lane.

Cross Section

(Looking North)

W Pitkin St to University Blvd

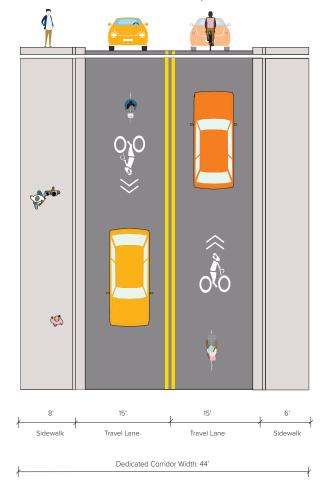
Add raised islands to buffer at intersections



W Lake St to W Pitkin St

Move sharrows to the middle of the lane.

Add 6 ft sidewalk to the east side of Libbie Coy Way with future development.



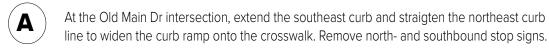
S Mason St





Spot Treatments

В



Remove the stairs that cross over the railroad tracks as well as the crosswalk leading to them.

Add green conflict markings across driveways from University Ave to W Laurel St.

At the west railroad crossing tunnel exit, eliminate the three easternmost parking spaces and stripe a walkway through the parking lot to the trail that connects to Oval Dr.

Reconfigure angled parking to back-in angled parking along east side of Mason St. At intersection with University Ave, extend curb (optionally with paint-and-post treatment) to narrow crossing distance to less than 15 feet; design curb radius to accommodate bus left turn. Move crosswalk and stop bar on Mason forward to mitigate sightline issue.

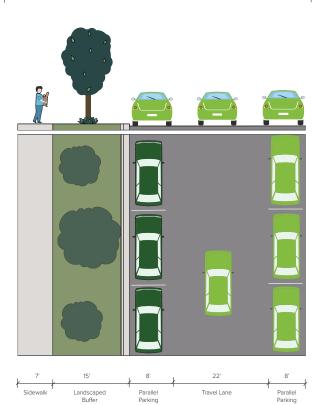
Add green conflict markings across on Pitkin St to guide bicycles through the rail and busway crossings.

Cross Section AlternativesUniversity Ave to W Pitkin St

(Looking North)

Various options presented for parking solutions:

1) Back-in angled parking on the east side of S Mason St with no designated bikeway. Because of the width of the roadway, parallel parking is recommended to be permitted on the west side of Mason St.



Dedicated Corridor Width: 60'

2) Parallel Parking is formalized on both sides of Mason St.

Rampart Road

Cross Sections

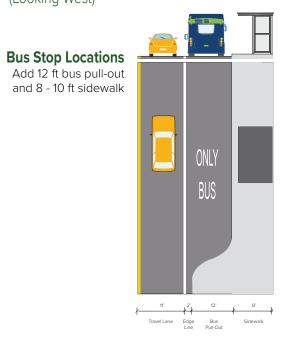
(Looking West)

Spot Treatments

- Build bus bulb outs and landing pads at all Foothill Shuttle bus stops. See for existing bus stop locations
- Add speed limit signs across corridor every 0.25 0.5 miles.

 See for location suggestions.
- Implement access control by closing redundant driveways to improve corridor safety. See for driveway closure suggestions
- **D** Build raised crosswalk to support future parking lot.

S Overland to end of Rampart Rd
Add centerline and edge lines









Bicycle Master Plan Colorado State University

Acknowledgements

This document was developed through a collaborative process involving University staff from numerous departments, faculty, students, and the City of Fort Collins.

Steering Committee

- Aaron Fodge, Parking and Transportation Services
- Joy Childress, Police Department
- Fred Haberecht, Facilities
- David Hansen, Facilities
- Jennifer Johnson, Parking and Transportation Services
- Tim Broderick, Housing and Dining Services
- Tessa Greegor, City of Fort Collins
- Steve Hultin, Facilities
- Kim Sharpe, Bicycle Pedestrian Education Coalition
- Sam Block, ASCSU

Consultant Team

- Jessica Juriga, Project Manager, Toole Design Group
- Bill Schultheiss, Deputy Project Manager, Toole Design Group
- Jessica Zdeb, Transportation Planner, Toole Design Group
- Geneva Hooten, Transportation Planner, Toole Design Group
- Anthony Pratt, Landscape Architect, Toole Design Group

Table of Contents

INTRODUCTION	
Plan Purpose and Goals	1
Study Area	3
PLAN PROCESS	4
Steering Committee	4
Online Interactive Map	5
EXISTING PLANS AND PROGRAMS	7
Plans and Surveys	7
Existing Programs	11
Existing Support Facilities	13
Program Recommendations	14
EXISTING BICYCLE ENVIRONMENT	
Bicycle Network	15
Bicyclist Safety	23
Existing Wayfinding	
Bicycling and Transit	25
BICYCLE NETWORK RECOMMENDATIONS	26
Principles of Network Recommendations	26
Facility Toolbox	26
Main Campus Network Recommendations	32
Foothills Campus Network Recommendations	34
South Campus Network Recommendations	
Wayfinding Recommendations	35
BICYCLE PARKING	36
Existing Bicycle Parking	36
Bicycle Parking Best Practices	37
Summary of Bicycle Parking Needs	40
Bicycle Parking Recommendations	40
IMPLEMENTATION AND EVALUATION	44
Infrastructure Implementation	44
Evaluation	49
Summary and Next Steps	51

Figures

Figure 1 Existing Bicycle Lane on Campus	2
Figure 2 "Where I'd like to ride" Hand-Drawn Routes from WikiMap	5
Figure 3 Stadium Site Plan	9
Figure 4 Fort Collins Bike Plan Bicycle Demand Analysis	10
Figure 5 Example of Fort Collins 2020 Low Stress Network	11
Figure 6 BEEP Citation	11
Figure 7 Bicycle Registration Sticker on Campus	11
Figure 8 On-Campus Bicycle Thefts and Recovery Rates	12
Figure 9 Existing CSU Bicycle Network	
Figure 10 A Bicyclist Walks his Bike in the Dismount Zone	17
Figure 11 Vehicular Travel Routes on CSU's Main Campus	
Figure 12 Bicycle Dismount Zone near the Lory Student Center	18
Figure 13 View of Braiden Drive	18
Figure 14 Travel Routes through the CSU Campus Identified on the WikiMap	19
Figure 15 "Routes I'd Like to Ride" Identified on the WikiMap	20
Figure 16 Barriers to Bicycling as Identified on the WikiMap	21
Figure 17 College Avenue and Elizabeth Street Intersection	21
Figure 18 South Campus Existing Bicycle Network	22
Figure 19 Foothills Campus Existing Bicycle Network	23
Figure 20 Campus Crashes Between 2006 and 2013	24
Figure 21 Existing Mason Trail Wayfinding	24
Figure 22 Display at Lory Student Center Teaching How to Transport Bicycles on Buses	25
Figure 23 Existing Bike Lane on Campus	27
Figure 24 Contra-flow Bike Lane Typical Section	27
Figure 25 Buffered Bike Lane Typical Section	27
Figure 26 Shared Path Typical Section	28
Figure 27 Protected Bike Lane Typical Section	28
Figure 28 Separated Path Typical Section	29
Figure 29 Parking Lot Path in Lot 575	29
Figure 30 Two-way Sidepath Typical Section	29
Figure 31 Dutch-style Intersection Depiction	30
Figure 32 Bicycle Signal	32
Figure 33 Main Campus Bicycle Network Recommendations	33
Figure 34 Foothills Campus Bicycle Network Recommendations	34
Figure 35 South Campus Network Recommendations	35
Figure 36 Full bike racks at Corbett Hall residences	36
Figure 37 Main Campus Bicycle Rack Inventory	36
Figure 38 Cora-style bicycle racks on the South Campus	37
Figure 39 Boulder County Secure Bicycle Parking Shelter	38
Figure 40 Example of Covered Bicycle Parking	
Figure 41 Bicycle parking outside Student Recreation Center	39
Figure 42 University Avenue East of the Dismount Zone	40
Figure 43 Recommended Bicycle Count Locations	50

Tables

Table 1 Bicycle Parking per Building Typology	4
Table 2 Recommended Quantities of Bicycle Parking	
Table 3 High Priority Projects	
Table 4 Medium Priority Projects	
Table 5 Low Priority Projects	47
Table 6 High Priority Bicycle Counter Locations	

Introduction

Colorado State Univeristy (CSU) has demonstrated a commitment to a sustainable transportation system by developing separated bicycle facilities, closing streets for use by bicycles and pedestrians, offering popular bicycle education programs, partnering with the City to build the Mason Trail extension, and more. While these actions demonstrate a strong commitment to sustainable transportation, there remains a need for an overall plan to organize and guide the growth of the bicycling system at CSU. This Bicycle Master Plan (the Plan) was created to fulfill that need. This Plan will guide CSU's bikeway development over the next decade as to become a more bicycle friendly campus and to achieve the goals of improved safety, sustainability, and health.

Providing improved bicycle facilities for the University's 25,600 on-campus students and 6,400 employees is directly related to improving public safety, reducing injuries resulting from crashes, ensuring efficiently and ease of movement, improving public health, and meeting sustainability targets.¹

The Plan analyzes existing conditions, including current policies, programs, and infrastructure, while providing best practice examples of programs and facilities at peer institutions. These recommendations aim to meet the project's goals while improving the user experience through the development of the bicycle network. This Plan also recognizes that improving existing bicycle facilities, adding new facilities where needed, and providing more educational opportunities to the campus community will

¹ CSU is the largest employer in Fort Collins with an estimated 6,400 employees, of which 1,600 are faculty, 2,500 are administrative professionals, 1,900 are state-classified personnel, and 400 are other salaried employees. http://www.colostate.edu/features/facts-figures.aspx

improve safety for all modes of travel even as the number of bicyclists increases.

Plan Purpose and Goals

This Plan is intended to help the University increase bicycling on campus as a way to enhance campus sustainability and reduce demand for automobile travel and parking. The Plan provides clear vision and guidance to improve the bicycle environment on campus while also aligning with the City of Fort Collins Bicycle Master Plan (Fort Collins Bike Plan). Specifically, this plan:

- Prioritizes investments to the built environment;
- Equips CSU to apply for North Front Range Metropolitan Planning Organization funding in partnership with the City of Fort Collins (City);
- Guides programmatic investments for education, enforcement, and encouragement;
- Recommends data collection measures to support ongoing investment in the bicycle environment at CSU;
- Informs Master Plan updates and decisions about placement of new buildings and open spaces on campus; and
- Provides guidance for accommodating bicycles on campus in new residences, office and educational buildings, and parking garages.

Improve Sustainability

In 2008, CSU announced its intent to "seek environmental solutions that include making CSU carbon neutral in a rapid timeframe." Subsequently, CSU signed the American College and University Presidents Climate Commitment, whereby the University agreed to set carbon neutrality as a long-term climate goal. The original 2010 Climate Action Plan began the process of defining a path for CSU to

 $\frac{http://www.fm.colostate.edu/sustain/downloads/Climate\ Action\ Plan\ Updat}{e-2-20-2013.pdf}$

² Climate Action Plan.

achieve climate neutrality and the most recent update, The Climate Action Plan Update in February 2013, offered goals and updates to the original plan.

This Bicycle Plan advances Goal 4.11 to reduce single-occupancy vehicle commuting by 5 percent. Alternatives to single-occupancy vehicle commuting can reduce greenhouse gas emissions, improve air quality, and encourage healthy walking and cycling habits, thereby advancing the University's goal of becoming a climate neutral campus.

The Sustainability Tracking, Assessment & Rating System™ (STARS) is a self-reporting framework for colleges and universities to measure their sustainability performance.³ In February 2014, CSU was granted a gold STARS rating, the highest rating granted to any University (platinum is the highest designation). Transportation factors such as the University's campus fleet, commute mode split, bicycle sharing, bicycle and pedestrian plans, facilities for bicyclists, car sharing, mass transit programs, and other programmatic elements fit into the STARS scoring. CSU earned 6.8 of 12 possible points in the 2014 scoring. They points on the campus fleet student/employee commute modal split, which be directly improved through recommendations to the bicycle network proposed in this Plan.

Attain Platinum Bicycle-Friendly Designation

The national Bicycle Friendly University (BFU) program, created and run by the League of American Bicyclists, recognizes applicants for improving bicycling conditions on campus. The program scores universities in the following five areas, colloquially known as the "Five E's":



Figure 1 Existing Bicycle Lane on Campus

- 1. Engineering: Create safe and convenient places to ride and park a bicycle.
- 2. Education: Give people of all ages and ability levels the skills and confidence to ride.
- 3. Encouragement: Create a strong bicycle culture that welcomes and celebrates bicycling.
- 4. Enforcement: Ensure safe roads for all users.
- 5. Evaluation and Planning: Plan for bicycling as a safe and viable transportation option.⁴

Each of the Five "E's" calls for changes to the campus bicycle environment to promote holistic improvements. There are currently 100 BFUs across the country. A small number of CSU's peer institutions in the Mountain West region have attained the silver or higher designation, including:

- Arizona State University (Gold)
- University of Montana (Gold)

 \sin^{q^2}

- Northern Arizona University (Silver)
- University of Arizona, Tucson (Silver)
- Boise State University (Silver)

³ Sustainability Tracking, Assessment & Rating System. Feb. 25, 2014. https://stars.aashe.org/institutions/colorado-state-university-co/report/2014-02-25/

⁴ Definitions from The League of American Bicyclists, http://www.bikeleague.org/content/5-es

- University of Utah (Silver)
- Utah State University (Silver)

In 2011, the League of American Bicyclists (LAB) designated CSU as a BFU at the silver level. Reviewers based this designated on the University's efforts and commitment to support bicycling as well as the campus' potential growth. The application included an update on the University's bike trail to connect south and main campus, investment in additional bike parking, policies and ordinances for end of trip facilities, efforts of the Bicycle Advisory Committee, success of the Bicycle Education and Enforcement Program (BEEP), and the number of rides, races and fundraisers that take place on campus. CSU should reapply for a new BFU designation in 2015 with the goal of attaining a platinum designation. Only two Universities have attained that status: Stanford University and the University of California-Davis. The LAB states that platinum universities "usually show excellence across the board. [They have] a comfortable and safe bike network, excellent bike parking, great bike education programs, a supportive police force and just people on bikes everywhere."5

Study Area

The study area for the Plan includes the Main Campus and two satellite campuses: South and Foothills. The Main Campus is located in central Fort Collins and is bordered by four major arterial streets: Laurel Street to the north, Lake Street to the south, College Avenue to the east, and Shields Street to the west. This Plan focuses on how to improve bicycling on the Main Campus due to the high concentration of students, classrooms, and other academic facilities. However, recommendations to improve bicycling conditions on the satellite campuses are also included in this Plan.

The South and Foothill Campuses are an important part of the bicycling network, but improvements on these campuses will affect fewer riders than on Main Campus. The Foothills Campus is located approximately 2.5 miles from CSU's Main Campus, on the west edge of the city. The Foothills Campus is home to several research facilities and the Centers for Disease Control Borne Infectious Disease Lab. The South Campus is located just south of the Main Campus and is bordered by the Sherwood Lateral to the north, Drake Road to the south, Centre Avenue and Gilette Drive to the west, and Bay Road and the Mason Trail to the east.

⁵ The League of American Bicyclists. http://bikeleague.org/content/process-0

Plan Process

The development of the Plan was managed by CSU's Parking and Transportation Services Department and involved a steering committee, advisory committee, and robust public involvement conducted concurrent with the City's Plan.

Steering Committee

A steering committee of students, faculty, and staff was formed to guide development of the Plan. The committee was composed of City staff, Facilities staff, Police Department staff, Housing and Dining staff, Parking and Transportation staff, community members, and students (a full member list is provided in the acknowledgements section of this document). The committee participated in four workshops. A description of each workshop follows.

Workshop 1

The first workshop focused on providing committee members with an overview of roles, the current CSU bicycling context, the anticipated Plan focus and key topics, and the relationship of the Plan to other University and City efforts.

Workshop 2

The second workshop provided information on existing conditions, previous planning efforts, initial observations about bicycling on campus, and potential opportunities for improving bicycling on campus. Additionally, information gathered from the WikiMap (described below) was presented. At the conclusion of the presentation, the group discussed problem areas for bicycling including, but not limited to South Drive, the West Elizabeth Street and South Shields Street intersection, the East Elizabeth Street and South College Avenue intersection, the West Lake Street and Centre Avenue intersection, and the Oval.

Workshop 3

At the third workshop, committee members were presented with draft infrastructure recommendations for the Main Campus and reviewed the City's draft bicycle network recommendations. Valuable feedback was received about the following areas:

- the West Laurel Street and South Mason Street intersection;
- West Pitkin Street;
- a north-south route near the Oval;
- the South Meldrum Street and West Laurel Street intersection;
- South Shields Street;
- West Plum Street:
- Remington Street;
- South Loomis Avenue; and
- Center Avenue.

Workshop 4

Committee members were presented with draft recommendations for bicycle parking, a recommended bicycle counting program, infrastructure recommendations for the Foothills and South Campuses, and initial cost estimates for infrastructure recommendations. The committee helped clarify assumptions and gave feedback on recommendations. As a result, refinements were made to the recommendations; these are reflected in this Plan.



Figure 2 "Where I'd like to ride" Hand-Drawn Routes from WikiMap

Online Interactive Map

Infrastructure recommendations were informed by feedback from an online interactive map, or WikiMap, which collected geographically-specific feedback. The map was created in conjunction with the City Bike Plan. Over 400 registered users were asked to identify routes they already ride, routes they would like to ride, barriers to bicycling, locations where bike parking is needed, and potential bike share station locations. The map was prominently featured on the project website and in the Fort Collins Bike Plan's documents and website.

The WikiMap highlighted that cyclists use the Spring Creek Trail and Mason Trail as well as Overland Trail and West Elizabeth Road. The arterials that border campus, including South Shields Street and South College Avenue, as well as intersections such as South Shields Street and West Prospect Road, were noted as barriers to bicycling.

Additionally, WikiMap users indicated that South College Avenue (a north-south arterial) and Laporte Avenue and West Drake Road (east-west arterials) are corridors that people are interested in bicycling.

Example Comment

West Lake and Center Road: "With the mix of 4-way stop, high vehicle traffic, high pedestrian traffic, high bike traffic, and general disregard for following the rules of the road for most parties involved, this intersection is pretty undesirable."

Public Open Houses

Two open houses were held as part of the Fort Collins Bike Plan process. Both included focused information about the CSU Bike Plan and activities designed to gather feedback on existing bicycling conditions and proposed recommendations. The first Open House sought input about existing conditions on and near campus while the second Open House sought input about specific intersections and travel corridors. There were 236 attendees at the first open house and 114 at the second. Notable preferences about preferred corridors for north-south and east-west travel include:

- South Shields Street was noted as the most critical north-south route that should be created first in the City's proposed 2020 Low Stress Network.
- West Pitkin Street was noted as the most critical east-west route that should be created first in the City's proposed 2020 Low Stress Network.
- South Shields Street was noted as the north-south protected bike lane that should be created first in the City's Full Build Vision.
- West Drake Road was noted as the east-west protected bike lane that should be created first in the City's Full Build Vision.

The following four intersections were indicated as most in need of improvement at the edge of CSU's campus:

- West Elizabeth Street and South Shields Street (43 percent)
- 2. East Elizabeth Street and South College Avenue (19 percent)
- 3. West Lake Street and Center Avenue (16 percent)
- 4. South Meldrum Street and West Laurel Street (15 percent)

Existing Plans and Programs

This chapter includes a review of existing campus transportation plans and policy documents, including summary of bicycle parking inventory and use and a description of other bicycle-related programs and resources on campus. This information was used to understand aspects of bicycling on campus that are working well and challenges and barriers on campus to inform the development of recommendations.

Plans and Surveys

The following plans and studies that impact transportation and bicycle travel on campus were reviewed and are summarized below:

- Student Housing Survey
- CSU Parking and Transportation Master Plan
- CSU 2020 Plan
- Stadium Construction Plan
- City of Fort Collins Bicycle Master Plan

Student Housing Survey

CSU annually conducts the Student Housing Rental Survey which asks students about their housing preferences and travel behavior via an online questionnaire. The 2014 survey had 758 respondents of which 65 percent listed their personal car as their primary mode of transportation for commuting to campus. Just under a quarter (24 percent) of all students surveyed listed biking as their primary mode of transportation to campus, followed by bus/transit at 20 percent, and walking at 19 percent. When asked how important bicycle storage and parking are when selecting student housing, nearly 25 percent said that is it extremely important (up from 19 percent in 2013) with an additional 22 percent stating that it is very important.

CSU 2020 Plan (Campus Master Plan)

The CSU 2020 Plan is the Campus Master Plan that identifies infrastructure needs for intended expansion of the student population. The Plan forecasts a significant increase in bicycle mode share by 2024 with a target of 30 percent of students and 9 percent of faculty and staff accessing campus by bicycle. It is expected that 18,000 bicycle parking spaces will be needed on campus to accommodate future growth. This Plan will become an appendix to the Master Plan (to later be approved by the Master Plan Committee).

CSU Parking and Transportation Master Plan

A survey conducted as part of the Parking and Transportation Master Plan showed that bicycling is the second most popular mode of travel to and from the campus, though only 8 percent of trips are made by bicycle. While the mode split for bicyclists is much lower than for driving, approximately 38 percent of respondents live within three to five miles of campus meaning that a greater bicycling mode split could be captured by improving the bicycling environment on and around campus and by providing additional bicycle education and encouragement initiatives.

The Master Plan supports increasing bicycle infrastructure and increasing travel options for non-auto modes of transportation. The plan aims to reduce the amount of parking space supplied to students and employees in the future, thereby encouraging students to bike or walk to campus instead of driving. Providing a safe, comfortable, and intuitive bicycling network is important to enable this shift.

Stadium Construction Plan

Hughes Stadium, built in 1968, is CSU's outdated football stadium located roughly three miles west of campus and adjacent to the Horsetooth Reservoir. The University is considering several options for the future of this stadium with the ultimate goal of relocating the stadium to Main Campus. If the stadium is relocated to the CSU campus, it

would be located at the southern edge of campus along West Lake Street and Meridian Avenue to the east.

According to a September 2014 letter written by University President Dr. Tony Frank, there are four options to be considered before making a final recommendation to the Board in December 2014. The four options are (1) to maintain Hughes Stadium, (2) to modernize and improve the stadium to keep it functioning until a new stadium can be built by 2050, (3) to phase the current planned stadium in the proposed on-campus location, or (4) to rebid the existing stadium plan as a public-private partnership. Although the future of Hughes Stadium is not certain, this Plan has assumed that options three or four will be undertaken and that Hughes Stadium will be decommission and an on-campus stadium will be constructed.

⁶ Frank, Tony. "Recommendation on CSU Stadium." Sept. 25, 2014, accessed October 6, 2014. http://president.colostate.edu/campus-messages/2014-9-25-stadium.aspx



Figure 3 Stadium Site Plan

Source: CSU, Stadium Site Plan Update

City of Fort Collins Bicycle Master Plan (Fort Collins Bike Plan)

The Fort Collins Bike Plan was developed concurrently with this Plan. CSU is the largest employer in the City, is home to thousands of students, and serves as a primary activity center for all residents, employees and visitors. In fact, the bicycle demand analysis performed for the City's plan revealed that the area around CSU Main Campus has the highest expected demand for bicycling in Fort Collins (see **Figure 4**).⁷

Many of the streets bordering campus, such as South Shields Street and South College Avenue, were classified as high-stress in the analysis of bicyclist comfort level completed for the Fort Collins Bike Plan. This means that they are not appealing to the widest range of bicyclists which may include students who have not ridden a bicycle since they were children.

The bicycle network developed for the Fort Collins Bike Plan includes all of the streets bordering the Main Campus as well as many that feed into it. The City Plan's 2020 Low Stress Network was developed to take advantage of existing low-stress streets that form an alternative network to the high-stress arterial streets. One critical low-stress route in the City network runs directly through campus on West Pitkin Street. This route provides an alternative through route to high-stress West Prospect Road and will be made feasible for low-stress riding through a series of spot improvements at offset intersections, such as at South Shields Street. Other low-stress routes through CSU's campus, such as West Laurel Street, Shields Street, Mason Street, Meridian Avenue, and Center Ave, are shown in Figure 5.

Fort Collins Bike Plan's Full Build Vision provides a pathway toward implementation of a world-class bicycle network. This network focuses on improvements to high-

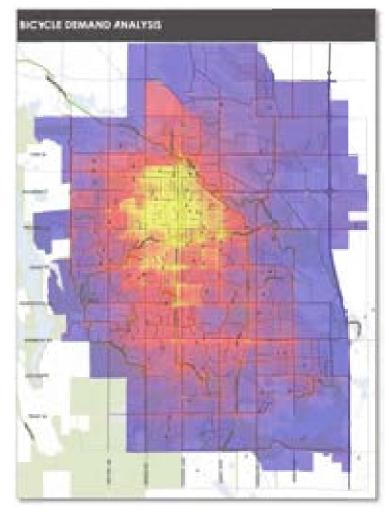


Figure 4 Fort Collins Bike Plan Bicycle Demand Analysis

stress streets that will require more complex studies and design, and a higher level of investment.

 $^{^{7}}$ Fort Collins Bike Plan, Network, Policy, and Program Recommendations, November 2014



Figure 5 Example of Fort Collins 2020 Low Stress Network

Existing Programs

CSU's existing bicycle programs are successful and have become models for other universities across the country.

Campus Bike Advisory Committee

The Campus Bike Advisory Committee is a working committee that meets monthly, staffs bicycle advocacy events, and promotes bicycle education and safety on the CSU Campus. Their mission is to "promote a safe and enjoyable bicycle experience through awareness, planning, and education. We encourage the environmental benefits of bicycles as affordable green-transportation for our campus community." Additionally, the Bike Advisory Committee manages an on-campus listsery to keep interested community members informed about on-campus bicycling efforts.

Bicycle Education and Enforcement Program (BEEP)

The Bicycle Education and Enforcement Program (BEEP) was formed in 1994 and is housed within the CSU Police Department (PD). The BEEP, funded through bicycle registration and citation revenues, employs six Campus Service Officer (CSO) student employees and a coordinator.



Figure 6 BEEP Citation

The BEEP distributes educational information, including the bicycle user's handbook, to those who have registered their bicycles with the University. The program allows for the distribution of educational materials to nearly 5,000 CSU students. The BEEP's RAMCYCLE course educates CSU freshman on basic bicycle safety information in order to ensure their continued safety on the road.

Bicycle parking is discussed more fully in a later chapter of this Plan, but a major aspect of the BEEP program is parking enforcement. Improperly parked bicycles (such as those locked to trees, light poles, or railings) are impounded by CSU PD. Additionally, BEEP employees regularly check bicycle racks for abandoned bicycles that need to be impounded. Non-residence hall buildings are checked for abandoned bicycles during academic breaks

⁸ The Campus Bike Advisory Committee's Mission, accessed Sept. 28, 2014. http://bicycle.colostate.edu/

⁹ For more information on the BEEP, see the BEEP website at: http://police.colostate.edu/bike-traffic/

and residence hall racks are checked at the end of the academic year. Impounded bicycles can be recovered by owners at CSU PD.

Ram Guards

To address locations on campus that experience circulation issues, CSU employs students to work the Ram Guards program which is housed within the Police Department. Ram Guards control traffic at highly-congested locations such as Meridian Avenue and South Drive and address wrong-way bicycle riding on South Drive. Ram Guards are funded by the University Parking & Transportation Services from parking revenue.

RamBassadors

Similar to the Ram Guards program, the RamBassadors program employs students to improve bicycling on campus. RamBassadors are employees of Parking and Transportation who perform educational outreach to other students about bicycling on campus. For example, at the beginning of the academic year RamBassadors are stationed near the dismount zone on Main Campus to hand out literature about bicycling on campus and to conduct bicycle counts. This peer-to-peer encouragement and education has been successful at CSU and should continue. Like Ram Guards, RamBassadors are funded by the University Parking & Transportation Services from parking revenue

Bicycle Registration

To facilitate campus policing and provide some security for bicycle owners, CSU requires for all bicycles ridden or parked on the CSU campus to be registered with CSU PD, though visitors are exempt. Registration costs \$10 per year and is completed online or submitted in-person at the BEEP Office at the Campus PD. The registration decal, known as a CSU bicycle license, must be placed on the bicycle and is valid for as long as the decal numbers are legible. Campus PD, who manages the registration program, estimates that approximately 50 percent of bicycles on campus are registered.



Figure 7 Bicycle Registration Sticker on Campus

Bicycle Theft

Bicycle registration has steadily increased since 2009 and has proved instrumental to tracking and recovering stolen bicycles. There were 4,792 bicycles registered in 2013, up from up from 4,544 four years prior. Campus police track bicycle theft as well as traffic and behavior-related violations. As of 2014, there were approximately 180 reported bicycle thefts per year, which is estimated to be about 1.7 percent of the bicycles parked on campus.

Figure 8 shows the total number of bicycles stolen and recovered between 2009 and 2013. Thanks to bicycle registrations and the BEEP, bicycle thefts are falling while recovery rates are rising.¹⁰

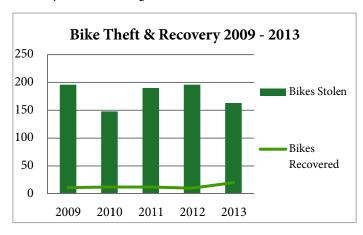


Figure 8 On-Campus Bicycle Thefts and Recovery Rates

¹⁰ Although there is not complete data for 2014, in the first quarter of the year there were three bikes stolen, of which none was recovered.

Fort Collins Bike Library

The Fort Collins Bike Library is operated by the City between April and mid-December. The Bike Library allows residents and visitors to check out a bike from their any of their five locations and return them at any of the six drop-off locations. To rent a bike, one can make a reservation online, complete a waiver form either online or in person, and put down a \$150 deposit. It costs \$10 per day to rent a bike, however, if a bike is returned before closing to the same location from which it was rented, it is rented for free of charge. The Bike Library's new satellite location at CSU's Surplus Property Department (at 201 West Lake Street) has twenty bicycles that are available to rent on a first-come, first-served basis from 9:00 am to 1:00 pm on weekdays.¹¹

Get Back on the Bike Program

CSU was awarded with a nearly \$20,000 Kaiser Permanente Walk and Wheel grant to create a program to help faculty and staff become more comfortable riding a bike to work. 12 The program, Back on the Bike, is intended to help CSU employees who want to bike to work assess their health, tune theirs bicycles, acquire safety gear, and learn tricks to travel in traffic and overcome other safety or comfort obstacles through personalized travel training. To qualify, faculty and staff must be at least 50 years old, live within a Fort Collins zip code, and want to commute by bicycle. The Back on the Bike program will offer two annual faculty and staff travel training programs including:

- A survey of all eligible employees
- Health assessments administered by the Recreation Center
- Free bicycle tune up and safety gear

¹¹ Novey, Madeline. "Fort Collins opens bike library at Colorado State." The Coloradoan. June 8, 2014. Accessed Oct. 24, 2014.

http://www.coloradoan.com/story/news/local/2014/06/08/fort-collins-opens-bike-library-colorado-state/10201399/

¹² Grant to CSU helps faculty, staff bike to work." Today @ Colorado State. June 24, 2014. Accessed Oct. 24, 2014. http://today-archive.colostate.edu/story.aspx?id=10210

- Hands-on travel training and bicycle skills development
- Monthly training and discussion group
- Online participation tracking system
- The opportunity to recruit other eligible employees

Traffic Law Enforcement

Traffic laws are enforced by BEEP CSOs and sworn CSU PD officers. In 2013 there were a total of 1,599 citations issued for 1,856 violations (some citations had multiple violations). The most-cited offence was for disobeying a traffic control device (674 infractions) followed by riding without required registration (652 infractions). The third and fourth most-ticketed offences were riding in the dismount zone (212) and riding the wrong way on the road (185). There are no clear trends in the number of citations issued between 2009 and 2013.

Existing Support Facilities

Fix-it Stations

The BEEP provides a number of self-service bicycle fix-it stations on campus that include air pumps and an assortment of tools to help bicyclists repair flats and complete basic tune-ups. Current locations include the following:

- Parking garage
- Morgan Library
- Recreation Center
- Academic Village
- Recycled Cycles in the Lory Student Center has an air hose (available 24/7) and tools to borrow during their open hours that are also free to use
- The Institute for Learning and Teaching (TILT)
- University Center of the Arts

On-Campus Bicycle Shop

ReCycled Cycles is a full-service bicycle store and service shop located on the north side of the Lory Student Center. The bicycle shop serves as a campus-wide resource for bicycle services and contributes to the on-campus bicycling environment.

Program Recommendations

- CSU should continue to support bicycle encouragement and enforcement programs including the BEEP, RamBassador, and Ram Guards programs that foster greater dialogue between road users and enforcement. In addition to educating and enforcing bicyclist behavior, these programs should also address pedestrian behavior, as to increase respect for bicycle-only facilities and proper etiquette for shared spaces.
- CSU should continue to require bicycle registration and look for new ways to increase compliance given the success of the bicycle registration program in returning stolen bicycles and enforcing bicycling rules.

- CSU should continue to offer bicycle education in the form of orientations and safety seminars for incoming students to foster a safe and vibrant bicycling environment on campus.
- In addition to the programs previously summarized, CSU should continue with other successful programs such as its partnership with the Brave New Wheel bicycle shop to provide instruction about the use of Fix-It stands. The University may consider offering regular drop-in hours at Fix-It stands to provide students, faculty, and staff more options to service their bicycles.
- CSU should seek out new and creative ways to engage the ReCycled Cycles bicycle shop in other campus bicycle programs.
- When the University updates its Climate Action Plan in 2015, a bicycle-specific goal should be included. This could include a mode share target or targets associated with bicycle parking or counters, and should be coordinated with the Climate Action Plan team.



Existing Bicycle Environment

Bicycle Network

Currently bicyclists are utilizing a diverse network of streets with no accommodations, streets with bicycle lanes, parking lots, shared use paths, bicycle only paths, and in some instances sidewalks to navigate campus. Bicycle lanes vary in width from five to eight feet. Sidewalks are typically six feet in width and are utilized by bicyclists to close network gaps to access campus buildings or to transition to the City street system. Some sidewalks have been widened to twelve feet to operate as shared use paths. These are demarcated with a centerline and the Ram bicycle symbol.

A more recent iteration of the bicycle network is the conversion of some former streets into separated bicycle and pedestrian paths. These separate paths are designed to operate as two-way facilities with six foot bicycle lanes.

Main Campus

This section presents the existing bicycle network on and in the immediate vicinity of the CSU Main Campus. Existing travel patterns, gaps, and barriers were identified based on information collected from direct observations in the field, input provided by the public via the WikiMap and online surveys, project steering committee meetings, staff interviews, and previously completed studies.

Figure 9 displays the existing network of bicycle facilities on and in the immediate vicinity of the CSU Main Campus. The network consists of the following facility types:

- On-street bike lanes, sharrows, and parking lot routing;
- Streets closed to auto traffic;
- Off-street shared paths; and
- Off-street bicycle-only paths.

There are a number of streets not open to bicycle traffic and there is a "dismount zone" on the Center Avenue Mall where bicyclists are required to walk their bicycle.



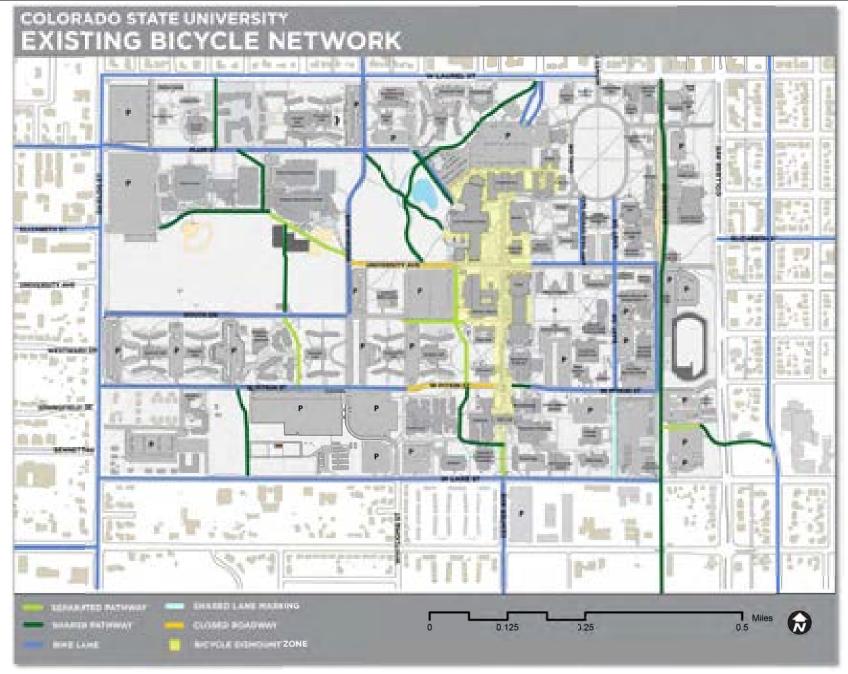


Figure 9 Existing CSU Bicycle Network



Figure 10 A Bicyclist Walks his Bike in the Dismount Zone

Vehicular Travel Routes and Patterns

Motor vehicle travel routes through the campus are generally disconnected to discourage this type of travel through campus. Through traffic is directed to peripheral streets including West Laurel Street and West Lake Street at the northern and southern boundaries of campus, and

South Shields Street and South College Avenue at the western and eastern boundaries. The one direct route through campus is the north-south East Drive/West Drive/Oval Drive route.

Input from the project WikiMap showed the travel patterns of respondents in Fort Collins including on and through the CSU campus. The WikiMap was available to all Fort Collins residents as part of the City's Bicycle Master Plan update. The results show that approximately 20 percent of all identified bicycle travel routes in Fort Collins include a trip through the CSU Main Campus. Many of these routes continue through campus and do not have a destination at CSU. A snapshot of routes through campus is shown in Figure 11. A cordon study was completed as part of the CSU Parking and Transportation Master Plan to determine travel patterns to and from campus. The study found relatively even splits among bicycle traffic entering and exiting campus from all four directions, with slightly less traffic to and from the east.

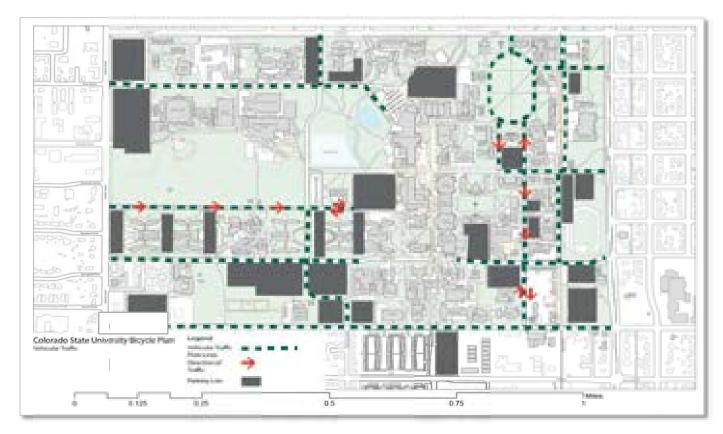


Figure 11 Vehicular Travel Routes on CSU's Main Campus



Figure 12 Bicycle Dismount Zone near the Lory Student Center



Figure 13 View of Braiden Drive

The primary north-south routes through campus are on South Loomis Avenue / Meridian Avenue and the Mason Trail. The west side of Oval Drive is also a heavy north-south route for campus-based bicycling trips. West Lake Street and West Laurel Street on the edges of campus are the primary east-west routes, along with West Pitkin Street through campus, the latter being impacted by the dismount zone on the Center Avenue Mall bisecting the route.

Main Campus Network Successes

CSU has progressively planned for bicycle transportation on campus, and was one of the first Universities to support a separation of bicycles and pedestrians in a dense campus environment. Overall, the campus offers good conditions for bicycling on campus and reasonable conditions on the periphery of the campus. CSU has begun to create pedestrian- and bicycle-only corridors through the campus center by closing internal streets (such as Braiden Drive). These corridors remove the opportunity for conflict with motor vehicles, demonstrate a commitment to active transportation, and serve as key corridors within the bicycle network.

The following locations are examples of facilities that are functioning well within the bicycle network.

Mixed-use Path at South Meldrum Street

This wide, shared-use path running southwest from the intersection of South Meldrum Street and West Laurel Street provides good access to the campus. Bicyclists and pedestrians respect each other's space and travel volumes are low enough to limit conflicts.

Braiden Drive Bicycle and Pedestrian Paths

This bicycle path and parallel pedestrian path on the former Braiden Drive (running north from West Pitkin Street) provides clearly separated areas for both modes. Most users were observed respecting the separation and bicyclists generally slow down to avoid conflicts with pedestrians at the two crosswalks that cross Braiden Drive.

Lory Student Center Plaza Dismount Zone

The Lory Student Center Plaza, bordered by the Center Avenue Mall, University Avenue, the Library, and the Computer Science buildings serves as a dismount zone for cyclists. While the plaza is often crowded, especially in between classes, the area functions well due to education and enforcement of the dismount rule. While this area works well on the whole, offering a parallel corridor where through bicycle traffic would not need to dismount would decrease congestion in this area while reducing travel time and inconvenience for bicyclists.



Figure 14 Travel Routes through the CSU Campus Identified on the WikiMap

<u>Separated Bicycle and Pedestrian Paths (Student Recreation Center to Meridian Avenue)</u>

The separate bicycle and pedestrian paths running diagonally between the Student Recreation Center and Meridian Avenue functions well due to its separation of travel modes. Bicyclists are able to travel efficiently without fearing conflicts with pedestrians or vehicles.

Main Campus Barriers

The following barriers to the bicycle network were informed by the online WikiMap, online survey, and public comments at open house events conducted as part of the Fort Collins Bicycle Master Plan update. This public feedback, combined with field observations made by the project team and discussions of existing barriers and challenges with CSU staff, stakeholders, and the project steering committee, have informed the following analysis.

Bicycling at CSU is generally good, but a lack of cross-campus connections (both north-south and east-west) and safe crossings from Fort Collins into campus are barriers to great bicycling. The following section outlines the barriers to developing a strong bicycle network at CSU.



Figure 15 "Routes I'd Like to Ride" Identified on the WikiMap

Improved North-South Connections through Campus

With the Center Avenue Mall dismount zone running through the heart of campus, there is a need for better north-south connections that parallel the Mall to allow bicyclists to travel quickly and efficiently without needing to dismount from their bicycles.

Improved east-west connections through campus

Bicyclists on campus are interested in east-west travel movements that are direct, efficient, and safe. As evidenced above (see **Figure 15**), there is a need for improved east-west connections through campus, in particular on North Drive, West Pitkin Street, and University Avenue.



Figure 16 Barriers to Bicycling as Identified on the WikiMap

Unsafe Crossings and Travel at the Periphery of Campus

CSU's campus is bordered by four major arterial streets – West Laurel Street to the north, West Lake Street to the south, South College Avenue to the east, and South Shields Street to the west. These four streets act as a barrier to safe and comfortable bicycling and are therefore four of the biggest barriers to a complete bicycle network for CSU.

South College Avenue

The South College Avenue and East Elizabeth Street intersection was highlighted as an important campus connection that feels uncomfortable for users. The bicycle turn movements are neither intuitive nor clear. For example, the eastbound bicycle lane on East Elizabeth Street does not align with the bicycle lane on South College Avenue. For pedestrians, there is no crosswalk on the south leg of South College Avenue which leads to unauthorized crossings (jaywalking) and a diminished travel environment.

South Shields Street

South Shields Street is the western border of CSU's campus that divides the residential area of west Fort Collins and the campus. Users cite feelings of unease and lack of safety while riding along or crossing South Shields Street. This corridor, and nearly every intersection along it, has become

a barrier to the bicycle network owing to a lack of signalized intersections and high motor vehicle traffic volumes. Special intersection treatments are needed to make safe crossings of offset streets (such as the segment of South Shields Street between University Avenue and South Drive).

City Police Department crash data show that South Shields Street has a high concentration of bicycle crashes, of which approximately 40 percent involve bicyclists riding on the sidewalk. Sidewalk riding typically occurs when riders feel unsafe riding directly on the street, though sidewalk riding is still dangerous, especially at access points such as driveways and intersections. Improving conditions along South Shields Street would encourage more lawful riding which would likely reduce sidewalk riding and other crashes.

West Lake Street and Center Avenue Intersection

The West Lake Street and Center Avenue intersection at the southern edge of campus is dysfunctional and unsafe for bicyclists and pedestrians. This is a high-volume bicyclist and pedestrian entrance to campus from the south and a key connection to South Campus. High volumes of automobile traffic are present, especially at times when many are accessing or leaving the Lake Street Garage. The current all-way stop control allows bicyclists and



Figure 17 College Avenue and Elizabeth Street Intersection

pedestrians to proceed southbound when drivers yield, but this can result in long wait times for drivers during class change periods. Queued lines of automobiles create sight line hazards for bicyclists and pedestrians crossing through the intersection as well.

West Laurel Street

West Laurel Street, bordering the north edge of campus, lacks bicycle lanes between Remington Street and midblock between South Mason Street and South Howes Street. The abrupt end of the bicycle lane at the intersection of Remington Street leads to unclear merging, which can be stressful to bicyclists and motorists alike. Additionally bicyclists traveling east or west are not detected by the traffic signal at the intersections of West Laurel Street and Remington Street and West Laurel Street and Central Avenue. Without automatic detection, bicyclists must wait until a motor vehicle arrives in order to make a lawful crossing; this is impractical during less busy times of the day and many bicyclists run red lights as opposed to waiting for the signal.

West Prospect Road

West Prospect Road is an east-west street on the south side of campus that is narrow and carries large volumes of motor vehicle traffic. It is a high-stress route for bicyclists, but few continuous suitable alternatives exist. The City is currently studying West Prospect Road as part of the West Central Area Plan.

South Campus

Network

The existing bicycle network at South Campus includes bike lanes along Center Avenue and Research Boulevard on the western and southern borders of campus and the Mason Trail shared-use path (depicted in green in **Figure 18**) on the east side of campus. There is a lack of bicycle facilities within South Campus which acts as a deterrent to bicycling.

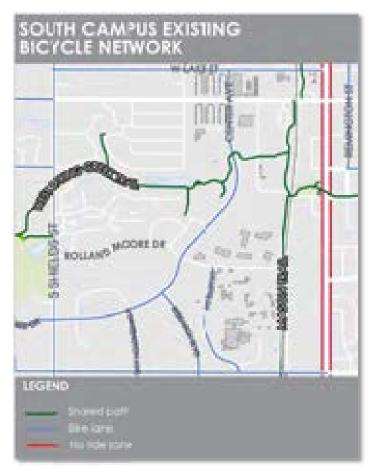


Figure 18 South Campus Existing Bicycle Network

Successes

A new pedestrian and bicycle bridge was completed in spring 2014 to cross the Burlington Northern Santa Fe railroad tracks and Mason Trail. This bridge links South Campus with the shopping center to the east while also providing a direct connection to South campus and the MAX BRT stop situated between the two.

Barriers

There are few east-west routes on South Campus. The campus bicycle network is constrained by railroad tracks running just east of the Mason Trail. Even with the new bridge to connect South Campus to the shopping center across the railroad tracks, there is still a need for enhanced connections to the Mason Trail and MAX BRT. Additionally, existing bicycle parking should be more accessible and readily visible to visitors.

Foothills Campus

Network

There are no dedicated bicycle facilities today on the Foothills Campus (see Figure 19). Students, employees and visitors access the campus through two main entrances at Laporte Avenue and Rampart Road. Laporte Avenue provides access into the northern portion of Fort Collins and is a direct connection to downtown. It runs along the northern edge of campus and has 4' shoulders where some bicyclists ride today, whereas others share the road with automobiles. Rampart Road is a 24' street which bicyclists share with automobiles and does not connect across Overland Trail at the eastern edge of campus. There is no sidewalk on either street. Some traffic to Foothills consists of large vehicles that deal with animal movement and may be particularly uncomfortable to encounter when sharing the road as a bicyclist.

Additionally, there are no bicycle connections between the northern and southern portions of the Foothills Campus. The current unpaved road that provides vehicle connection is steep and rutted, feasible for bicycling only by strong riders on bicycles suited for this type of terrain.

Successes

Staff members do bike to Foothills Campus and make use of existing parking facilities, especially in the northern half of the campus. The proximity of campus to recreational riding on unpaved trails means some staff members also bring bikes to campus for this purpose, even if they do not use them to commute to work.

Barriers

The lack of connection between the northern and southern parts of campus presents a major barrier for bicyclists. Comfortable bicycle facilities should be installed to allow for users to reach their destinations on both halves of campus. Overland Trail, while it does have bicycle lanes, is a high-stress route and a gap in the bicycle network for many users. Additionally, the gap in the Foothills Trail, an unpaved shared path, limits access for recreation purposes and limits connections to campus.

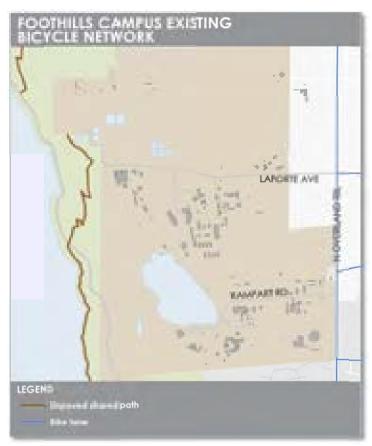


Figure 19 Foothills Campus Existing Bicycle Network

As improvements are made to the City's bicycle network that make access to this area better, more staff and visitors are likely to make the trip to the Foothills Campus by bicycle.

Bicyclist Safety

Crashes involving bicyclists are recorded by the CSU PD. Data for the period from January 2006 to February 2014 showed a total of 123 crashes for an average of approximately 15 crashes per year involving bicyclists. Approximately 66 percent of the crashes involved a motor vehicle. Of these crashes, CSU PD deemed bicyclists to be at fault in 34 percent of instances and the driver at fault in 54 percent of instances; fault was not determined for the remaining crashes. Very few pedestrian-bicycle crashes were reported (only five incidents) with most of these

involving a bicyclist and a skateboarder.¹³ See **Figure 20** for a visual representation of all campus crashes in this period; the graph only displays those crashes on campus, which is an underrepresentation of all crashes within the vicinity of campus.

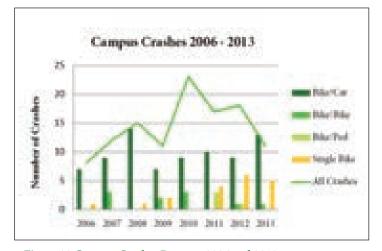


Figure 20 Campus Crashes Between 2006 and 2013

Note: The "All Crashes" figure includes bicycle-car, bicycle-bicycle bicycle-pedestrian, bicycle-only, and car-pedestrian crashes.

The project team also studied bicycle crashes reported on the periphery of the CSU campus. These are recorded by the Fort Collins Police Service. For the period between 2006 and 2013, a total of 115 bicycle-related crashes were reported. ¹⁴ It is unknown how many crashes involving bicyclists go unreported. Notable findings include:

West Elizabeth Street, from City Park Avenue to South Shields Street has the highest concentration of bicycle-related crashes in Fort Collins. Almost half of these are driveway-related and the motor vehicle driver was attributed at fault in 75 percent of these incidents.

South Shields Street along the edge of the campus also recorded a high crash concentration. Approximately 40 percent of these crashes involved bicyclists riding on the sidewalk.

CSU PD should work with the University's bicycle community and the Fort Collins Police Department to improve on-campus bicycle crash reporting. Improved crash reporting can be used to track trends in crash rates as well as the environmental and behavioral contributing factors to each crash. This information, in combination with information about other enforcement activities (such as ticketing) should inform the University's enforcement, education, and transportation programs.

Existing Wayfinding

Wayfinding helps people orient themselves and find their destinations in unfamiliar settings. Unfortunately, the existing wayfinding on and to campus is very limited. The exception is the wayfinding that has recently been added to the Mason Trail. Wayfinding signage is needed to create a welcome and comfortable bicycling environment that removes the uncertainty about traveling by bicycle or on foot. With new ways to get around campus such as the MAX shuttle and bicycle network improvements recommended with this Plan, complete signage will appeal to students, visitors, and new riders alike.



Figure 21 Existing Mason Trail Wayfinding

¹³ Skateboarders are considered pedestrians by CSU PD.

¹⁴ For these figures, both on- and off-campus crash statistics include those crashes reported to CSU PD or the Fort Collins Police Service.

Bicycling and Transit

CSU's Main Campus and South Campus are very well served by transit, especially with the recent additions of MAX Bus Rapid Transit and the Around the Horn service, a campus-focused route offered by CSU in partnership with Transfort. Foothills Campus is served directly by one Transfort bus line and some with adjacent stops. It is likely that transit takes the place of bicycling for many commuter trips close to campus, especially during poor weather.



Figure 22 Display at Lory Student Center Teaching How to Transport Bicycles on Buses

Transit can also be combined with bicycling to extend the reach of the bus and MAX Bus Rapid Transit system. MAX stations feature ample bike parking, and they are a main focus of the City's proposed automated bike share system. Additionally, all Transfort buses have racks that accommodate up to three bicycles and MAX buses are fitted with racks that accommodate up to four bicycles.

Bicycle Network Recommendations

Principles of Network Recommendations

The following four principles were used to develop the bicycle network recommendations in this Plan:

- Reduce conflicts between street and path users to improve safety;
- Increase bicyclist comfort;
- Provide more bicycle connections; and
- Improve perimeter campus bicycle access.

Reduce Conflicts

Separating bicyclists from pedestrians is the most effective method to reduce conflicts between these modes. Due to space and financial restraints, however, developing bicycle-only facilities is not always practical or possible. In that case, it is possible to develop shared facilities for bicyclists and pedestrians where there is limited pedestrian traffic, mostly in areas farther from the center of campus. Conflicts between bicyclists and automobiles occur mostly at intersections, so improvements to help reduce these conflicts are centered there.

Increase Bicyclist Comfort

Bike lanes are the only current on-street bike facility on campus. These provide space on the roadway, but are minimal facilities. Bicyclists who are more averse to sharing space with automobiles may not ride these routes today, so providing more comfortable facilities may help increase ridership.

This plan recommends upgrading bike lane facilities to buffered bike lanes in the short term and protected bike lanes in the long term. The merits of these facility types are discussed below.

Provide More Connections

Bicyclists on the Main Campus today string together some routes that do not have dedicated bicycle facilities. This plan helps to formalize those routes with facility recommendations which will enable connected bicycle travel throughout campus. The existing dismount zone is a major barrier to north-south travel, so provision of parallel routes was very important to network development. On South Campus, the Mason Trail is a high-quality connection to the rest of Fort Collins, but access to it is limited; providing a connection to this was a focus.

Improve Campus Access

The Main Campus is surrounded by four high-volume, high-speed arterial roads. Improving connections across these high-stress streets was very important to the development of this bicycle network. Recommended intersection improvements help facilitate existing bicycle movements and make them more predictable, and some provide for greater physical separation of bicyclists from automobiles. These intersection improvements will need to be implemented in coordination with the City.

All of these considerations led to the bicycle network described in this section of the Plan. This vision for an ideal campus bicycle network can help guide CSU's master planning efforts and routine street maintenance work, eventually leading to a set of campus facilities that make bicycling the obvious and easy choice for a large portion of students, staff, faculty and visitors.

Facility Toolbox

The following treatments are referenced throughout the Plan. This section provides a definition specific to the context of this Plan with suggested minimum and/or typical dimensions where appropriate. The following treatments are considered part of a toolbox that the University can utilize to enhance the bicycling network on and around the CSU campus. The following treatments have been used successfully in cities across the United States.

Bike Lane

A bike lane designates a portion of a roadway with pavement markings and signs for the exclusive use of bicycles. Bike lanes may vary in width, but should never be less than 4 feet in total width, exclusive of a gutter on curbed roadways. Bike lanes may be wider on campus where volumes of bicyclists are higher. Bike lanes are one-way facilities, and generally are located to the right of other travel lanes.



Figure 23 Existing Bike Lane on Campus

Contra-flow Bike Lane

A contra-flow bike lane is a bike lane designed to allow bicyclists to ride in the opposite direction of one-way motor vehicle traffic. They convert a one-way street into a two-way street: one direction for motor vehicles and bikes, and the other for bikes only. Contra-flow bike lanes should meet the same minimum standards as regular bike lanes.

Buffered Bike Lane

Buffered bike lanes are created by striping a buffer zone between a bike lane and the adjacent travel lane and/or parking lane. The buffer creates a more comfortable operating environment for bicyclists by creating additional space between bicyclists and passing traffic or parked vehicles. Buffered bike lanes typically create sufficient space for bicyclists to operate side by side if desired or to pass slower moving bicyclists without having to encroach on adjacent travel lanes. Buffered bike lanes are typically a minimum of

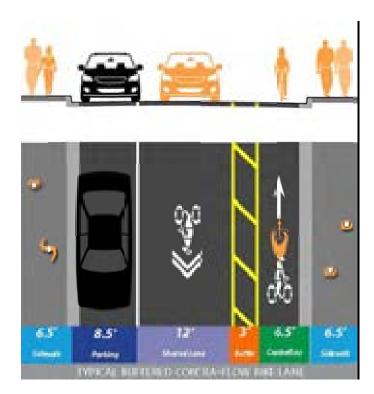


Figure 24 Contra-flow Bike Lane Typical Section

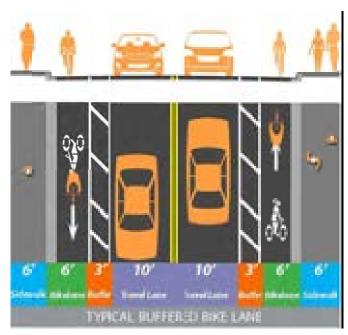


Figure 25 Buffered Bike Lane Typical Section

7 feet in total width, including a 2 foot buffer. The bike lane or buffer may be wider, and buffers may exist on both sides of the bike lane.

Protected Bike Lane

A protected bike lane is physically separated from both the street and the sidewalk and is intended for the exclusive use of bicyclists. A protected bike lane may be constructed at roadway level, sidewalk level, or at an intermediate height. Protected bike lanes can be provided in either one-way or two-way configurations. One-way protected bike lanes typically vary between 5 and 10 feet in total width. Bidirectional protected bike lanes typically vary between 8 and 11 feet in total width.

Shared Path

A shared path is a two-way facility that is physically separated from motor vehicle traffic and is designed to accommodate pedestrian and bicycle traffic. A shared path is located in an independent alignment from a roadway, generally crossing roadways at right angles.



Figure 26 Shared Path Typical Section



Figure 27 Protected Bike Lane Typical Section

Separated Paths

Separated paths are two-way facilities that are physically separated from motor vehicle traffic while also separating out bicycle and pedestrian traffic. These facilities that have a portion dedicated for pedestrians and an adjoined portion for bicyclists, with enough space to accommodate two-way bicycle traffic



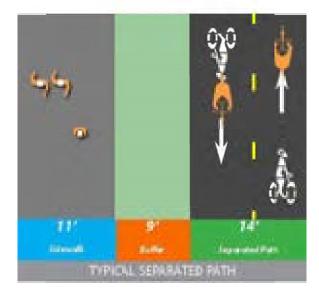


Figure 28 Separated Path Typical Section

Parking Lot Paths

Parking lot paths are striped as to delineate a separate bicycle facility. These enable bicyclists to safety travel within a parking lot and onto their destination without directly mixing with motor vehicle traffic.



Figure 29 Parking Lot Path in Lot 575

Two-way Sidepaths

Short sections of two-way sidepaths are a recommended treatment where one of the streets in an intersection has an offset alignment. This configuration often necessitates a bicyclist riding on a major street which may or may not have bicycle facilities for a short stretch of time. A two-way sidepath enables the bicyclist to ride in a protected space adjacent to the major road to reach the continuation of the street. This treatment is most often paired with the addition or upgrading of which allows for crossing the major street without conflict. This signal may detect or be actuated by a bicyclist's presence.

Intersection Treatments

Intersection improvements can enhance bicyclist safety by eliminating or raising awareness of potential areas of conflict between motorists and cyclists or between cyclists and pedestrians. Most intersection improvements will require additional study to determine the preferred improvement. This section provides guidance for intersection and mid-block crossing treatments to supplement the American Association of State Highway Transportation Officials (ASHTO) Guide, National

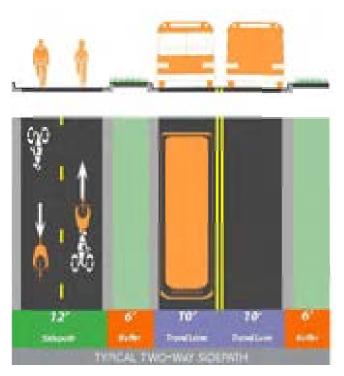


Figure 30 Two-way Sidepath Typical Section

Association of City Transportation Officials (NACTO), and Manual on Uniform Traffic Control Devices (MUTCD) guidance.

Dutch-style Intersections

This design treatment, also called a protected intersection, is recommended for implementation at intersections that include protected bicycle lanes. The design of protected intersections is evolving and will require pilot designs to determine the appropriate geometric and operational characteristics for Fort Collins and CSU. The design approach will be different for street level versus curb protected bike lanes. The following are principals for protected intersection design:

- It includes island-protected waiting areas for bicyclists that:
 - Reduce turning radius for automobiles slowing their turning speeds to 10 mph or less to improve yielding
 - Allow bicyclists to queue in front of crosswalks providing a head start over motorists
 - Allow bicyclists to wait outside of other through or right turning bicyclists minimizing their delay
 - Require bicyclists to slow on the approach to the intersection reducing their approach speed to less than 10mph reducing the likelihood of surprising a turning motorist

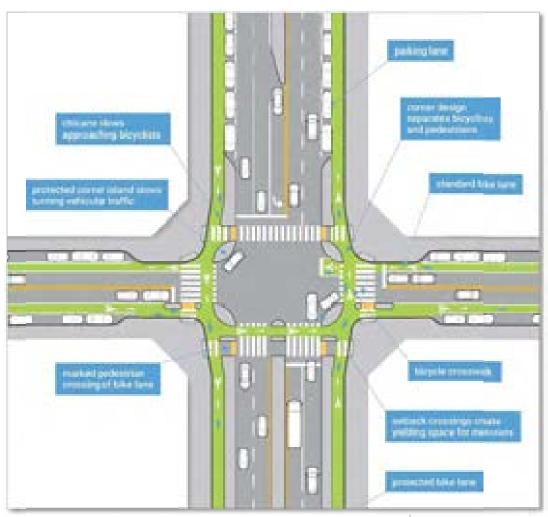


Figure 31 Dutch-style Intersection Depiction

- Create space for bicyclists to turn right-on-red minimizing their delay
- Create clear pedestrian and bicyclists crossing areas
- Allow for the creation of bicycle crosswalks parallel to pedestrian crosswalks
- Provide bicycle signals at signalized intersections
- Incorporate two-stage left turn queuing space

Bicycle traffic may be separated from auto traffic by signal phasing as well through provision of a leading interval or protected phase. The combination of these features reduces the ambiguity inherent in current on-street and sidepath bicycle facility design and improves overall safety and comfort of bicyclists. Design treatments will vary based on available right-of-way and unique intersection geometric and utility constraints and needs.

Traffic Calmed Intersections

Traffic calmed intersections are designed to physically slow down or reduce vehicular traffic and to improve safety for pedestrians and bicyclists. The specific treatments vary by intersection, traffic volumes, right of way, and existing travel speeds. It is often a combination of engineering, enforcement, and encouragement tools that create a traffic calmed intersection. These include:

- Education to community neighbors about traffic and safety issues for all road users.
- Police presence and/or enforcement of the speed limit and rules of the road.
- Radar speed sign to display drivers' speeds as compared to the posted speed.
- High visibility crosswalks including special pavement markers, signage, and flashing lights.
- Restriping travel lanes to be narrower to naturally slow traffic by reducing the shy distance.
- Curb bulb-outs narrow the roadway width at the intersection and shorten the distance that pedestrians must cross.

- Traffic mini-circles to slow vehicle speeds at intersections and deter through traffic.
- Raised intersections are flat, raised areas covering entire intersections with ramps on all approaches and often with brick or other textured materials on the flat section. This intersection treatment will slow traffic and draw attention to pedestrian safety.

Signal Treatments

Signalized intersections allow bicyclists to cross arterial streets without needing to select a gap in moving traffic. Traffic signals make it easier to cross the street, though it is important to make improvements to reduce conflicts between bicyclists and turning vehicles. When evaluating warrants for the potential installation of new traffic signals, it is important to note that bicyclists may be counted as pedestrians or vehicles to satisfy the MUTCD warrant.

Bicycle Signal Head

Bicycle signal heads can provide more clear direction to bicyclists crossing signalized intersections that they may enter an intersection. This is particularly important at locations where bicyclists may be provided an advance or exclusive phase. At locations (typically trail crossings) where cyclists are expected to follow pedestrian signals, under present law and timing practices, bicyclists may only "legally" enter the crosswalk during the solid WALK portion of the signal, but the solid WALK portion is significantly shorter than the entire WALK time. This often results in bicyclists disobeying the flashing DON'T WALK portion of the cycle which can lead to them being caught in the intersection during the change interval. Providing bicycle signals allows for a longer display of green as compared to the walk signal, which significantly improves compliance with the traffic control. Further, the MUTCD states explicitly that pedestrian signals are for the "exclusive use of pedestrians." Bicycle signals can be designed to call a green signal phase through the use of loop detectors (or other passive detection such as video or radar) or push button. Bicycle signal heads and a separate bicycle signal phase should be considered at intersections and trail crossings with very high volumes of cyclists or locations

where it is desirable to provide separate phasing for the bicyclists.

The MUTCD has no provision for bicycle signals; however bicycle signals were issued interim approval for use by FHWA in December 2013.



Figure 32 Bicycle Signal

Signal Timing and Bicycle Detection

Section 9D.02 of the 2009 MUTCD states: "On bikeways, signal timing and actuation shall be reviewed and adjusted to consider the needs of bicyclists." Accommodating bicyclists at actuated intersections is a relatively cost-effective way

to make significant strides to improve the safety and level of service provided to bicyclists. Bicyclists need more time to start up and to clear intersections so green times should be adjusted accordingly. To calculate minimum green times for bikeways, refer to the AASHTO guidelines.

Main Campus Network Recommendations

Network recommendations were crafted in consideration of the University's goals of facilitating bicycle travel throughout campus to become more sustainable and bikefriendly. Recommended projects fall into three broad categories, for which various treatments have been discussed in the Facility Toolbox section:

- On-Street Facilities
- Off-Street Paths
- Intersection Treatments

The recommended network for the Main Campus is shown in **Figure 33**. The recommended on-street facilities provide a higher level of comfort than existing bike lanes. New shared paths formalize bicycle connections and provide dedicated space for bicycle travel, and new separated paths make connections in high-pedestrian volume areas of campus where avoiding conflict between these modes is paramount. Intersection treatments standardize the interaction of bicyclists, pedestrians and drivers to reduce conflict.

Overall, this suit of projects aids in both through bicycle connections and short, on-campus trips between building destinations. Numerous discrete projects comprise the Main Campus network recommendations, and each is detailed in Appendix A.

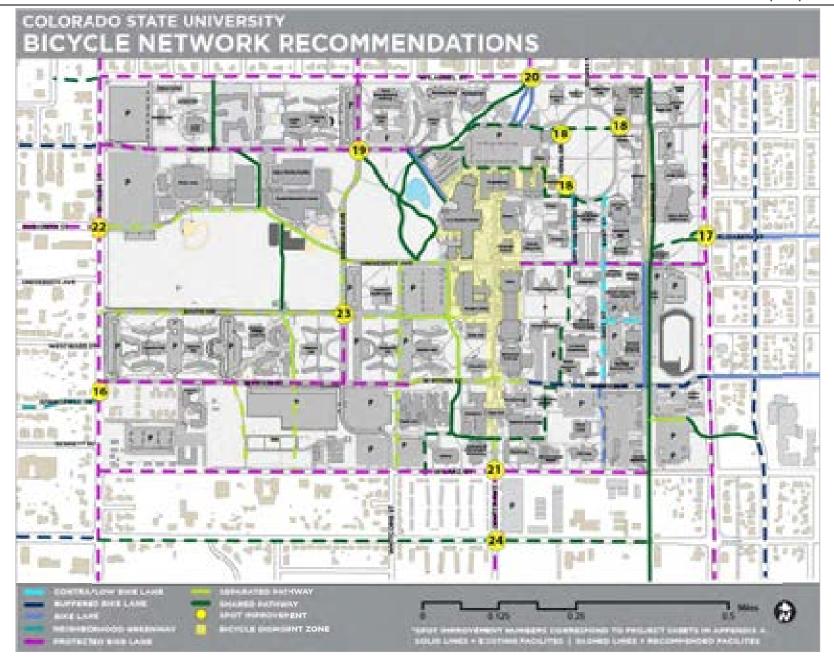


Figure 33 Main Campus Bicycle Network Recommendations

Foothills Campus Network Recommendations

'Recommendations on the Foothills Campus accommodate bicycle trips to and within campus (see **Figure 34**). The addition of facilities on the two main entrance roads helps visitors reach their destinations and connects the campus to the overall Fort Collins bicycle network. The addition of an on-campus north-south connection provides a critical bicycle link between these two areas. Several discrete projects comprise the Foothills Campus network recommendations, and each is detailed in Appendix A. Additionally, the Bella Vira mixed-use development

planned just east of the Overland Trail is an opportunity for future collaboration and network development.

As a longer-term goal, the University should collaborate with local jurisdictions to develop a recreational trail that can serve students, employees, and the public in connecting the Foothills Campus to open space.



Figure 34 Foothills Campus Bicycle Network Recommendations

South Campus Network Recommendations

Recommendations on the South Campus accommodate bicycle trips to and within campus (see **Figure 35**). The addition of east-west facilities on the inner roads will help bicyclists reach their on-campus destinations. Additionally, recommended facilities here would better connect the campus to the Mason Trail. Several discrete projects comprise the South Campus network recommendations, and each is detailed in Appendix A.

Wayfinding Recommendations

CSU should create a plan to address campus-wide wayfinding needs. A first step in this process should be for the University to adopt the City's wayfinding guidelines (where applicable), as presented in the Fort Collins Bike Plan, to create seamless and cohesive routing between CSU and the City.



Figure 35 South Campus Network Recommendations

Bicycle Parking

Existing Bicycle Parking

There are an estimated 14,200 bicycle parking spaces on the main campus and 1,100 spaces at CSU's satellite campuses (see Figure 37). In general, these racks are well distributed and are available at or near every major campus building. The majority of bicycle parking is uncovered and distributed throughout campus, including within the dismount zone. There is some covered bicycle parking provided in breezeways, under building overhangs, and inside the Lake Street Parking Garage.

Campus policy restricts bicycle parking on anything other than a bicycle racks such as railings, benches, or trees. Those bicycles parked illegally are impounded without notice; students can recover their bicycles at no charge, but must pick them up from the campus PD.



Figure 36 Full bike racks at Corbett Hall residences

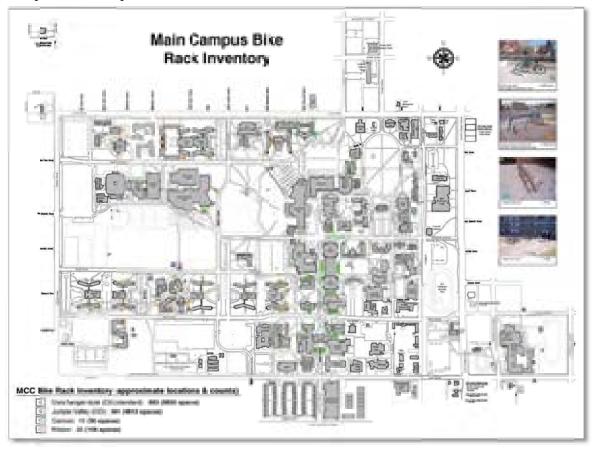


Figure 37 Main Campus Bicycle Rack Inventory

Source: CSU

Parking Occupancy and Policies

While a formal bicycle parking count was not completed as part of this study, based on field observations and discussions with staff, peak bicycle parking usage is roughly 75 percent of total capacity. This means that during peak periods of usage, which varies depending on the building type, there are approximately 10,650 bicycles parked on campus. The peak periods for residence halls and academic buildings are opposite from one another – racks are full during the day at academic buildings and at night for residential buildings. Observations also confirm that at some residence halls and academic buildings the racks are frequently full at peak times, indicating that existing bicycle parking is inadequate at certain locations.

Residence halls are equipped with outdoor bicycle parking to meet parking needs for up to 80 percent of occupants. The Housing and Dining Services department has observed high occupancy of bicycle parking at residence halls—anecdotally, up to 95 percent of parking is occupied—though they have received very few complaints about a lack of parking. Students are allowed to park their bicycles inside residence halls, though are not allowed inside of classrooms or other enclosed campus buildings. A new pilot project at the Laurel Village residential development will have a dedicated bicycle room when it opens in fall 2014.¹⁵

While the University has built a high number of outdoor parking spaces, the parking supply does not fully meet all of the needs of bicycle users, and is not well positioned to meet future needs. As student populations grow and staffing level increase, bicycle use and adequate, reliable, and secure parking will need to grow as well. To ensure that bicyclists can find convenient bicycle parking, supply will always need to be one step ahead of demand.

Existing Parking Types

The University currently uses four types of racks:

- "Cora" bicycle racks (Main Campus standard bicycle rack, see **Figure 38**)
- "Juniper Valley" bicycle racks (Housing and Dining Services standard bicycle rack)
- "Cannon" bicycle racks (from 1970s)
- "Wave" bicycle racks (from 1980s)

As the Cannon and Wave racks age and rust, the University has chosen the Cora and Juniper Valley racks as replacements because of their high capacity and high level of mobility.



Figure 38 Cora-style bicycle racks on the South Campus

Bicycle Parking Best Practices

Examples of bicycle parking most appropriate for college campuses are described below. The appropriate type of parking for each location varies based on available space and the duration for which bicycles will be parked.

Basic Bicycle Parking

At minimum, bicycle parking consists of an immovable, anchored object that a bicycle can be locked to using any type of lock. Basic bicycle parking is best suited for short-term use. On college campuses, basic parking usually takes the form of metal racks. A recommended list of racks is available in the Association of Pedestrian and Bicycle Professionals (APBP) *Bicycle Parking Guidelines*, 2nd

¹⁵ Bicycle racks are located in the Lake Street parking garage.

Edition. Bicycle racks should be installed so that they provide adequate access aisles on all sides.

Covered Bicycle Parking

Covered bicycle parking consists of racks with a covering to protect the bicycles from precipitation. Most often, this is a simple roof or canopy, either a separate structure constructed to cover the racks, or part of a building's structure. Covered parking helps prolong the life of bicycles and reduces their deterioration due to exposure to natural elements.



Figure 39 Boulder County Secure Bicycle Parking Shelter

Secure Bicycle Parking

Secure bicycle parking can take many forms. It can be provided with bike lockers, outdoor bike shelters or cages, or indoor bike parking rooms. The advantages of secure bike parking include:

- Surveys show that bicyclists would be more likely to ride if secure bike parking is provided.¹⁶ This might be particularly important for CSU staff and faculty.
- It is well suited for longer-term bicycle storage, especially if it is also situated to protect bicycles from precipitation.



Figure 40 Example of Covered Bicycle Parking

 $^{^{16}}$ A February 2014 survey conducted by the Regional Transportation District in Denver found that secure bicycle parking is the single biggest factor that would influence a decision to ride.

Secure outdoor bicycle parking should be implemented in highly-visible and highly-used locations across campus. These locations should include, but not be limited to:

- Near buildings with high demand for indoor bicycle parking but no space for indoor parking;
- Near entrance points to the dismount zone;
- Near buildings with long-term bicycle users (offices, laboratories, residential);
- In parking garages; and
- Under building overhangs or awnings with existing bicycle parking.

Like the indoor parking rooms, space and demand will dictate the rack type chosen for the facility. If the space is utilizing existing overhanging space (such as the breezeway under the Clark Building), the rack type will be dictated by the space. If placing the rack in an open area, where space is not a major issue (such as University Avenue east of the dismount zone), a modular outdoor bicycle parking shelter can be utilized.



Figure 41 Bicycle parking outside Student Recreation Center

Other University Practices

Bicycle Friendly Universities (BFUs) are evaluated by the League of American Bicyclists on the provision of adequate bike parking. This assessment pertains to the supply, type and location of parking, as well as any policies governing inclusion of parking in campus construction. Neither Platinum-level BFU (University of California, Davis and Stanford University) has a stated policy to include indoor or covered bike parking as part of construction projects, which might be due to their temperate climates. They do provide some covered parking, and Stanford has two bike cages in parking garages that are very well utilized. Both universities have an ample supply of standard, outdoor parking and continually evaluate whether enough parking is provided in high-use areas of campus.

Nearly all Gold-level BFUs provide some type of covered bike parking, either in the form of bike lockers, cages located in parking garages or sheltered outdoor racks. A larger number of these universities are located in areas with inclement weather, such as the University of Minnesota, University of Oregon, and Oregon Health and Science University. The University of Washington has embarked on perhaps the most aggressive schedule of building indoor bike parking for new university residences buildings with a goal of providing parking for 30 percent of residents, a large majority of it indoors. Ideally, these bike rooms are isolated in the building allowing for restricted access and higher security. All are located near an at-grade or ramped entrance and are accessible only to students who register their university ID cards as bike parkers. The recommended bike parking standards in this Plan, presented in Bicycle Parking Recommendations, would place CSU at the forefront of providing campus bike parking, sending the message that promoting bicycling is an important community value.

Summary of Bicycle Parking Needs

The bicycle parking recommendations are based on five categories of bicycle parking needs: weather protection, security, long-term options, availability, and effective equipment. Each category is described below.

- Weather Protection: Based upon typical Colorado weather patterns of considerable snow in the winter, hot sunny summers and considerable sun and dry air throughout the spring and fall seasons, bicycles stored outside without covers are subjected to harsh impacts from the elements. Lubricants will dry out, chains will rust, and plastic parts become brittle and prone to breakage. Bicycle parking should provide protection from the elements whenever possible.
- Increased security: While bicycle theft does not appear to be a major problem at CSU, secure bicycle parking is still necessary to ensuring a positive and effective bicycle environment at CSU.
- Increased capacity at select locations: It is clear from student experience and observation that some bicycle parking locations are often full, or nearly full at residential halls and racks surrounding the dismount zone. In general, it is desirable for every bicycle parking location to be at least 10 percent vacant at peak use so that users can always be guaranteed a parking spot.



Figure 42 University Avenue East of the Dismount Zone

Bicycle Parking Recommendations

In order to address the bicycle parking issues previously noted, CSU should make the following programmatic and infrastructural changes to bicycle parking.

Overall Bicycle Parking Types

The CSU Master Plan has developed twelve building categories to represent the variety of uses on campus. Using these typologies, bicycle parking recommendations were developed based on best practices and an understanding of CSU's needs.

Table 1 depicts the different building types and the recommended parking facilities for each. More specific parking recommendations are included in the following section.

		Basic Bicycle Parking	Covered Bicycle Parking	Secure Outdoor Bicycle Parking	Indoor Bicycle Parking	Shower Facilities	Maintenance Facilities
	Classrooms	0	0	0			
	Instructional Lab	0	0	0	0		
	Research Lab	0	0	0	0	0	0
	Office	0	0	0	0	0	0
Building Typology	Study/Stack	0	0	0			
	Athletics	0	0	0	0	0	
	General	0	0	0	0	0	
	Shop/Storage	0	0	0			
	Health	0	0	0		0	
	Veterinary	0	0	0	0	0	0
	Housing	0	0	0	0		0

Table 1 Bicycle Parking per Building Typology

1. Create Secure and Covered Outdoor Bicycle Parking

The dismount zone and the areas near residential facilities are prime locations for secure outdoor bicycle parking due to high demand. Replacing existing racks with secure bike shelters, similar to the Boulder County Bus-then-Bike shelter, would accomplish two things: free up space in the dismount zone and along its edges for other uses, as the shelters provide more capacity per area; and provide weather protection for bicycles. CSU should provide at least 50 percent of the bicycle parking at the entrance points to the dismount zone as secure bicycle parking. Providing adequate secure bicycle parking near the dismount zone will also free up the standard bicycle parking for short-term use.

2. Change Bicycle Parking Restrictions

CSU currently prohibits bicycle parking within University buildings. Due to this restriction, all campus bicycle parking racks are located outside, most with minimal or no protection from the elements. Bicycles stored outside are more vulnerable to theft and vandalism as well as the harsh elements of Colorado's weather. Changing the University's policy to allow bicycles to be parked in designated locations indoors would enable for the provision of secure, protected parking.

This policy change would enable the University to provide indoor bicycle parking rooms in campus buildings, either as a retrofit project or for new construction. Indoor bicycle parking rooms should be focused on residential facilities and office buildings where long-term parking is in high-demand. Ideally, indoor bicycle parking rooms would have dedicated building entrances with secure access to the rooms themselves. Providing an entrance that is close to or on a bicycle facility will minimize conflicts with pedestrians providing the most convenient and easy access for bicycle users.

3. Retrofit Existing Buildings with Bicycle Parking

CSU should survey students, faculty, and staff about bicycle parking needs in their primary building as it would help create a standard for the amount of parking to place in a given building type. Adding an additional 40 percent to the stated demand for indoor bicycle parking should be the goal for indoor parking for an existing building. For example, if surveys show demand for 25 indoor parking spaces in a given building, then 30 racks would be the goal for the indoor parking. This goal responds to the demand of the users, provides room for growth, and would cover users who did not respond to the survey.

4. Construct Bicycle Parking at New Buildings

Table 2 outlines the recommended parking quantities and types of bicycle parking based on a variety of measures (residential, employment, and visitation rates). The proposed parking rates were informed by APBP parking guidelines, national experience, and existing parking quantities at CSU. They represent aggressive and visionary numbers that would help CSU achieve a greater number of students and staff bicycling. With the development of new on-campus construction, CSU should adhere to the following bicycle parking requirements:

Number of	Per	Per	Per Daily					
spaces	Residents	Employees	Visitor					
Indoor Bicycle Parking								
1	1.25	5	N/A					
Outdoor Covered Bicycle Parking								
1	N/A	5	10					
Basic Bicycle Parking								
1	N/A	N/A	10					

Table 2 Recommended Quantities of Bicycle Parking

Develop Design Standards

In anticipation of new on-campus development, CSU should modify its existing design standards to incorporate the parking recommendations included within this Plan.

 $^{^{17}}$ To date, the shelters have cost approximately \$65,000 to install, including materials.

5. Add Special Event Bicycle Parking

To encourage higher bicycle ridership to special events and sports games, CSU should provide a combination of basic bicycle parking and special event bicycle valet parking. Valet parking may be staffed by volunteers.

6. Augment Bicycle Registration to Include Parking Questions

To keep up with the changing demands of bicycle parking on campus, questions about bicycle parking behavior and preferences should be asked as part of the bicycle registration process. This will help keep an active conversation on campus about the effectiveness and use of current infrastructure and any demands for changes to the bicycle parking program.

7. Bicycle Parking Utilization Study

CSU should complete a campus-wide bicycle parking use study to best understand how the existing parking is used. If the existing facilities are close to or at maximum capacity, additional capacity should be added. For racks that are underused, the University should consider relocating these to locations where they will be more heavily utilized. For example, the bicycle racks around the Anatomy/Zoology Building are located on the northeast side of the building and are hidden by a grove of trees. These racks could be relocated to the main entrance of the building to provide more parking at an area with higher demand.

Implementation and Evaluation

Infrastructure Implementation

The infrastructure and program recommendations described in previous sections provide a set of projects that will move CSU's vision of becoming a word-class bicycling University. While improving bicycling is a clear community priority, implementation of these recommendations will necessarily occur over time commensurate with available resources. The purpose of this chapter is to provide guidance in the phasing and funding strategies to realize the University's vision.

CSU is in the process of implementing new or upgraded bicycle facilities at several locations, including buffered bike lanes on West Plum Street and Meridian Avenue, a new bikeway on a closed portion of West Pitkin Street, and contraflow lanes on East and West Drives. Considering the low costs and high impact of bike lanes and other paint-only projects, the University should continue to pursue all paint-only projects in the near term.

The following implementation prioritization is based on each project's potential to preserve the travel corridor and increase safety, with regard to planning-level cost estimates and data collection needs.

Project Prioritization

Recommended projects, as detailed and numbered in Appendix A, were scored in relation to the following five metrics: safety improvement, corridor preservation, project complexity, importance for data collection, ¹⁸ and cost minimization.

¹⁸ For example, projects at proposed bicycle counter locations are given a high priority, projects that are adjacent to counter locations are of medium priority, and projects that are not close to bicycle counters are rated the lowest priority. The projects that score highest across all five categories are recommended to be implemented first. As shown in **Tables 3 through 5**, there are seven high priority projects, fifteen medium priority projects, and ten low priority projects.

As funding becomes available or as the campus needs change, project implementation priorities should be reevaluated.

Project Number	Project	Long-term Construction Cost Estimate	Improves Safety	Preserves the Corridor	Project Complexity	Essential for Data Collection
2	East Elizabeth Street - University Avenue Path	\$51,000	Medium	Medium	High	High
17	College Avenue & Elizabeth Street Intersection	\$18,000	High	Low	Medium	Medium
9	Oval Drive at Admin Building	\$51,000	High	Medium	Medium	Low
22	Elizabeth Street & Shields Street; Parking Lot	\$376,000	High	Low	Medium	High
12	Pitkin Street (East Portion)	\$33,000	Low	Low	High	High
19	Plum Street & Meridian Avenue Intersection	\$18,000	High	Low	Medium	Medium
3	East Drive & Amy Van Dyken Way	\$38,000	High	Low	High	Low

Table 3 High Priority Projects

Project Number	Project	Long-term Construction Cost Estimate	Improves Safety	Preserves the Corridor	Project Complexity	Essential for Data Collection
4	Oval Drive to Transit Depot Connection	\$101,000	High	High	Low	Low
21	Lake Street & Center Avenue Intersection	\$310,000	High	Low	Medium	Medium
16	Pitkin-Shields-Springfield Intersection	\$310,000	High	Low	Low	High
20	Meldrum Street & Laurel Street Intersection	\$103,000	High	Low	Medium	Medium
14	South Drive	\$1,090,000	High	Low	Medium	High
15	Southwest Campus Bikeways	\$152,000	Low	High	High	Low
5	Laurel Hall to Transit Depot Connection	\$126,000	High	High	Low	Low
25	South Campus East-West Path	\$240,000	Medium	High	Medium	Low
18	Oval Drive Crossings	\$37,000	Medium	Low	High	Low
32	Rampart Road Extension	\$6,000	Low	Low	High	Low
31	Foothills Trail Connection	\$70,000	Medium	Low	Medium	Low
27	Gillette Drive to Research Boulevard Path	\$228,000	Medium	High	Low	Low
11	Pitkin Street (West Portion)	\$3,039,000	Medium	Low	Medium	High
23	South Drive & Meridian Avenue Intersection	\$207,000	High	Low	Medium	Low
6	Plum Street	\$2,502,000	Medium	Low	Medium	High

Table 4 Medium Priority Projects

Project Number	Project	Long-term Construction	Improves Safety	Preserves the Corridor	Project Complexity	Essential for Data
13	Lake Street	\$5,004,000	Medium	Low	Low	High
1	North-South Pathway	\$240,000	Low	High	Low	Low
28	Rampart Road	\$360,000	Medium	Low	High	Low
24	Center Avenue & Prospect Road Intersection	\$1,000,000	Medium	Low	Low	Medium
29	Foothills North - South Path	\$540,000	Medium	Low	Medium	Low
7	University Avenue	\$1,501,000	Medium	Low	Medium	Low
10	Meridian Avenue	\$1,501,000	Medium	Low	Medium	Low
8	University Avenue	\$1,001,000	Low	Low	Medium	Low
30	Laporte Drive	\$125,000	Low	Low	Low	Low
26	South Campus Bike Lane Upgrades	\$12,510,000	Medium	Low	Low	Low

Table 5 Low Priority Projects

Cost Estimates

Construction cost estimates shown in Tables 3 through 5 were developed by measuring quantities associated with each recommended project, identifying pay items, and establishing rough per-mile costs. Unit costs are in 2014 dollars and were developed based on historical cost data from the Colorado Department of Transportation, the University of North Carolina Highway Safety Research Center - Costs for Pedestrian and Bicyclist Infrastructure Improvements Report, the City, and other sources such as RS Means. The costs shown are construction costs only, and do not reflect other costs that may be associated with a complex project. The costs are intended to be used for long-range planning purposes and thus, a 30 percent contingency was applied to each project.

The cost estimates do not include costs for planning, surveying, engineering design, right-of-way acquisition, full roadway reconstruction, addition of closed drainage systems, mobilization, or future maintenance. Construction costs will vary based on the ultimate project scope and economic conditions at the time of construction.

Funding Strategy

In order to implement the recommendations in this Plan, the University will need to evaluate and establish funding for bicycle programs and infrastructure. This funding strategy considers a range of approaches to obtaining funds for implementation:

- Work with the City, the North Front Range Metropolitan Planning Organization (NFRMPO), and Larimer County to fund and implement bike projects that are mutually beneficial. Leveraging agency funds will be especially critical to developing the bicycle network at the border to the Main Campus.
- Partner with private developers, health organizations, and non-profit organizations for funding and implementation of bike projects and programs.

- Identify those projects that are eligible for and would compete most successfully for federal grants.
- Pursue non-governmental grant opportunities.

Funding Sources

There are a variety of funding mechanisms available for bicycle improvement projects and programs. Below is a list of potential local, state, federal, and non-governmental funding sources along with the types of bicycle projects and programs that are applicable to each funding source.

City Funding Sources

- Building on Basic (BOB) Fort Collins voters approved Building on Basics (BOB), a quarter cent sales and us tax that extends from January 2006 through December 2014. Fort Collins Bikes currently receives \$125,000 each year towards implementation of the Bike Plan. The City has a ballot initiative for fall 2014 for BOB 2.0, a tax renewal. If voters approve it, FC Bikes intends to apply for \$500,000 per year beginning in 2016 to be used toward implementation of the Fort Collins Bike Plan projects and programs.
- Keep Fort Collins Great (KFCG) In November 2010, Fort Collins voters passed Keep Fort Collins Great (KFCG), a sales tax to fund critical services for the community between 2011 and 2020. KFCG has been important funding to source Fort Collins Bikes in the past and is expected to continue as a source for bicycle project implementation funding.

Federal Funding Sources

- Congestion Mitigation and Air Quality
 Improvement Program (CMAQ) funds may be
 used for either the construction of bicycle
 transportation facilities or non-construction
 projects related to safe bicycle use.
- Transportation Alternatives Program (TAP) This federal funding program authorized under the federal transportation bill, Moving Ahead for Progress in the 21st Century (MAP-21) provides

funding for transportation alternatives including on- and off-road bicycle facilities and regional trail programs.

Federal Transit Administration (FTA) Grants -

- Transit grants such as Urbanized Area Formula and Capital Investment can be used for improving bicycle access to transit facilities.
- Hazard Elimination and Railway-Highway
 Crossing Program This program is a set aside
 from the Surface Transportation Program (STP)
 specifically to correct locations that are unsafe, and
 these funds may be used to address bicycle safety
 issues.
- FASTER safety this state funding source can be used for adding shoulders when combined with a surface treatment project.
- FASTER Transit This state funding source can be used for bicycle amenities such as bike racks, lockers and bicycle parking at multimodal stations or enhanced modal connections such as trails and bicycle lanes providing access to major transit stations that would enhance transit ridership.

Other Funding Sources

 Kaiser Permanente Grants – Kaiser Permanente offers Walk and Wheel grants to help communities to be more bike-friendly by planning and designing safer, healthier, and more accessible transportation options.

Evaluation

CSU should begin tracking bicycle metrics including ridership, mode-share, bicycle facilities, bicycle parking, crash data, theft, facility implementation status, and a catalog of program efforts. This tracking and the reporting of results can be used as a tool to applaud the University's successes, demonstrate a need for continued funding and support, and to justify any programmatic changes.

Bicycle Counting Program Recommendations

Understanding the value in tracking bicycle ridership and changes over time will help the University to maintain and develop their active transportation program. Based on best practices and an understanding of existing conditions and needs, a draft plan for bicycle count implementation was completed (see Appendix C for the draft recommendations memorandum).

Draft counter location recommendations were finalized in conjunction with this Plan's recommended projects. **Figure 43** shows the final recommended locations for conducting bicycle counts.

High Priority Locations

Table 6 shows the top four highest priority locations for the installation of continuous (permanent) count devices. These location recommendations aim to capture travel to and from Main Campus, travel within Main Campus, and travel between South Campus and Main Campus.

Next Steps

The University should conduct a formal field assessment of each location to examine the facility parameters (e.g. facility widths, equipment mounting location and heights, identify obstructions or other limitations), and develop detailed site/installation plans. Both the permanent and short-duration count locations require detailed planning and evaluation to ensure that the sites are suitable for productive data collection that effectively captures bicycle and pedestrian travel patterns and meets the parameters of the selected technology.

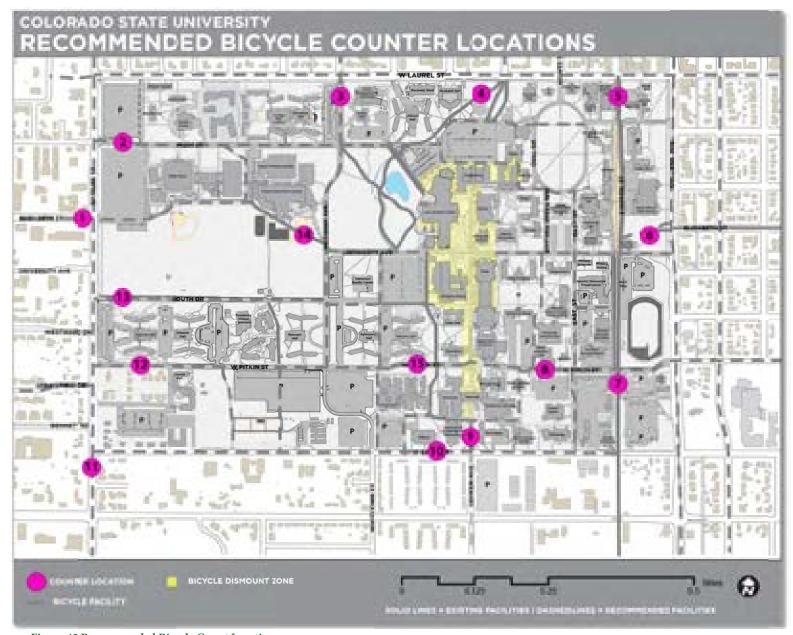


Figure 43 Recommended Bicycle Count Locations

Map ID	Location Description	Existing facility type	Context	Recommended Bicycle Counter Technology
1	Elizabeth Street, west of Shields Street	On-street bike lanes	Major bicycle route from the west; potential high bicycle volumes accessing campus from housing to the west of campus. High crash location with the City.	Inductive loop counters (2)
4	Path from Laurel Street to Transit Center by Rockwell Hall	Designated separated bicycle path with high pedestrian use	Entry point to campus from North; probably less bicycle traffic than Mason Trail to the east. Good capture point on diagonal route to transit	Combination passive IR/Inductive loop counter (1)
7	Mason Trail, south of Pitkin Street	Shared use path	Potential to capture significant northbound bicycle traffic from south of campus and intercampus-travel between central and south campuses. This location would provide a good contrast for traffic counts before and after the implementation of the City's planned improvements (such as the two-way sidepath to connect Pitkin and Springfield) and the CSU decision to open up the walk zone at this point. This count location will capture nearly all campus traffic entering from the east.	"Totem" - Feedback inductive loop counter (1)
8	West Pitkin Street, east of Center Avenue Mall	On-street bike lanes	Major east-west route through southern part of campus; currently split by walk zone, but planned bicycle facility will increase the attractiveness of the route.	Inductive loop counters (2)

Table 6 High Priority Bicycle Counter Locations

Note: A bike counter at the Mason Trail, south of Lake, would capture through traffic, campus traffic, and high ridership of the Mason Trail. This counter location was considered but not recommended because the Mason Trail counter (south of Pitkin Street) would likely capture a greater change in bike ridership as City and campus improvements are completed.

Summary and Next Steps

Completing the bicycle network by providing improved bicycle facilities will improve public safety on campus, ensure efficiency and ease of movement, improve livability and quality of life, meet sustainability targets, and promote healthy, active lifestyles. With safer, better-connected bicycle infrastructure and a more robust bicycling environment for the CSU community, bicycling will become a more attractive mode for a larger portion of the campus community.

As enrollment increases and the campus evolves to fit the increased need for classrooms, offices, housing, and other support facilities, this Plan can to be used as a guide for future bicycle network and programmatic developments.

Continued Collaboration

The value of the recommendations presented in the previous chapters hinges on the University's ability to coordinate staff and resources to implement this Plan.

Continued collaboration across campus departments will be crucial to bringing this plan to fruition. The Plan should be reviewed and updated every five years to ensure completion and adaptive changes to the bicycle network. Building upon the collaborative process between the City and CSU in developing individual Bicycle Master Plans, the University should continue to work closely with the City on safety, enforcement, and engineering measures, especially as it concerns the intersections leading into campus.

(This page left intentionally blank)



