NEXT GENERATION SAFETY & MOBILITY PLAN

Borough of State College, Pennsylvania

March 2024

Next Generation Safety & Mobility Plan

Borough of State College, Pennsylvania

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Executive Summary

Plan Purpose

The NextGen Plan provides targeted recommendations for enhancements to safety, connectivity, and accessibility for the Borough's multimodal network. This plan proposes projects throughout the Borough to improve pedestrian access and safety, micromobility, transit, and bicycling. Elements of this plan comply with the requirements of a federal Safety Action Plan as set forth by USDOT's Safe Streets and Roads for All Self-Certification Eligibility Worksheet.

Strategic plan that identifies multimodal projects to construct over the next 10-15 years

Focus on improving safety for all road users, especially those most vulnerable (walking, biking, and rolling)

Safer Roads | **Safer Speeds** | **Safer Road Users** | **Equitable Network**

Plan Goals

Goals were developed to align with the Borough's Complete Streets Policy, respond to the Areas of Concern, and reflect community preferences.

- Enhance Safety for All
- Increase Multimodal Comfort
- Connect Facilities and Destinations
- Respond to Current and Future Needs
- Coordinate with Other Projects

Project Management Team meetings were regularly held with the consultant team, Borough staff, and key partner agencies, including PennDOT, Penn State, CATA, and Centre County. These meetings provided opportunities to review draft findings and recommendations, plan public engagement touchpoints, and ensure the NextGen Plan was aligned with agency and stakeholder initiatives.

FALL 2022 / WINTER 2023
Existing Conditions Analysis & Areas of Concern

WINTER / SPRING 2023
Recommendations & Multimodal Toolkit

SUMMER / FALL 2023
Public & Partner Agency Coordination

WINTER / SPRING 2024
Implementation & Plan Development

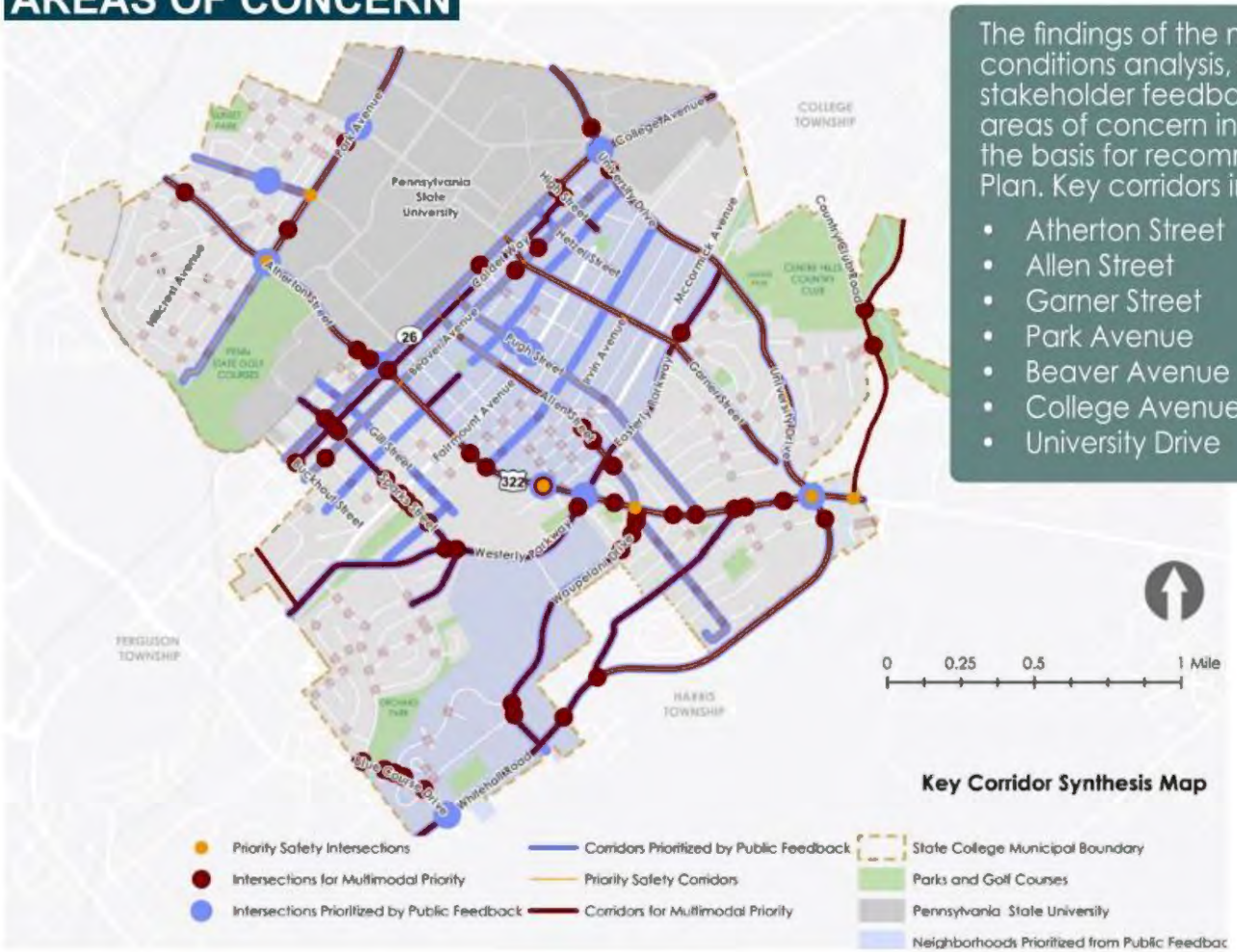
PUBLIC ENGAGEMENT ACTIVITIES

- Borough Tour
- Online Survey & Existing Conditions Comment Map
- Virtual Stakeholder Workshop

- Stakeholder Interviews
- Toolkit Survey & Recommendations Comment Map
- Pop-Up Meetings
- Neighborhood Association Meetings
- Public Open House

- Draft Plan Presentations

AREAS OF CONCERN



The findings of the multimodal existing conditions analysis, safety analysis, and public/ stakeholder feedback were used to identify areas of concern in State College and serve as the basis for recommendations in the NextGen Plan. Key corridors include:

- Atherton Street
- Allen Street
- Garner Street
- Park Avenue
- Beaver Avenue
- College Avenue
- University Drive
- Hamilton Avenue
- Easterly / Westerly Parkway
- Waupelani Drive
- Pugh Street
- Foster Avenue

The map on the following page shows how the multimodal toolkit was applied to the areas of concern through the identification of the NextGen Plan proposed projects and facilities.

MULTIMODAL TOOLKIT

The multimodal toolkit provides examples of treatments that can be used to improve safety, mobility, and access in the Borough's areas of concern. They will be used to create safe facilities for all users. This toolkit covers 5 categories:

- Traffic Calming
- Access to Transit
- Pedestrian Safety Improvements
- Curbside Management
- Bicycle Facilities

PROPOSED PROJECTS & FACILITIES

Typical treatments and facilities may vary along project corridors.

NEXT GENERATION SAFETY & MOBILITY PLAN

TRAFFIC CALMING & INTERSECTION IMPROVEMENTS

Improvements might include speed humps, speed cushions, raised crosswalks and/or intersections, pedestrian refuge islands, and bicycle wayfinding. The priority here is to slow vehicles and make intersections safer.

SHARED USE PATH

An off-road facility is shared between people biking and walking. A shared use path (SUP) or trail provides the highest level of separation and the lowest level of traffic stress for cyclists.

TRANSIT PRIORITY TREATMENTS

Portions of these corridors could be dedicated partially or fully to bus lanes. Transit Signal Priority (TSP) would also improve operations for buses. Intersections throughout the downtown would be reconfigured to prioritize pedestrian safety.

Source: DDOT

TRANSIT ACCESS TREATMENTS

The priority along these corridors would be to improve bus stops by adding transit shelters and amenities. Projects would be implemented to ensure there are safe crossings, wide sidewalks, and ADA ramps near transit stops.

SHARED STREET

A shared street prioritizes the movement of bicyclists and pedestrians rather than motor vehicles. Generally, speeds are very low and the motor vehicle traffic is restricted to access and loading as opposed to through trips.

SEPARATED BICYCLE LANE

Bicycle lanes that are physically separated from moving motor vehicle traffic by vertical treatments. They would be separated from traffic via concrete parking stops, which provide protection while accommodating drainage and trash pick up vehicles.

BICYCLE BOULEVARD

Bicycle boulevards are low-volume, low speed streets where bicyclists and motorized vehicles share road space, but where bicycle movements are prioritized and optimized.

ON-STREET BICYCLE ROUTE

On-street bicycle routes are where cyclists share the street with motorists. This would maintain existing on-street parking in downtown areas, and would allow Allen and Pugh to operate close to their current condition today.

Borough-Wide Strategies

In addition to corridor and intersection projects, implementing next generation safety and mobility in State College will involve Borough-wide strategies. These strategies include:

- Shared Use Path Upgrades
- E-Bike Planning
- Bicycle Parking
- Traffic Calming
- Parking and Curbside Strategies
- Mobility Hubs
- Adoption of A Vision Zero Policy
- And Non-Engineering Strategies

Implementation

The NextGen Plan provides a comprehensive approach to implementing the projects and strategies identified in the plan.

Prioritization: Projects are prioritized based on project goals developed through public outreach and inter-agency partnerships.

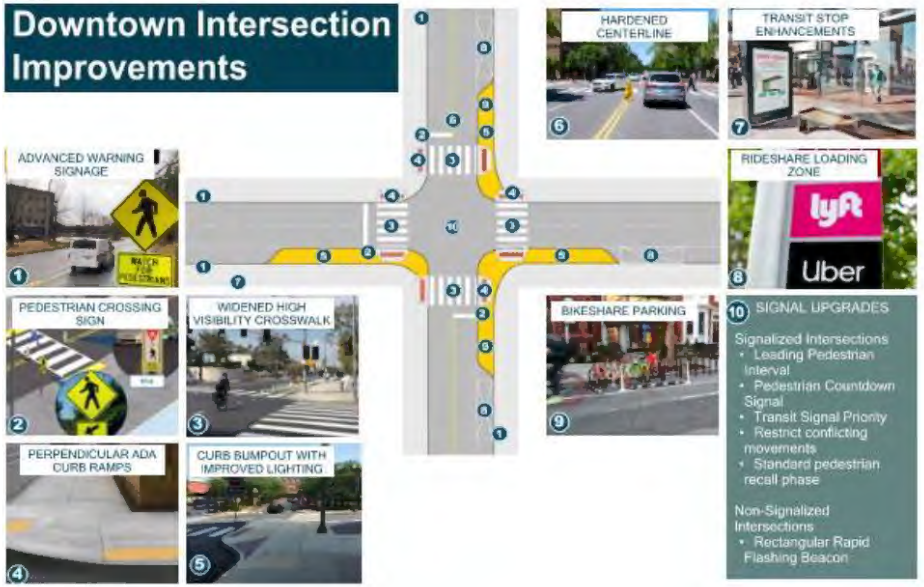
Phasing: Timelines for design and construction are identified. Short-Term = 0 to 5 years; Mid-Term = 5 to 10 years; Long-Term = 10+ years

Partners: Several agencies and organizations will be involved in implementing the corridor projects and Borough-wide strategies proposed.

Operations + Maintenance: The facility types recommended in the Plan will require ongoing coordination with Borough staff to identify adjustments to operations and maintenance.

Cost + Funding: High-level planning costs are provided for each project. Funding the projects will require several sources, including at the local, regional, state, and federal level.

The map above shows how smaller mobility hubs can provide access to multiple modes of transportation (transit, bikeshare, ridshare, etc.) and improve pedestrian safety. The diagram below shows how the different elements of a mobility hub come together at downtown intersections throughout the Borough.



Section 1: INTRODUCTION

The Challenge

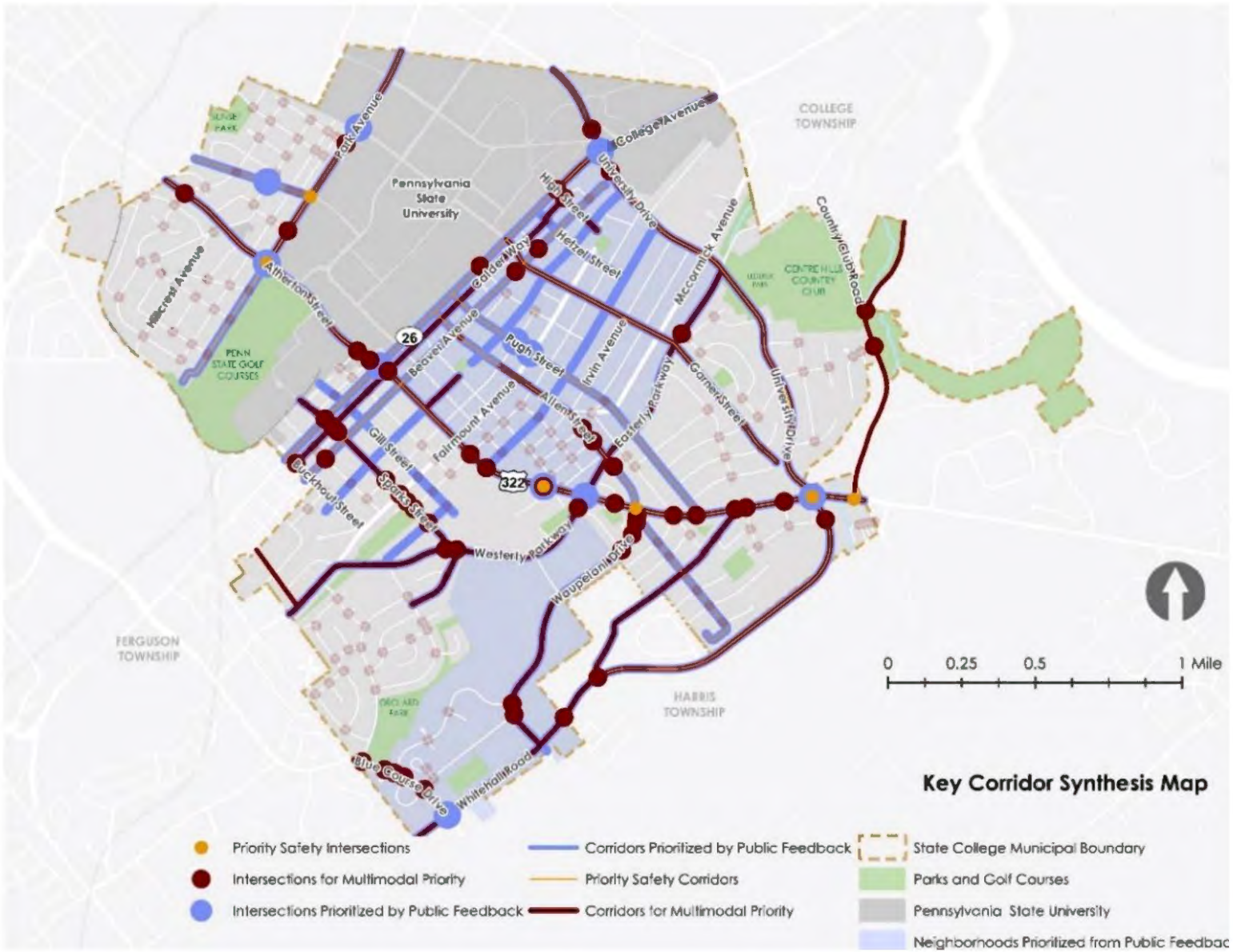
The Borough of State College is framed by a set of primary east-west and north-south streets that connect to local and regional destinations and serve multiple transportation modes. (In State College, "east-west" streets run from northeast to southwest.) Many of these streets have higher traffic volumes and are also state routes that are owned and maintained by PennDOT. This network is filled in by a robust grid of smaller, residential and neighborhood-serving streets. Ultimately, the primary multipurpose corridors are struggling to safely serve bicyclists, pedestrians, and transit riders, while also moving motor vehicle traffic through the Borough. These primary corridors can feel stressful to vulnerable users in certain areas, and they are also the most congested for drivers. They also contribute to the highest number of crashes. In the recent PennDOT Vulnerable Road User (VRU) Safety Assessment, State College includes two corridors – Beaver Avenue and Atherton Street – that have the highest concentrations of crash clusters for walking and bicycling in Centre County.

State College's core road network has the most diverse and dense land use, the most development, the greatest population density, and is often serving the Borough's more vulnerable populations. These corridors make up the areas of concern identified during the existing conditions analysis as shown in Figure 1. They include:

- Atherton Street
- Allen Street
- Garner Street
- Park Avenue
- Beaver Avenue
- College Avenue
- University Drive
- Hamilton Avenue
- Easterly / Westerly Parkway
- Waupelani Drive
- Pugh Street
- Foster Avenue

The Next Generation Safety and Mobility Plan (NextGen Plan) prioritizes these corridors of concern by transportation mode and outlines the necessary trade-offs to improve their function for all modes of travel.

Figure 1. Key Corridor Synthesis Map



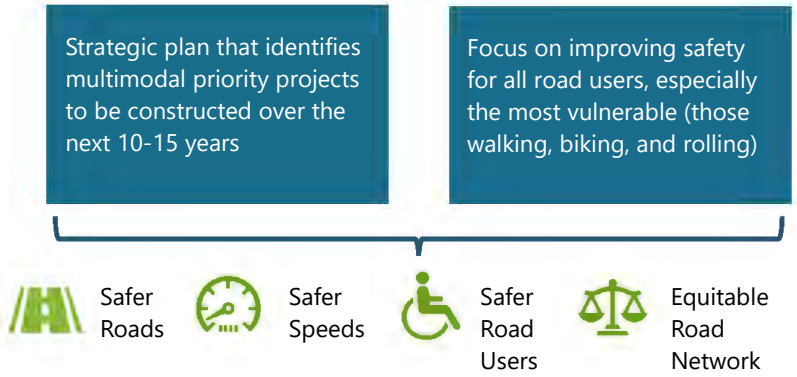
STATE COLLEGE AT A GLANCE

The Borough of State College is situated within a growing and transforming region, anchored by a dense downtown, Pennsylvania State University's campus, and a collection of vibrant residential and mixed-use neighborhoods. Penn State's campus serves over 75,000 students, faculty, and staff and is the largest employer in Centre County.

- **Size:** 4.5 square miles
- **Population:** 39,525 (2021)
- **State Routes:** Atherton Street (US 322 business), College Avenue/Beaver Avenue (PA 26), Park Avenue, University Drive
- **Bicycle Facilities:** mix of on-street bike lanes, on-street bicycle routes, and shared-use paths that connect through parks and to adjacent municipalities.
- **Transit:** Centre Area Transportation Authority (CATA)
- **Micromobility:** SPIN E-Bike
- **Crash Statistics**: 50% of all crashes were injury crashes. Beaver Avenue and Atherton Street have the highest concentrations of crash clusters in Centre County

Plan Purpose

The NextGen Plan is a critical step in pursuing a more equitable, safe, and accessible transportation network in the Borough of State College. The NextGen Plan provides targeted recommendations for enhancements to safety, connectivity, and accessibility for the Borough's multimodal network. This plan recognizes ongoing projects and planning efforts throughout the Borough, including micromobility, transit, and bicycling. The NextGen Plan presents an opportunity to coordinate various efforts, working to guide future development and growth to create a safe, equitable transportation network in the Borough.



This plan incorporates elements of the Safe System Approach to enhance safety and mobility in State College. An analysis of crash types and characteristics, as well as systemic evaluation of pedestrian comfort and bicyclist stress, were overlaid to identify key corridors and intersections for application of safety countermeasures.

SAFE SYSTEM APPROACH

In January 2022, the United States Department of Transportation released its National Roadway Safety Strategy that adopted **the Safe System Approach** at its core. The Safe System Approach focuses on modifying transportation system design to anticipate human errors and lessen impact forces to reduce crash severity and save lives. Six Safe System **principles** encompass the fundamental beliefs that the approach is built on:

1. Death/serious injury is **unacceptable**
2. Humans make **mistakes**
3. Humans are **vulnerable**
4. Responsibility is **shared**
5. Safety is **proactive**
6. **Redundancy** is crucial

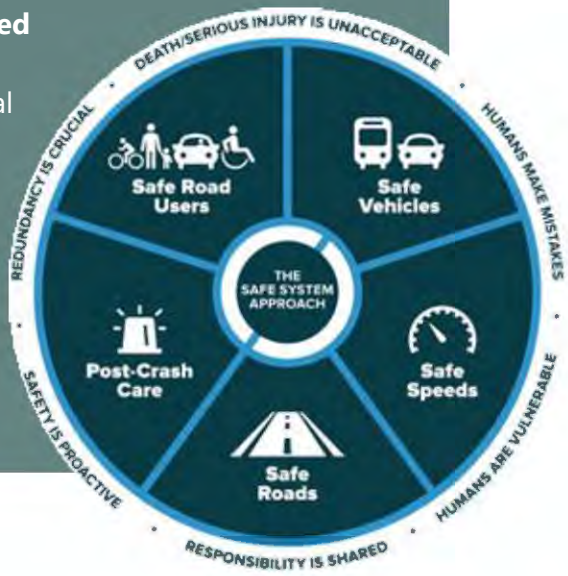


Image Source: FHWA

Plan Process

Development of the NextGen Plan followed a three-step process:

Existing Conditions: Understand existing transportation network challenges and opportunities.

Recommendations: Identify and adapt strategies to develop a safe, reliable, efficient, integrated, and connected multimodal transportation system.

Draft & Final Plan: Develop a safety and mobility plan that promotes active transportation and prioritizes safety, transportation improvements, expansion of travel options, and sustainable development.

The content of this plan is informed by data analysis, input from agency partners, and community engagement. Data analysis was used to understand elements such as crash data, the existing and proposed multimodal network, neighborhood demographics, land use, and capital projects.

The Borough engaged a Project Management Team (PMT) to review and provide input on draft results, recommendations, and deliverables. This team met as often as monthly during the busiest stages of plan development. The PMT included representatives from the Borough of State College, Centre Area Transportation Authority (CATA), Pennsylvania State University, and Centre Region Council of Governments. Community engagement was conducted during existing conditions analysis, recommendation development, and the draft of the final plan to gather feedback at key milestones. Information from data analysis, agency partners, and engagement was synthesized throughout the three steps of the plan to inform the proposed network, identified projects, and effective strategies.

Plan Goals

The goals of the project aim to foster a more equitable, safe, and accessible transportation network in the Borough of State College. The goals were developed to align with the Borough's Complete Streets Policy, respond to the Areas of Concern, and reflect community preferences. Later in the Plan, these goals are used to prioritize the identified projects in the plan to put forward strategic and successful projects that meet several community goals including:

Plan Organization

The plan is organized into the following sections:

- Public Engagement
- Previous Efforts and Policies
- Existing Conditions: Transportation and Mobility
- Safety Analysis
- Projects and Strategies
- Implementation

Elements of this plan comply with the requirements of a federal Safety Action Plan as set forth by USDOT's Safe Streets and Roads for All Self-Certification Eligibility Worksheet. Table 1 shows required tasks and their corresponding sections.

Table 1. Safety Action Plan Requirements

NextGen Plan Section	Safety Action Plan Task
Public Engagement	Engagement with the public and relevant stakeholders, including the private sector and community groups
Public Engagement	Incorporation of information received from the engagement and collaboration into the plan
Public Engagement	Coordination that included inter- and intra-governmental cooperation and collaboration,
Previous Efforts + Policies	Assessment of current policies, plans, guidelines, and/or standards to identify opportunities to improve how processes prioritize safety
Existing Conditions	Considerations of equity using inclusive and representative processes
Existing Conditions	The identification of underserved communities through data
Safety Analysis	Analysis of existing conditions and historical trends to baseline the level of crashes involving fatalities and serious injuries
Safety Analysis	Analysis of the location where there are crashes, the severity, as well as contributing factors and crash types
Safety Analysis	Analysis of systemic and specific safety
Safety Analysis	A geospatial identification (geographic or locational data using maps) of higher risk locations
Projects and Strategies	Equity analysis focused on initial equity impact assessments of the proposed projects and strategies, and population characteristics
Projects and Strategies	Discusses implementation through the adoption of revised or new policies, guidelines, and/or standards
Projects and Strategies	Identifies a comprehensive set of projects and strategies to address the safety problems
Projects and Strategies	Time ranges when projects and strategies will be deployed
Projects and Strategies	Project prioritization criteria is explained
Projects and Strategies	A description of how progress will be measured over time that includes, at a minimum, outcome data

Section 2:
PUBLIC ENGAGEMENT

Engagement Overview

Public and stakeholder engagement was conducted throughout development of the NextGen Plan. Community engagement was crucial to the identification of areas of concern and to the development of recommendations and strategies that respond to community needs. The NextGen Plan had two phases of engagement:

Phase 1: Issues and Opportunities

Phase 2: Draft Recommendations

Engagement activities included a range of in-person and virtual touchpoints, such as online surveys and comment maps, meetings with neighborhood associations, pop-up meetings, virtual stakeholder meetings, an open house, and Borough presentations.

Throughout the planning process, PMT meetings were regularly held with the consultant team, Borough staff, and key stakeholders including PennDOT, Penn State, CATA, and Centre County. These meetings provided opportunities to review draft findings and recommendations, plan public engagement touchpoints, and ensure the NextGen Plan was aligned with agency and stakeholder initiatives.

Borough staff maintained a project website on the Zen City platform throughout the planning process. The website provided information about the plan, a timeline of engagement activities, presentation materials, and links to online comment maps and surveys.

Phase 1 Community Engagement: Issues and Opportunities

STAKEHOLDER INTERVIEWS

Meetings and interviews were held to gather information on ongoing planning studies related to transit (the Reimagine CATA Transit Development Plan) and proposed bicycle and pedestrian facilities on Penn State's campus as part of the Penn State University Park Bicycle Master Plan. Meetings were held with CATA, downtown business representatives, and Penn State.

BOROUGH TOURS (OCTOBER 2022)

Walking, biking, and driving tours of the Borough were held with the project team to observe and experience transportation conditions throughout the Borough in priority areas (e.g., downtown), key corridors, and intersections. Attendees included Borough staff, the Mayor, members of the Transportation Committee, and stakeholders such as CATA, Penn State, and Centre County.

ONLINE PUBLIC COMMENT MAP #1 (OCTOBER 2022)

Participants provided feedback on transportation issues and opportunities they experience in the Borough using an interactive online comment map. This information was used to inform the existing conditions analysis and identification of areas of concerns. Participants left 102 total comments with 23 individual commentors.

ONLINE PUBLIC SURVEY (OCTOBER 2022)

Participants answered questions about demographics, travel patterns, destinations, key corridors, and concerns they have about multimodal safety using an online survey. The survey received 56 responses. For survey demographics, 90% of respondents identified as white, 80% were 35 years old or more, and 55% identified as men. A high proportion of respondents live in the College Heights and Highlands neighborhoods and outside of State College.

VIRTUAL STAKEHOLDER WORKSHOP (JANUARY 2023)

A workshop was hosted to introduce key community stakeholders to the project, provide an overview of the existing conditions analysis, and gather strategic feedback on plan goals. Breakout groups were organized to discuss ideas and strategies to respond to the identified areas of concern on the topics of multimodal safety, curbside and transit, and downtown projects. A total of 35 residents and stakeholders attended the workshop.

Feedback received during the workshop indicated that lived experiences do not fully align with some of the multimodal existing conditions data analysis. This feedback was used to revise analysis around pedestrian and bicycle existing conditions.

PHASE 1 KEY TAKEAWAYS

Several main themes arose during Phase 1 engagement:

Phase 1 takeaways are shown in Figure 2. For responses from the online survey and comment map, please see Appendix A.

Safety

- Prioritize safe crossings for bicyclists and pedestrians, especially downtown and at shared use path crossings
- Enhance safe routes and access to schools
- Incorporate traffic calming elements to reduce speeds

Bicyclist and Pedestrian Infrastructure

- Improve bicyclist and pedestrian infrastructure, as expressed by many participants
- Better connect multimodal transportation to community assets, such as grocery stores, and convenience stores, and parks
- Create greater bike network connectivity (consider regional access)
- Provide more bike parking
- Enhance reach and infrastructure for micromobility

Curbside Management

- Control on-street parking and improve access for visitors and commuters
- Address challenges associated with parked vehicles impacting traffic and bike lanes
- Provide more rideshare drop off and loading zones, especially downtown

Transit

- Consider dedicated transit facilities on College/Beaver Avenues and Atherton Street
- Increase frequency of transit service downtown

Intersection Enhancements

- Implement intersection enhancements along key corridors including Atherton Street, Park Avenue, Allen Street, Garner Street, Gill Street, Foster Street, Pugh Street, and College Avenue

Downtown

- Improve traffic calming downtown
- Reimagine Calder Way as a pedestrian priority zone
- Explore a downtown mobility hub
- Provide more on-street dining

Figure 2. Phase 1 Engagement Takeaways

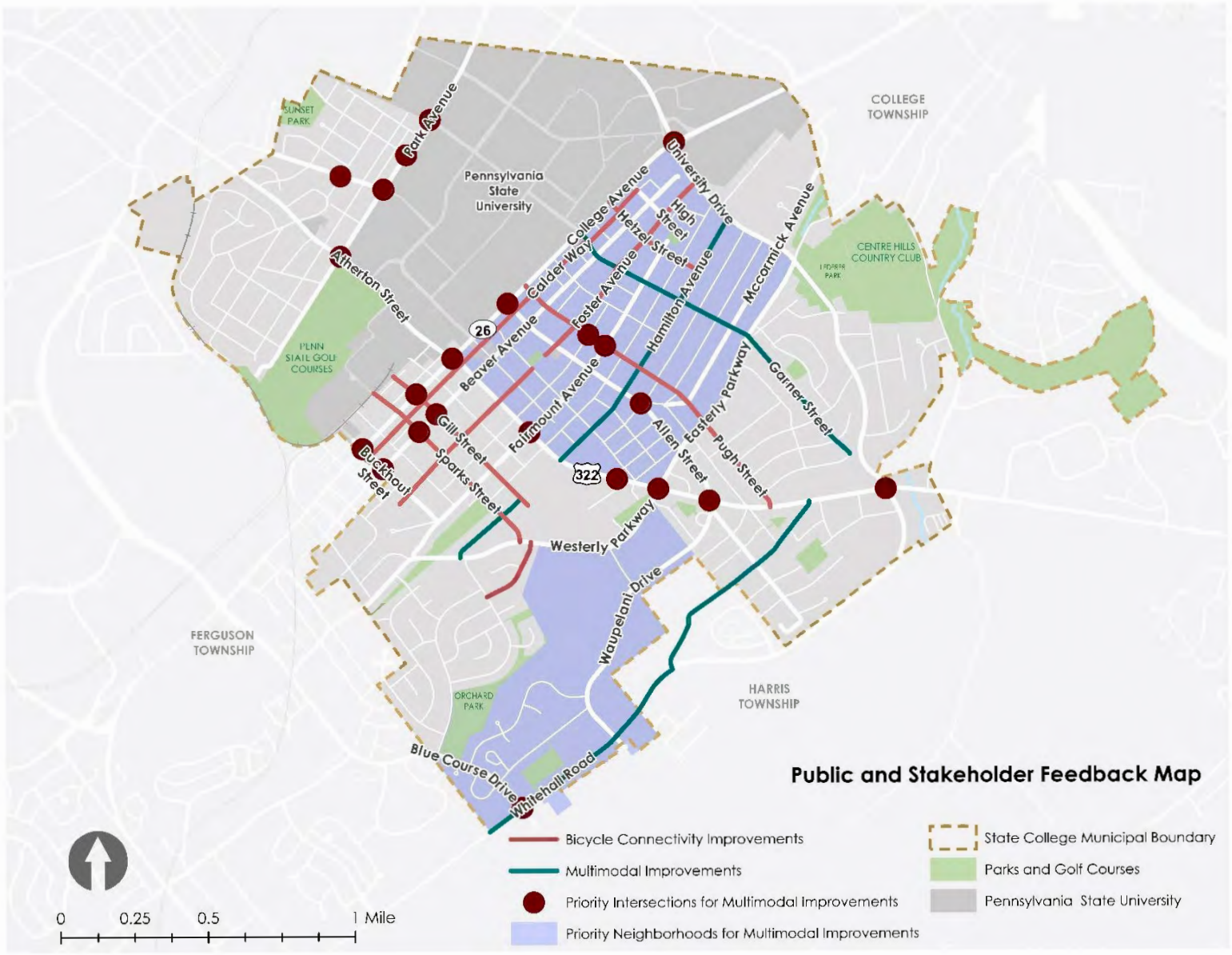


Figure 3. Phase 1 Engagement Activities

(biking tour, public comment map, and survey results)

Phase 2 Community Engagement: Draft Recommendations

Engagement activities during Phase 2 were expanded to connect with a more diverse range of residents and stakeholders and ensure that community members would have ample opportunities to provide feedback on the Plan's projects and strategies.

LION BASH POP-UP (AUGUST 2023)

Living in One Neighborhood (LION) Bash is a resource fair and block party in the Borough at the start of each academic year to encourage collaboration between the Penn State and Borough communities. The NextGen project team had a dedicated table at the event with display boards and QR code handouts to access the project website. Project team members provided an overview of the NextGen plan, collected feedback on the proposed multimodal network, and encouraged interested parties to fill out the online comment map and survey.

ONLINE COMMENT MAP (SEPTEMBER/OCTOBER 2023)

Participants provided feedback on the draft multimodal priority network to inform project recommendations and strategies. Participants left 392 total comments with 195 individual commentors.

ONLINE SURVEY (SEPTEMBER/OCTOBER 2023)

Participants provided feedback on preferences on multimodal toolkit elements, the effectiveness of proposed multimodal network, and feedback on project prioritization. The survey received 324 responses.

NEIGHBORHOOD ASSOCIATION MEETINGS (OCTOBER 2023)

Four neighborhood association meetings were held to collect feedback on potential projects identified through the existing conditions analysis and Phase 1 engagement activities. The meetings were held at various locations throughout the Borough, including Borough Hall, State College Area High School, and the Penn State Innovation Hub. The project team engaged with more than 50 residents and community members during these meetings.

ALLEN STREET GATES POP-UP (OCTOBER 2023)

A pop-up meeting was held at the Allen Street gates entrance to the Penn State campus. Project team members engaged with students and community members about the NextGen plan, collected feedback on the proposed multimodal network, and encouraged interested parties to fill out the online comment map and survey.

OPEN HOUSE (NOVEMBER 2023)

The Borough hosted an in-person Open House Event for community members on November 16, 2023 to present draft recommendations and gather feedback. The project team provided a brief presentation with an overview of the NextGen Plan and a brief summary of the draft recommendations. Display boards were provided with plan elements and prioritized recommendations to educate residents on the NextGen effort and project team staff facilitated conversations to understand if the recommendations were effectively responding to the local issues and opportunities.

BOROUGH PRESENTATIONS

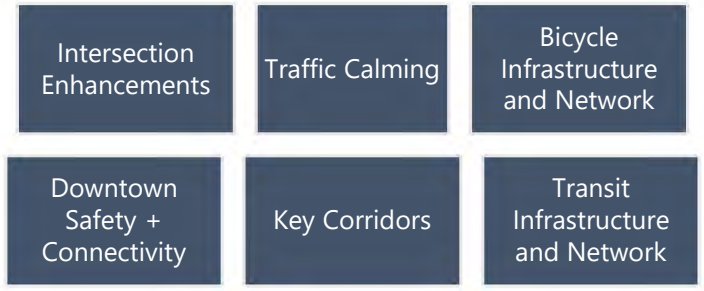
The draft NextGen Plan was presented at three Borough meetings in February, March, and April 2024:

- Transportation Commission February 13
- Planning Commission: March 13
- Borough Council: April 15

Feedback from those entities was incorporated into the final plan document.

PHASE 2 KEY TAKEAWAYS

Several main themes arose during Phase 2 engagement:



Phase 1 takeaways are shown in Figure 4. For responses from the online survey and comment map, please see Appendix A.

Intersection Enhancements

- Enhance intersections through high visibility crossings, signal timing, removal of slip lanes, and signage
- Prioritize intersections on Atherton Street, College Avenue, Beaver Avenue, and Park Avenue, and Easterly Parkway

Traffic Calming

- Provide traffic calming on neighborhood streets, such as Garner Street and Waupelani Drive
- Provide traffic calming in downtown

Bicycle and Infrastructure and Network

- Provide separated bicycle facilities on some streets; they are preferred to lower levels of traffic stress
- Provide safe bicycle facility connections to other townships
- Provide more bike parking on key corridors

Downtown Safety + Connectivity

- Limit vehicle access to Calder Way
- Provide two-way bicycle connectivity on Calder Way
- Enhance transit access and reliability on College Avenue
- Enhance streetscape on Beaver Avenue

Key Corridors

- Prioritize corridors such as Atherton Street, Park Avenue, Calder Way, College Avenue, Garner Street, Allen Street, Beaver Avenue, and Waupelani Drive

Transit Infrastructure and Network

- Provide improved lighting and bus shelters at existing transit stops
- Consider dedicated transit lane on College Avenue
- Enhance safety and access to transit through improved crossings on Waupelani Drive
- Consider greater transit access connecting to University Drive

Figure 4. Phase 2 Engagement Takeaways

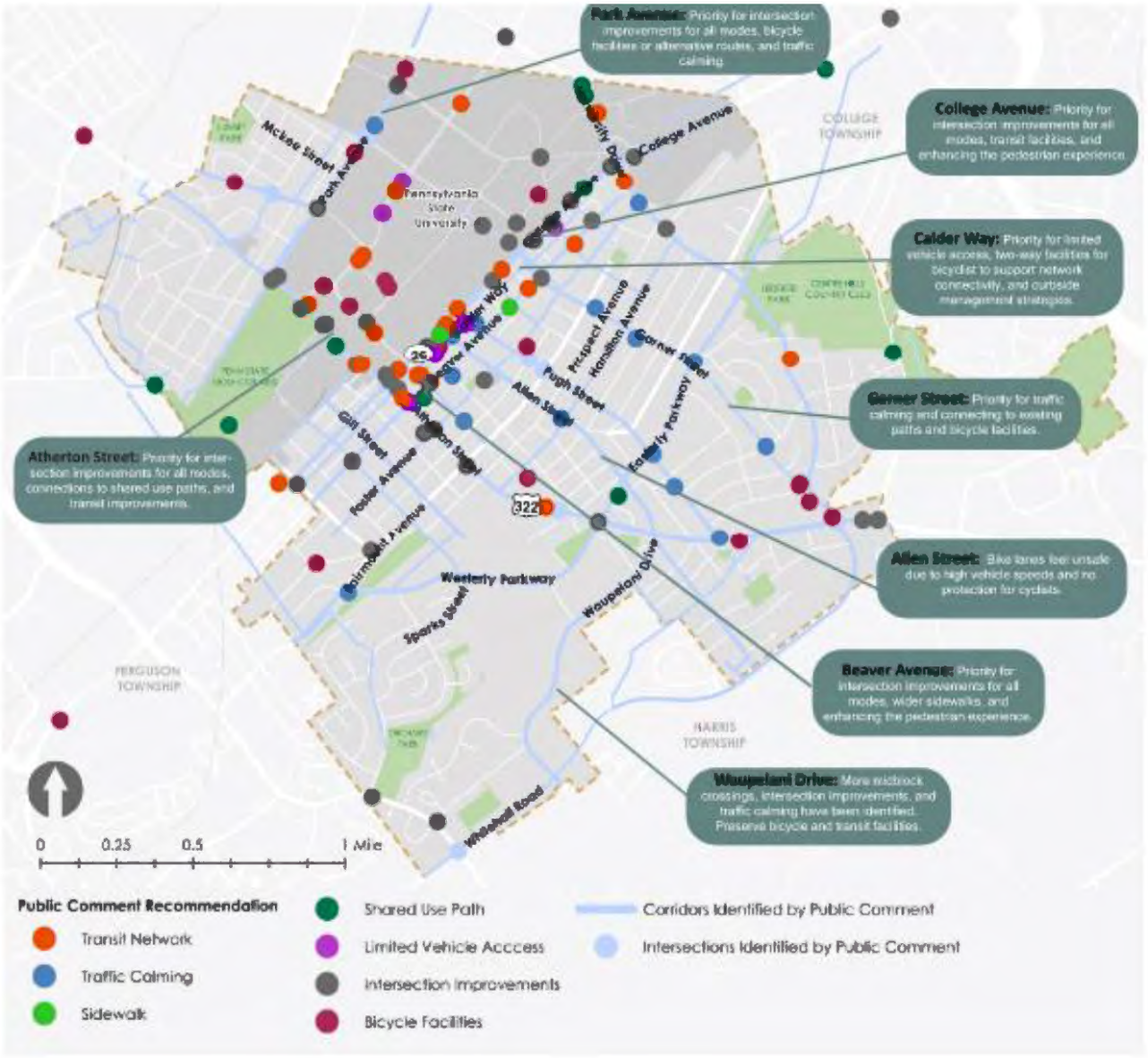


Figure 5. Phase 2 Engagement Activities

(online comment map, Allen Street Gates pop-up meeting, open house meeting, LION Bash pop-up meeting)

Section 3:
PREVIOUS EFFORTS & POLICIES

Pre-Planning Assessment

Past planning efforts were reviewed to identify key information that would complement and/or impact the development of recommendations in the NextGen Plan. The following plans were reviewed:

- State College Borough Comprehensive Pedestrian and Bicycle Program
- State College Borough Complete Streets Policy
- State College Borough Traffic Calming Guidebook
- Centre Region Bike Plan
- Centre Region Comprehensive Plan
- State College Borough Strategic Plan
- State College Borough 2022 Sustainability Plan
- State College Borough Downtown Master Plan
- PennDOT Active Transportation Plan

Key corridors and intersections identified in these plans are listed in Table 2. Additionally, there were several common themes throughout the plans and documents, including the five "Es" (Education, Evaluation, Engineering, Enforcement, and Encouragement) and a focus on providing a safe, multimodal transportation network for the area. Overall, previous plans also highlight specific aspects of the Borough, including future growth and development trends, the 5 Es, sustainability focuses, and downtown enhancements, among others.

The full memorandum of the Pre-Planning Assessment is available in Appendix B.

Table 2. Key Corridors and Intersections from Previous Plans

	Key Intersections			
Key Corridors	Atherton Street	College Avenue	Beaver Avenue	Calder Way
Cross Streets	Beaver Avenue	Atherton Street	Atherton Street	Garner Street
	College Avenue	Allen Street	Locust Lane	Pugh Street
	Park Avenue	Burrowes Street	Garner Street	
	Hillcrest Avenue	Garner Street	Allen Street	
	Westerly Parkway	Pugh Street	McAllister Street	
	Branch Road		Pugh Street	

Capital Improvement Projects

The Borough of State College has several identified capital improvement projects. Identifying and documenting these projects as a part of plan development is essential because these projects are set to be implemented over time and may complement recommendations made within this study. Figure 6 shows locations of planned projects. The project team identified key projects related to enhancements to safety and multimodal mobility and connectivity.

KEY TAKEAWAYS

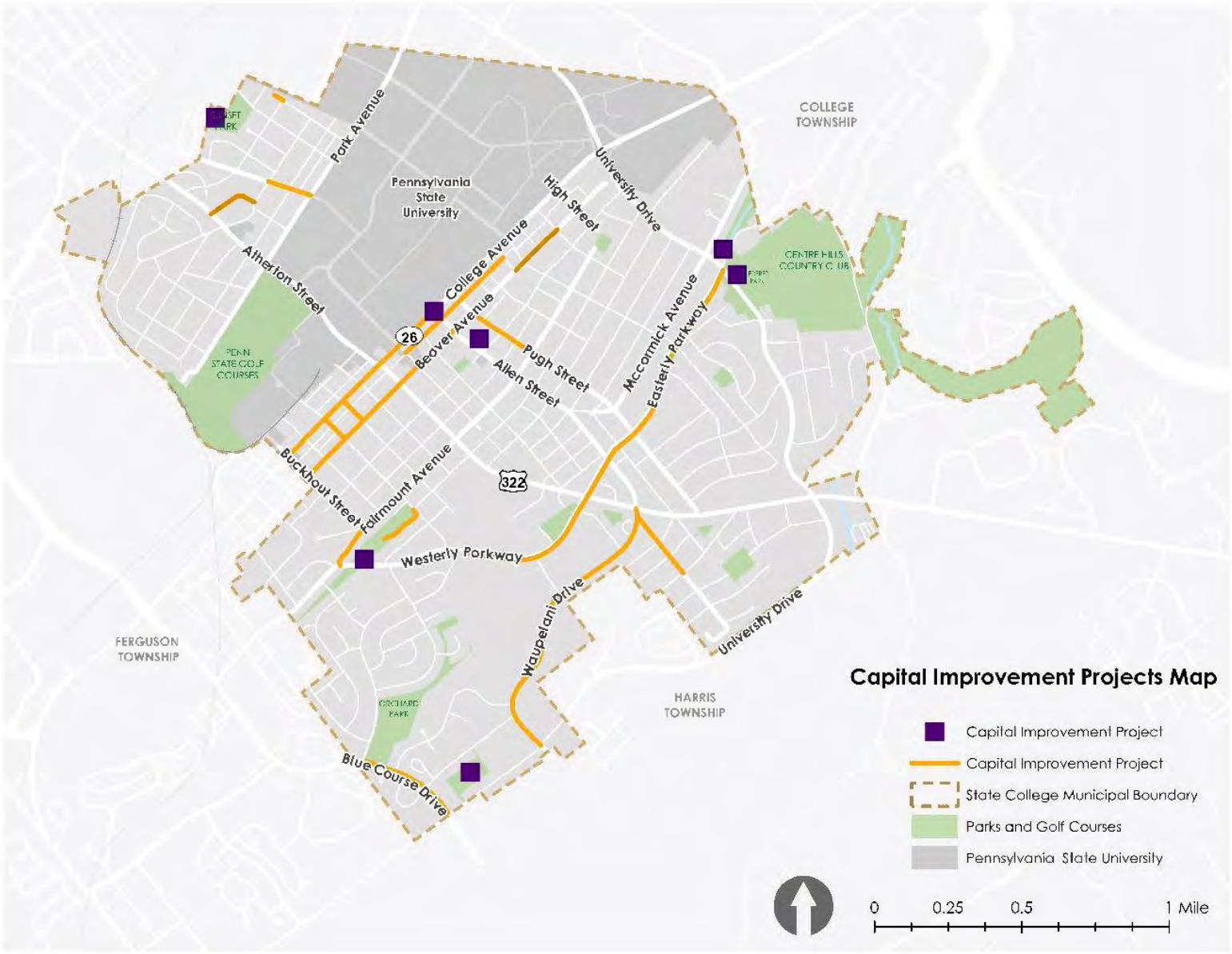
- Shared use paths are being built along Easterly & Westerly Parkway and Blue Course Drive
- Road diet and streetscape projects are planned on College Avenue, Beaver Avenue, and sections of Pugh Street and South Allen Street
- Park restoration projects are planned

Complete Streets Policy

The State College Borough Complete Streets Policy was adopted on August 21, 2017. The policy was created to outline and protect the rights of State College Borough pedestrians to have access to safe and efficient multimodal transportation systems. The policy is divided into six sections to guide transportation improvements: vision, users, and modes; inclusions and exceptions; jurisdiction and network connectivity; context sensitivity and complete streets; design guidance and performance standards; and policy implementation and starting points.

The policy states that the Borough should design and operate a system to ensure the safety, security, comfort, and convenience for pedestrians, bicyclists, public transit/paratransit users, assistive mobility devices, motorists, emergency responders, freight providers, and users of other common modes of transportation. The policy emphasizes that safety is a priority, followed by mobility. It is recognized that all modes cannot receive the same type of accommodation and space in every street, but the goal is that everyone can safely and conveniently travel across the network. The policy includes several performance measures to measure the success of the policy, including number of crashes and severity of injuries, Injuries and fatalities of all modes, number of countdown signals, number of transit shelters, and bike route connections to off-road trails.

Figure 6. Capital Improvement Projects



PennDOT Safety Plans

STRATEGIC HIGHWAY SAFETY PLAN

PennDOT's 2022 Strategic Highway Safety Plan (SHSP) serves as a blueprint to reduce fatalities and serious injuries on Pennsylvania roadways and builds on previous SHSP editions. The plan identifies Priority Emphasis Areas and additional Safety Focus Areas that have the most influence on improving highway safety all public roads. Themes addressed in this plan include enhancing highway safety, active transportation, the Safe System Approach, and transportation equity. The plan also includes Toward Zero Deaths (TZD), a national highway safety movement supporting the elimination of fatalities and serious injuries on our nation's roadways, conceptualized by safety practitioners, researchers, and advocates from a variety of disciplines. Pennsylvania's SHSP sets the groundwork for progressing TZD in the Commonwealth.

Several safety focus areas identified in the SHSP align with the NextGen Plan, including vulnerable user safety for pedestrians and bicyclists, intersection safety, and local road safety.

VULNERABLE ROAD USER (VRU) SAFETY ASSESSMENT

In 2023, PennDOT developed a comprehensive strategy to address transportation fatalities of vulnerable road users – people walking and bicycling – with the goal of making walking and bicycling safer across the state. Nearly 200 high-risk areas for walking and bicycling were identified throughout the state based on crash history, equity considerations, and land use. These high-risk areas were presented to a variety of interested parties through more than a dozen consultation meetings, each with a specific geographic focus, including Centre County. Based on input received during the consultation process, both spot-specific and systemic safety recommendations were developed and summarized as a program of projects and strategies. Two of the identified high-risk areas are in State College:

- Atherton Street from White Course Drive to Mitchell Avenue
- Beaver Avenue from High Street to Atherton Street

The NextGen Plan builds upon the VRU Safety Assessment using areas identified through public and stakeholder feedback, existing conditions, and a safety analysis. Information was synthesized to understand systemic safety needs in the Borough.

Section 4:
EXISTING CONDITIONS

A detailed existing conditions analysis was completed for the NextGen plan to understand the transportation system and identify areas of concern for recommendations. This chapter provides an overview of the existing conditions findings; the full Existing Conditions Memorandum can be found in Appendix C.

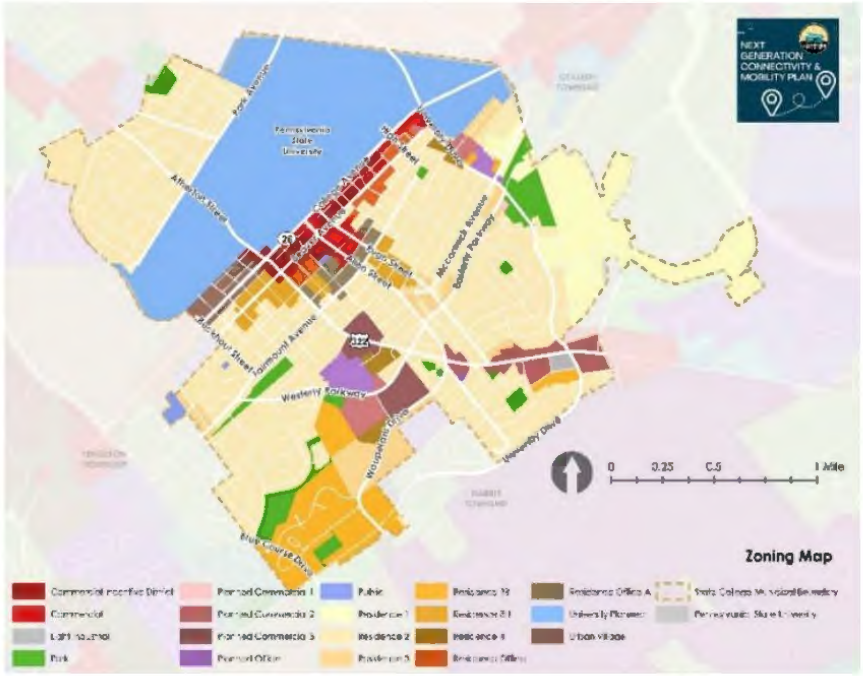
Current Zoning, Land Use, and Development

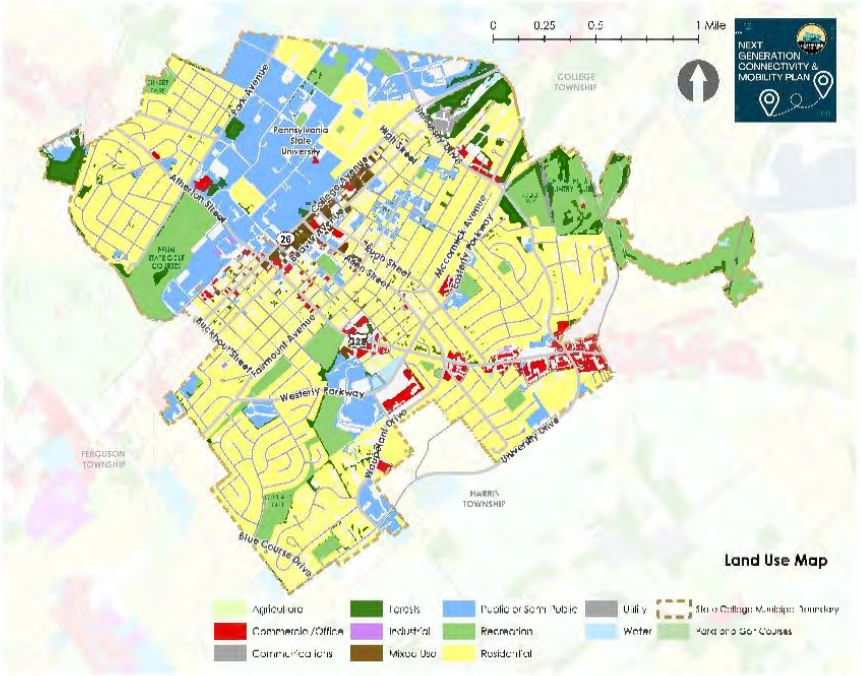
Identifying zoning, land use, and key developments is helpful to understanding community context and activity that is complementary to multimodal mobility and connectivity (e.g., residential, commercial, recreational, and public uses). Figure 7 shows zoning and land use throughout the Borough.

KEY TAKEAWAYS

- There is higher density residential zoning along Allen Street, University Drive, Downtown, & in the Orchard Park neighborhood
- Commercial land use is concentrated along Atherton Street and downtown
- Jobs are concentrated in Downtown and on campus
- Much of the development occurring in the Borough right now is multifamily and dense student housing
- PSU's campus is being extended to the west

Figure 7. Zoning and Land Use Maps





Key Destinations / Activity Centers

Key destinations and activity centers highlight where there is density of activity or where many people may travel to or from. Identification of these areas, shown in Figure 8, is key to a well-connected, equitable, and accessible multimodal network.

KEY TAKEAWAYS

- Schools, parks, and affordable housing are spread throughout the south side of the Borough
- Several schools are located along the Easterly / Westerly Parkway
- Shopping centers are concentrated along Atherton Street and Downtown
- There is one fire station in the Borough, at Beaver Avenue and Atherton Street

Figure 8. Key Destinations

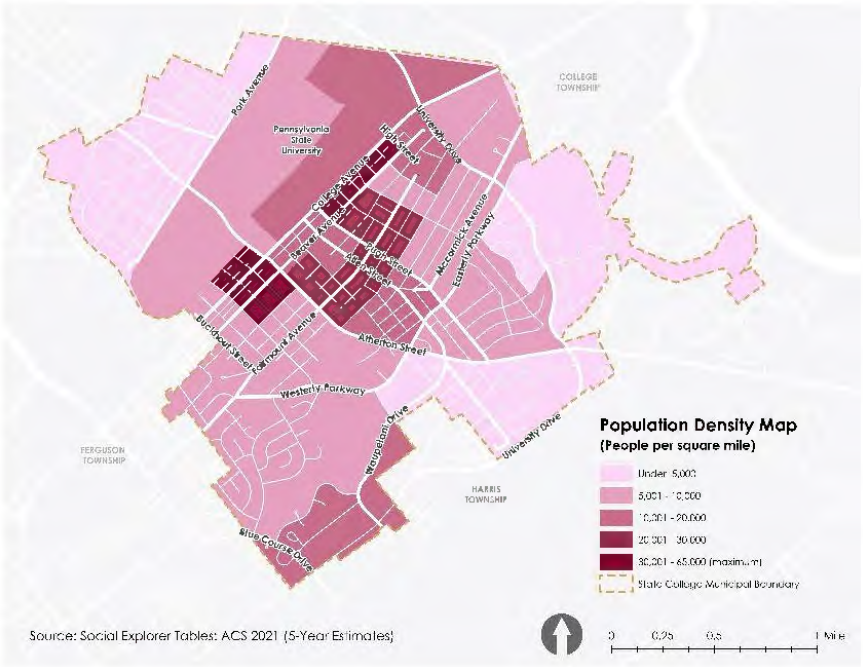
Population and Employment

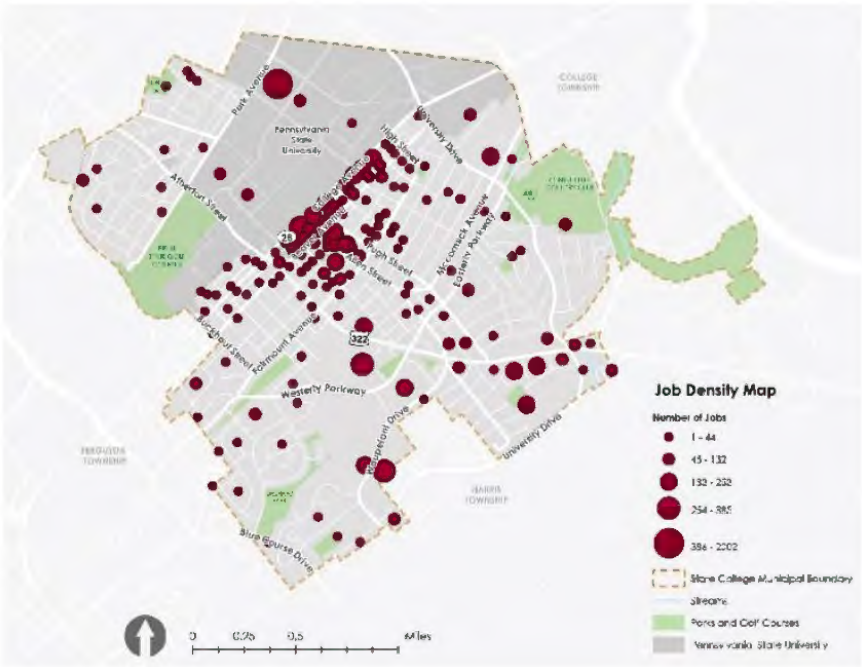
Population density helps visualize where many people live in portions of the study area, while job density illustrates density of places of work and locations of jobs. Figure 9shows these areas in relation to the street network within the study area. These areas help to inform key origin and destination areas across the study area and can help shape recommendations for multimodal connectivity.

KEY TAKEAWAYS

- High population density is seen in Downtown and directly south of the Penn State campus
- Lower population density is generally seen in the southeast and northwest portions of the study area
- Jobs are concentrated in Downtown and on campus
- There is also job density along Atherton Street where commercial land use is concentrated

Figure 9. Population Density and Job Density





Equity Analysis

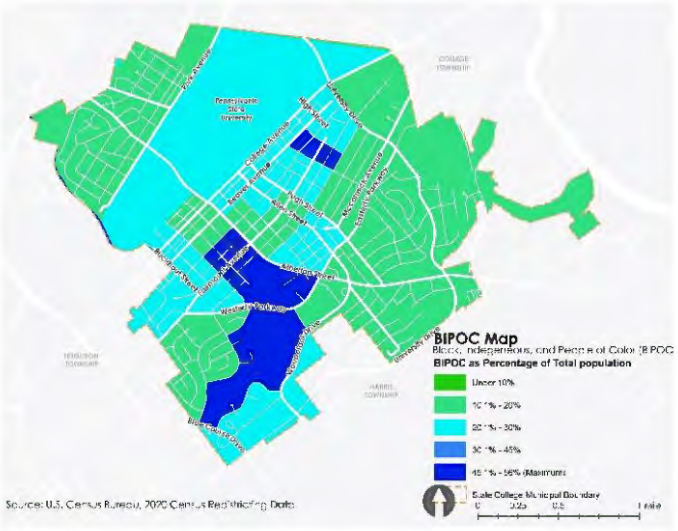
Demographic data was used to analyze communities through various equity factors, including race, age, zero-car households, and income. Vulnerable populations are those who are more likely to use active transportation modes, such as walking, biking, and taking transit; they are more likely to be represented in crash data. Exploring more deeply who lives in a focus area, how they interact with the built environment, and their perceptions about their community and quality of life are essential to the plan. Demographic information is shown in Figure 10.

KEY TAKEAWAYS

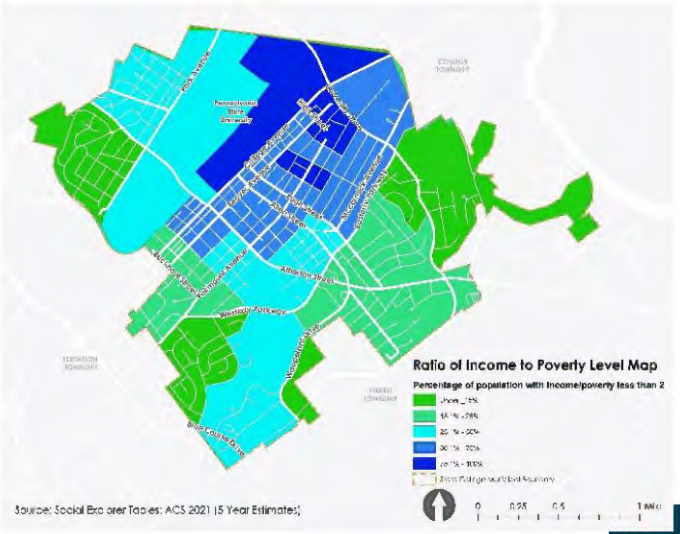
- Higher poverty is seen in Highlands, Downtown, part of the Holmes-Foster neighborhood, and on or near campus
- Higher zero-car households are found on campus, in Downtown, and in portions of the Highlands
- The highest BIPOC population is found in the Orchard Park neighborhood and a portion of the Holmes-Foster neighborhood
- Youth and senior populations are concentrated around Atherton Street and Easterly / Westerly Parkway

Figure 10. Equity Analysis

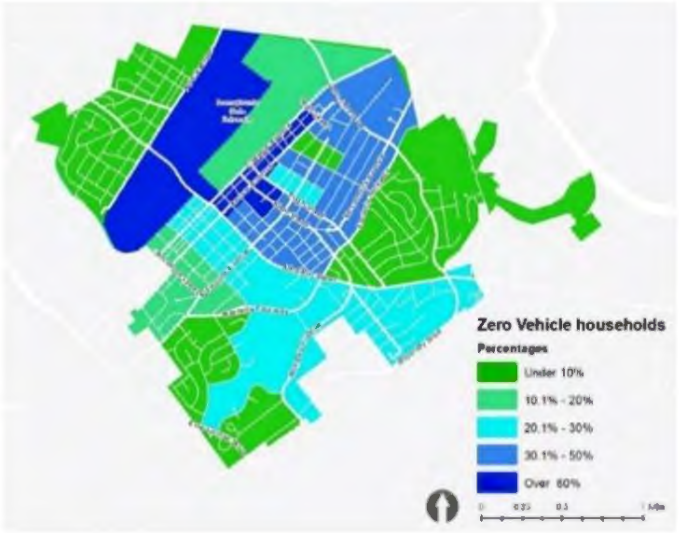
Black, Indigenous, People of Color (BIPOC):



Poverty:

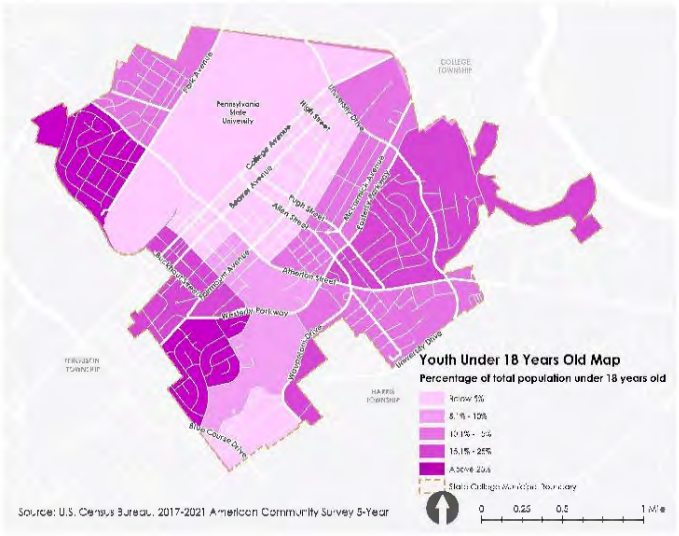


Zero-Vehicle Households:



Older Adults:

Youth:



Street Network

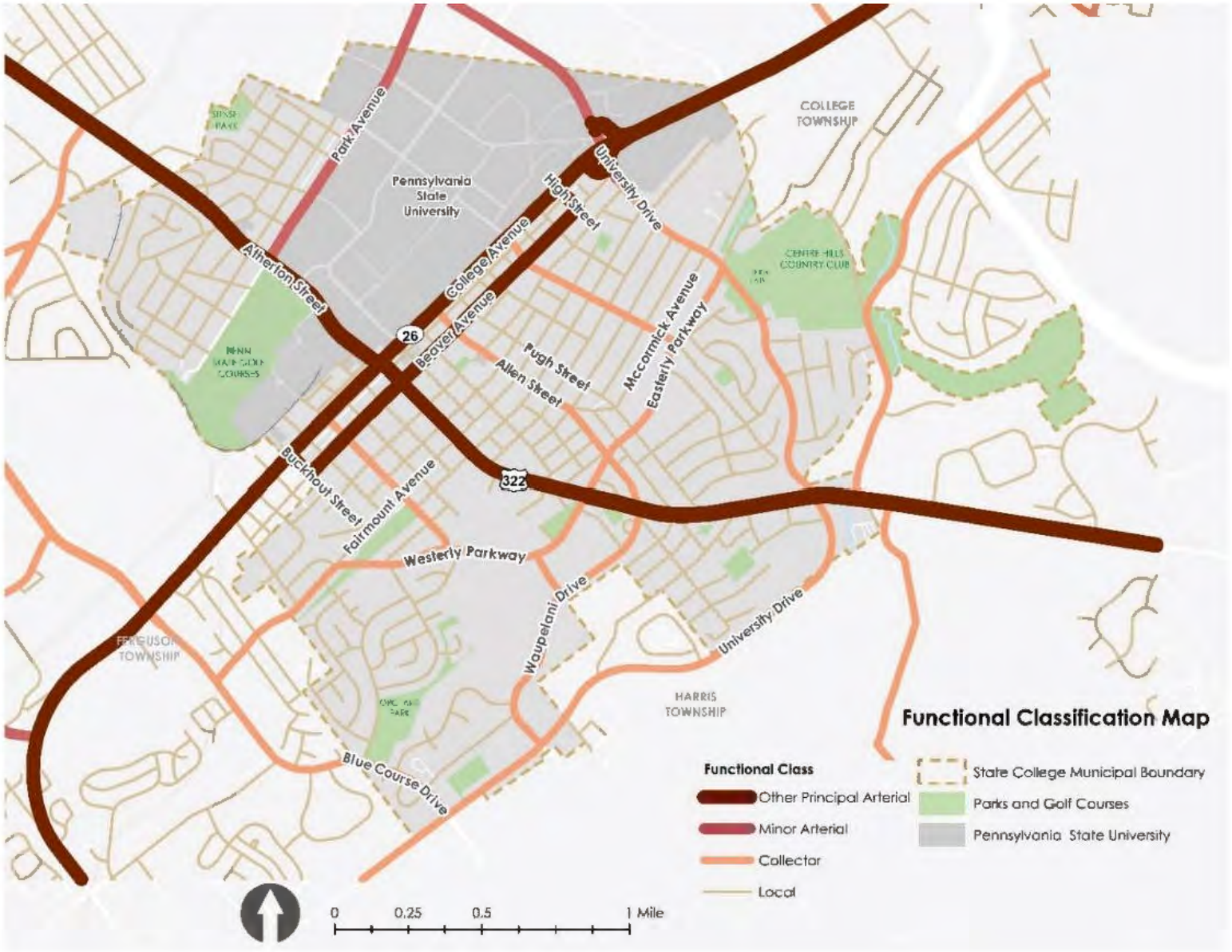
Documenting the street network and functional classifications of streets throughout the Borough, as shown in Figure 11, gives greater insight into the overall transportation system and how it relates to the Borough's neighborhoods. State-owned and maintained roads include the following:

- College Avenue
- Beaver Avenue
- Park Avenue
- Atherton Street
- Part of University Drive
- Whitehall Road

KEY TAKEAWAYS

- College and Beaver Avenues are Principal Arterials providing east/west connectivity through Downtown
- Atherton Street (Principal Arterial) and Allen Street / University Drive (Minor Arterials) are the main north / south routes
- Collector streets such as Easterly / Westerly Parkway, University Drive, and Waupelani Drive provide east / west connectivity in the southern part of the Borough

Figure 11. Street Network and Functional Classification



Traffic Volumes

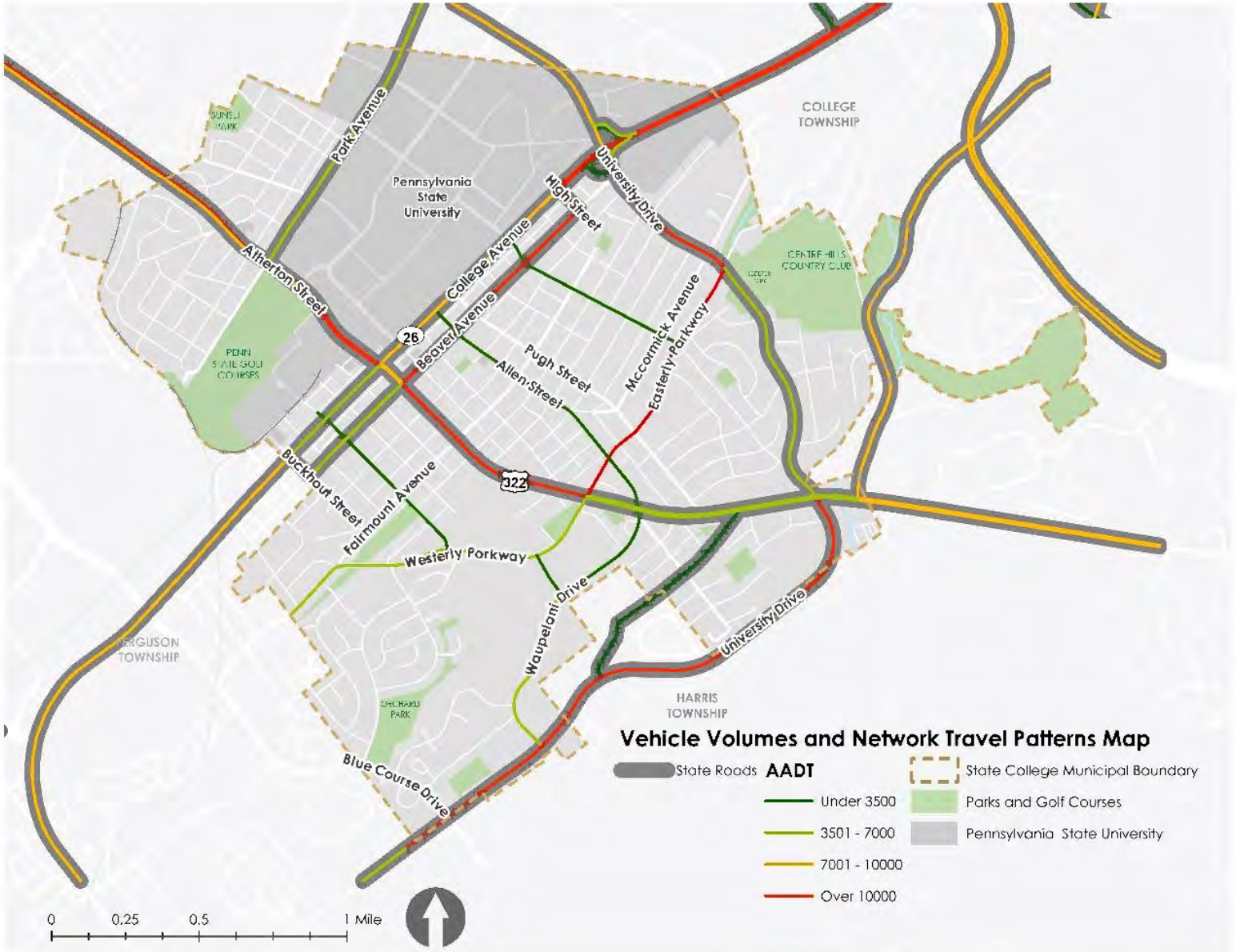
Identifying traffic volumes on major streets throughout the Borough provides insight into current travel patterns throughout the study area. Figure 12 shows the annual average daily traffic (AADT) calculated by PennDOT for state and local roads in the Borough.

Turning movement counts were collected at several locations during the morning, midday, and evening peak hours for all modes including passenger vehicles, buses, trucks, bicycles in the roadway, and pedestrian crossings in crosswalks. Please see Appendix B for more information.

KEY TAKEAWAYS

- The highest vehicular volumes are found on Atherton Street, Park Avenue, University Drive, and College Avenue east of High Street
- College and Beaver Avenues through Downtown carry between 10,000 and 12,000 vehicles daily
- The highest vehicular volumes are on State Routes that are owned and maintained by PennDOT: College Avenue, Beaver Avenue, Atherton Street, Park Avenue, and part of University Drive

Figure 12. Annual Average Daily Traffic



Transit Infrastructure

Transit infrastructure is essential to the multimodal network within the Borough. CATA runs service through the Borough as well as four surrounding townships, as shown in Figure 13. Building multimodal recommendations around existing service can enhance first and last mile connections to transit.

KEY TAKEAWAYS

- CATA ridership declined significantly during COVID-19 and has recently improved. However, it is still not at pre-pandemic levels.
- A significant number of lines connect to the university and outwards, such as to residential areas and areas outside of the Borough.
- Primary transit routes include Atherton Street, College and Beaver Avenues, and Waupelani Drive.
- Many stops lack shelters, especially those off campus.
- CATA does not have a designated transfer center. Most transfers occur downtown, which is difficult to accommodate within the right-of-way due to with the amount of frequent transit service.

Figure 13. Transit Stops and Routes

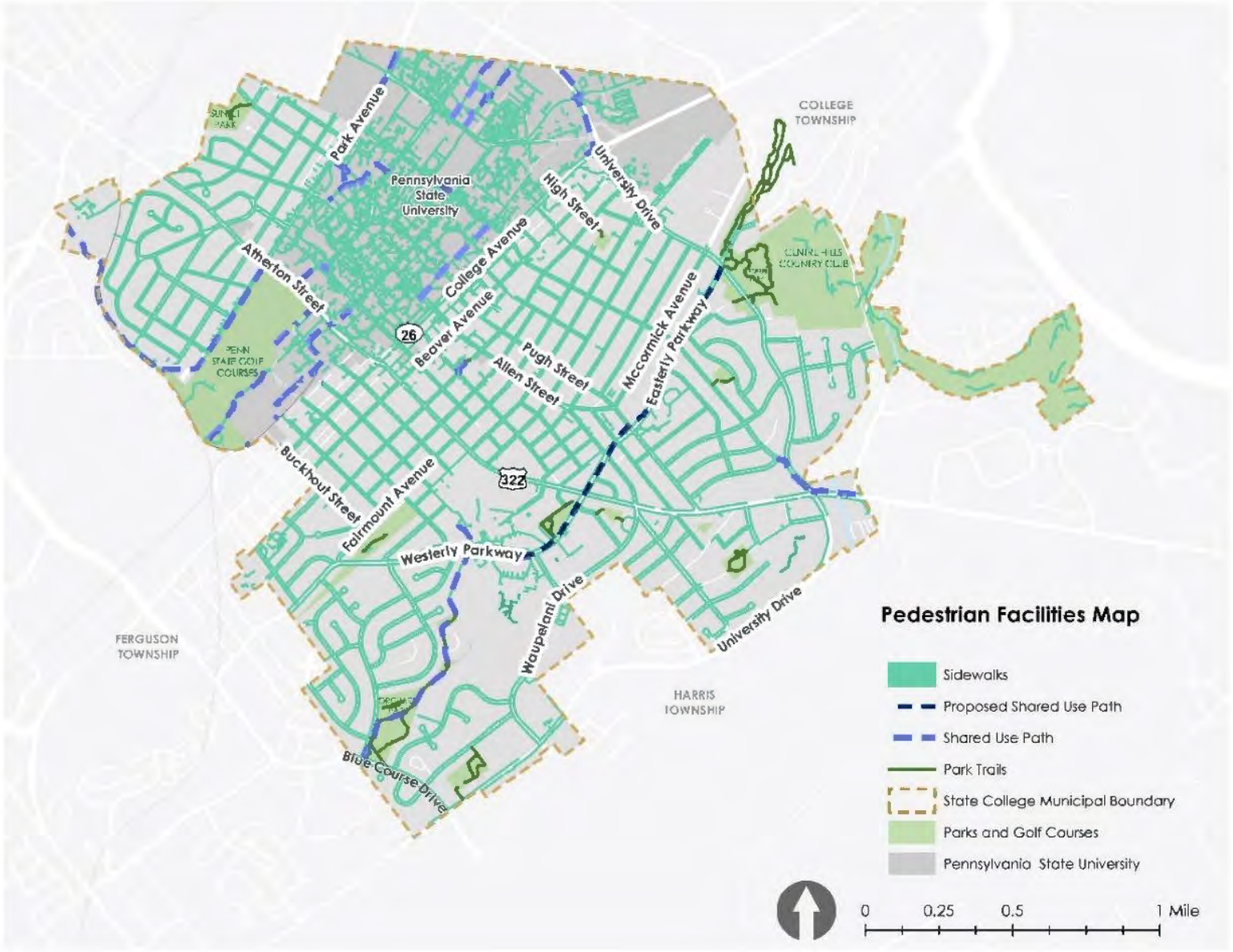
Pedestrian Infrastructure

Sidewalk coverage is one key element of pedestrian infrastructure. A comprehensive and well-connected sidewalk network can create safer conditions for people walking and rolling. Figure 14 shows the location of pedestrian facilities in the Borough. Shared use paths, which are shared by pedestrians and bicyclists, are also part of the pedestrian network.

KEY TAKEAWAYS

- There is significant sidewalk coverage throughout the Borough
- Other pedestrian infrastructure includes existing shared use paths and park trails that provide east / west connections
- The proposed Easterly / Westerly Parkway shared use path from the Orchard Park path to University Drive will improve connectivity in southern neighborhoods

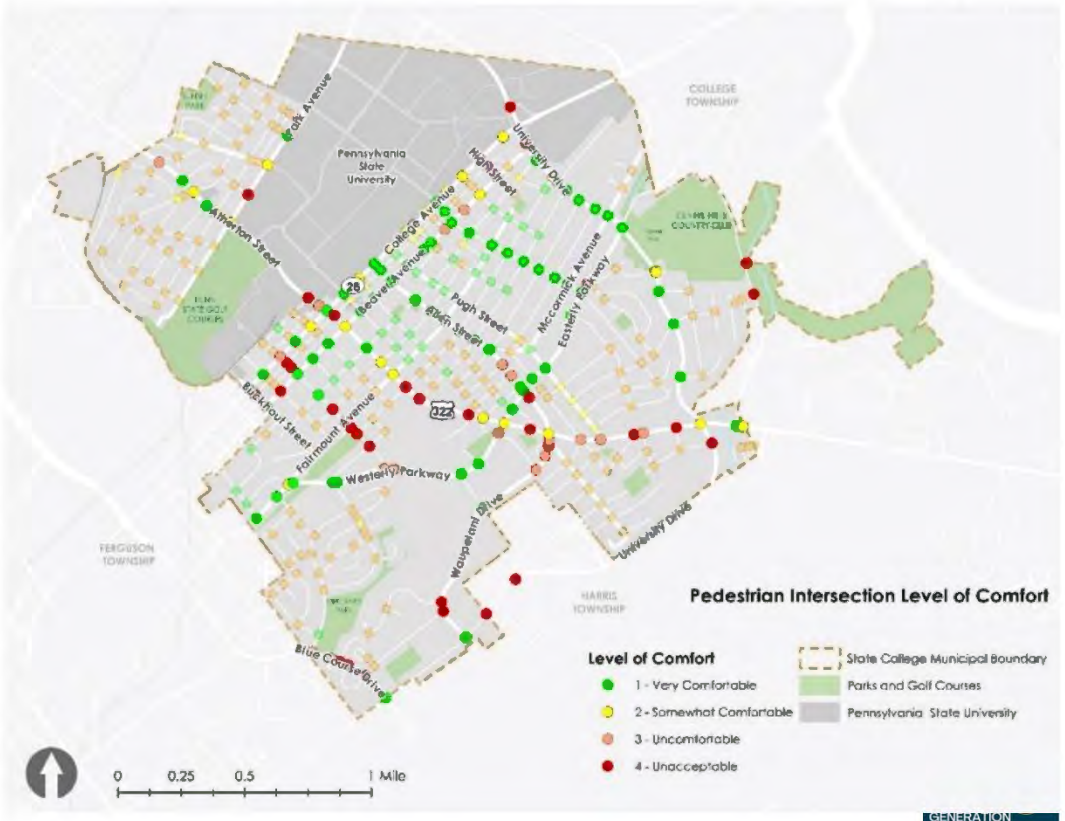
Figure 14. Pedestrian Facilities



Pedestrian Level of Comfort

Pedestrian Level of Comfort (PLOC) refers to the systemic evaluation of where the existing walking network is uncomfortable due to inadequate or incomplete sidewalks or uncomfortable crossings. PLOC analysis was completed to provide insight into intersections and corridors that may be uncomfortable due to the built environment. This analysis is shown in Figure 15 and Figure 16. The analysis can supplement public feedback as well as data from safety analysis to prioritize key intersections and corridors. PLOC 1 represents "Very Comfortable" while PLOC 4 represents "Unacceptable." See Appendix C for more information on methodology and scoring.

Figure 15. Pedestrian Level of Comfort at Intersections



KEY TAKEAWAYS

- Several intersections along Atherton Street, Sparks Street, and Waupelani Drive have PLOC 3 or 4
- The PLOC analysis supports community and stakeholder feedback that intersections Downtown require additional signal timing and pedestrian visibility improvements to reduce conflicts with vehicles
- Several parts of the Atherton Street and Park Avenue corridors have a PLOC of 2 or 3
- The PLOC analysis supports community and stakeholder feedback that portions of Downtown can be improved with wider sidewalks on College and Beaver Avenues and continuous, pedestrian priority facilities on Calder Way

Figure 16. Pedestrian Level of Comfort along Street Segments

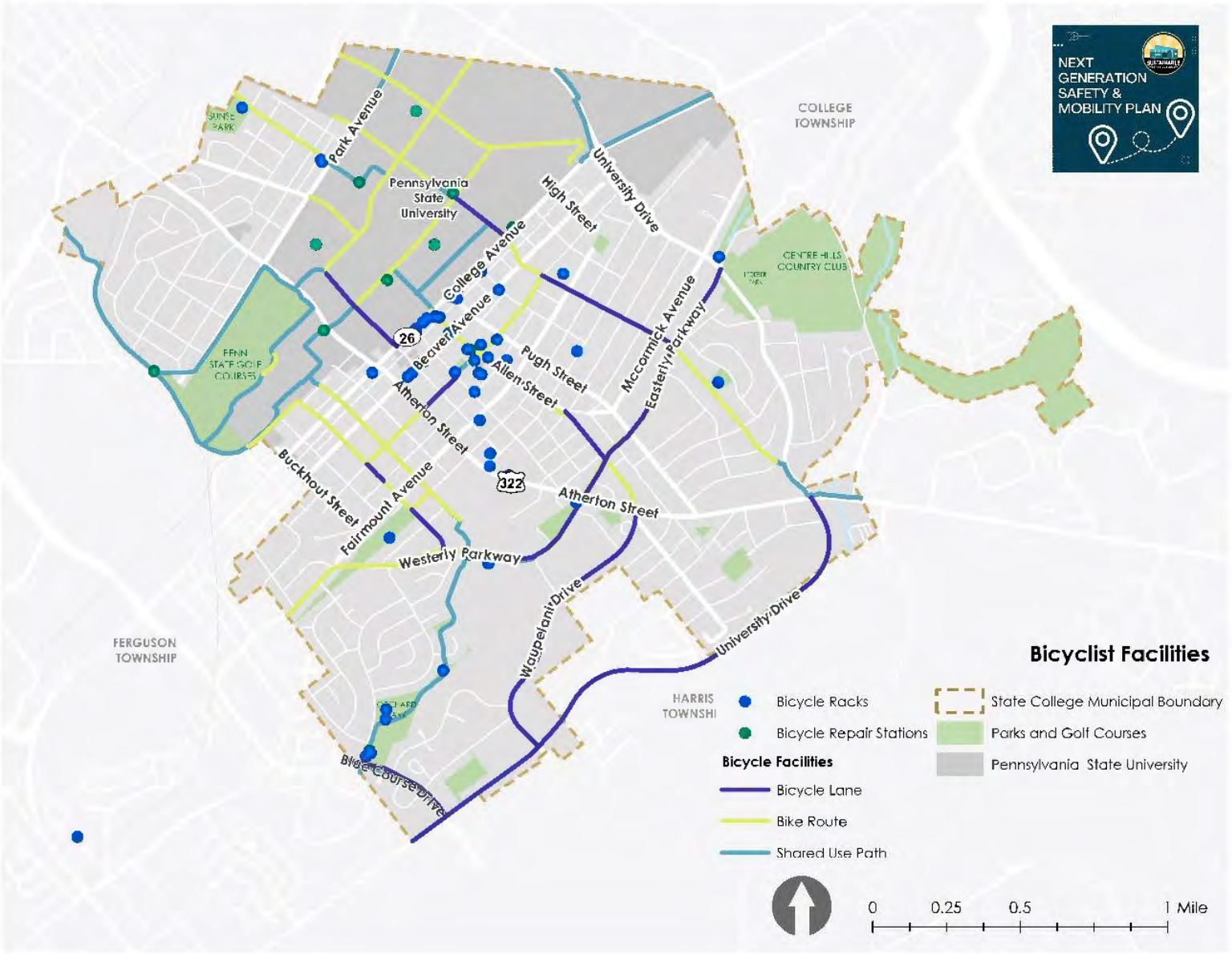
Bicycle Infrastructure

There are many aspects of bicycle infrastructure, including on-street and off-street facilities, bicycle racks, and even bicycle repair areas. Analyzing this infrastructure can help identify gaps in the network as well as determine how this infrastructure interacts with the existing street network, neighborhoods, and land uses throughout the Borough. Bicycle infrastructure is shown in Figure 17.

KEY TAKEAWAYS

- There are bike lanes, or sometimes on-street bike routes with no associated bicycle infrastructure, on several streets in the Borough and on campus
- Bike lanes with no separation are most present in the central and southern portion of the study area and are striped on South Allen Street, Garner Street, Waupelani Drive, and University Drive
- Shared use paths are a key off-road component of the bicycle network and provide connections east and west of Penn State and throughout Orchard Park and near the High School
- The future shared use path on Easterly/Westerly Parkway will provide a key east/west link throughout the southern portion of the Borough

Figure 17. Bicycle Facilities



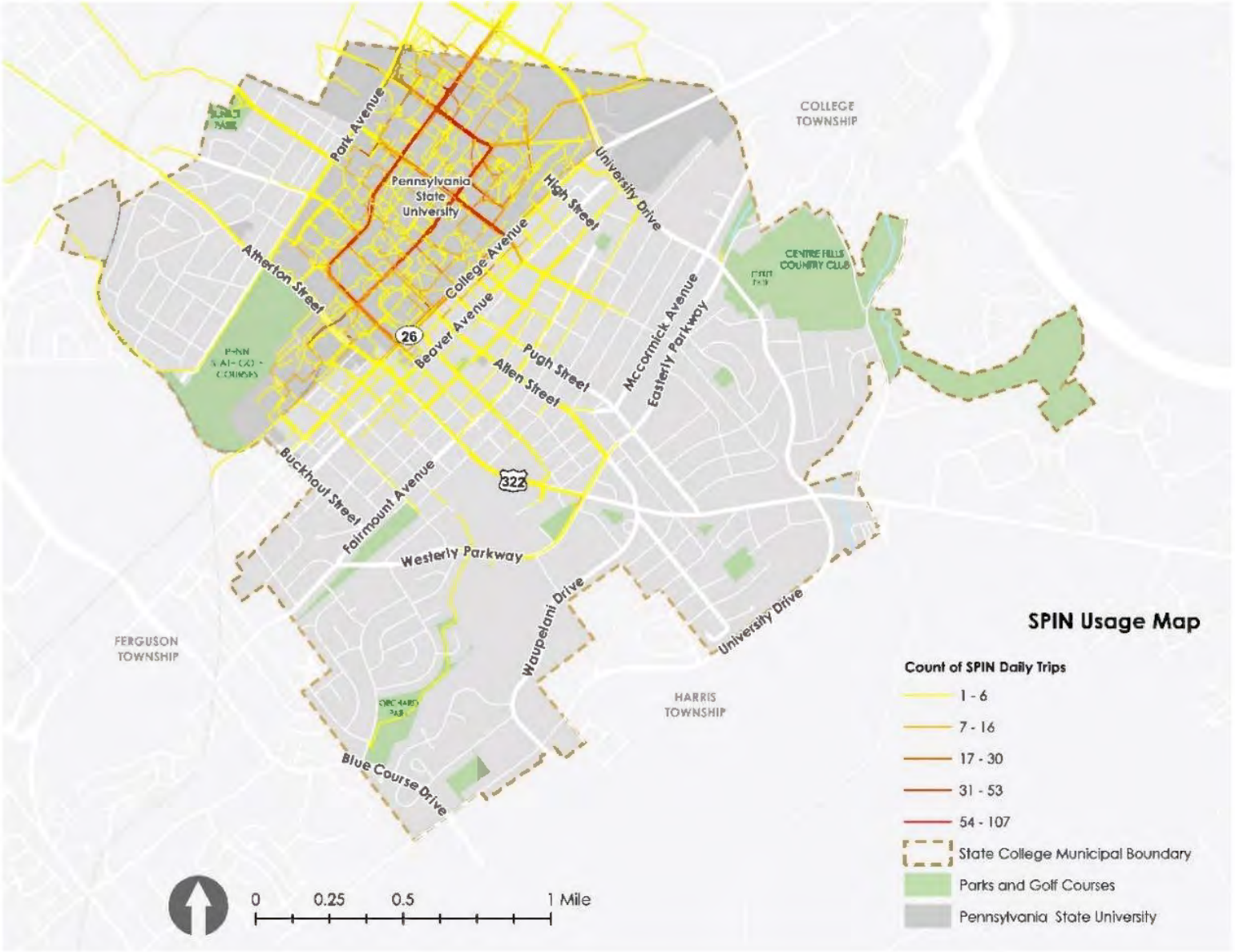
SPIN Bikeshare Usage

Approximately 300 SPIN electric-assist bicycles (e-bikes) are available within State College. The system is deployed primarily on the Penn State campus, but also extends into the Borough to offer community members convenient access to the bikes. Understanding where daily trips are taken by users, as illustrated in Figure 18, complements bicycle infrastructure.

KEY TAKEAWAYS

- The highest usage is on and directly around campus
- Trips utilize shared use paths through Orchard Park and the golf course
- Most trips to do not extend south of Westerly Parkway
- Many of the Borough's streets have no trips

Figure 18. SPIN Bikeshare Usage



Bicycle Level of Traffic Stress

Bicycle Level of Traffic Stress (LTS) refers to the systemic evaluation of where the existing bicycling network is stressful due to inadequate or incomplete bicycle facilities. LTS analysis was done at the segment level to provide insight into corridors that may be stressful due to the built environment. Figure 19 shows the results. This analysis supplements public feedback as well as data from safety analysis to prioritize key corridors. LTS 1 represents "Very Low Stress" while LTS 4 represents "Highly Stressful." See Appendix C for more information on methodology and scoring.

KEY TAKEAWAYS

- Most corridors have LTS 2, which is comfortable for the typical adult
- Atherton Street, University Drive, Park Avenue and part of College Avenue have LTS 4, which is suitable only for the most risk-tolerant bicyclists
- Portions of Garner Street, Allen Street, and Waupelani Drive have LTS 3

Very Low Stress
for people of all ages and biking abilities, such as separated facilities

Somewhat Low Stress
for people of all ages and biking abilities, such as low-volume / low-speed roads; some upgrades may be needed in the future

Stressful
for most people, such as a bike lane in a busy street; priority to address issues

Highly Stressful
for everyone, such as bicycling in high-speed traffic; highest priority to address issues

Figure 19. Bicyclist Level of Traffic Stress

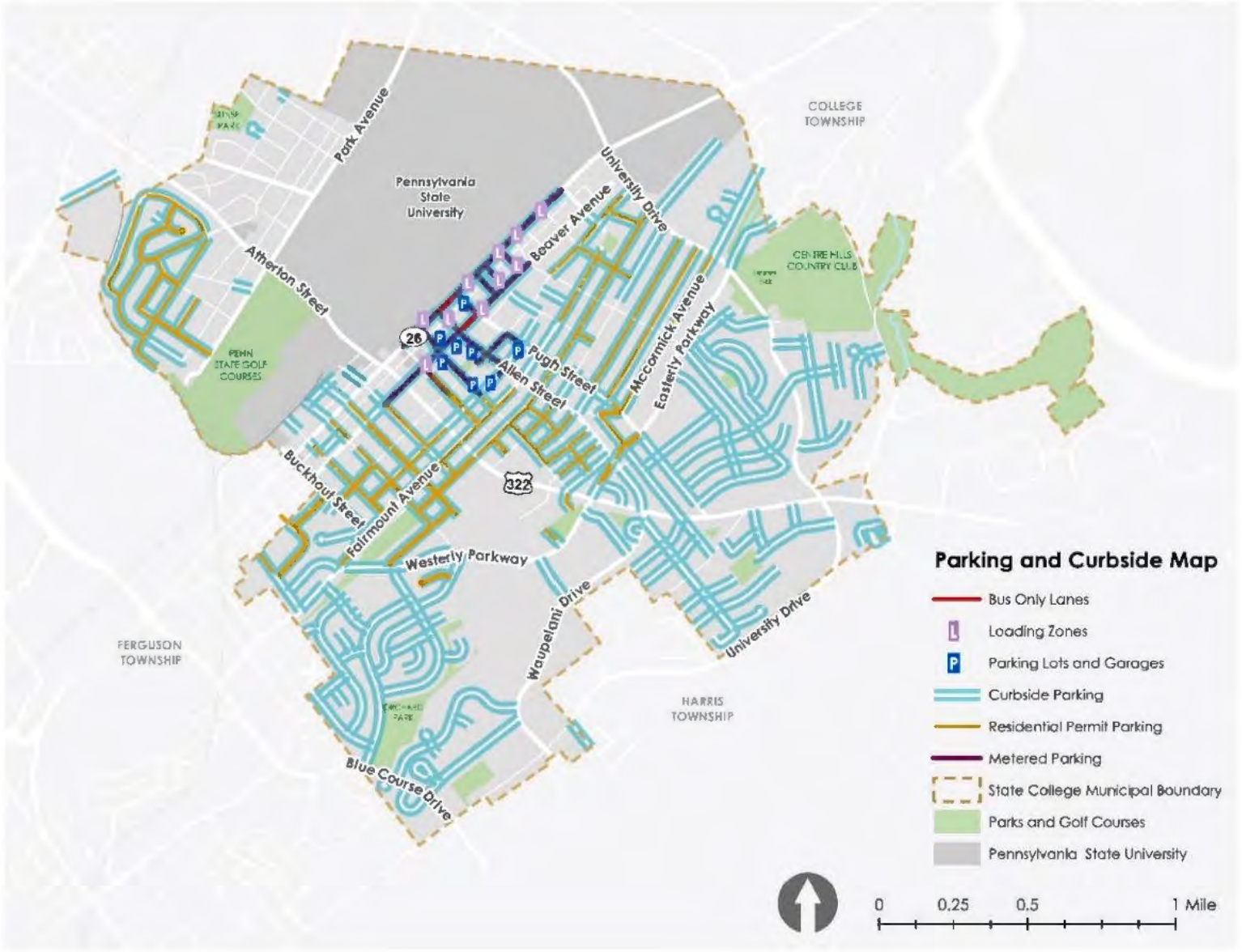
Curbside Management

While the curb in commercial districts has historically been primarily used for parking, with new modes and technologies, including ride-hail app vehicles, e-commerce deliveries, electric vehicles, and micromobility service, there are more demands than ever on the limited amount of curbside space. The use of curb space for multiple modes of transportation, including bus-only lanes, bicycle facilities, or widened sidewalks, along with the new modes and technologies, has furthered the need to either identify alternative locations for parked cars or alternatives to the need to park a car. Current parking areas and curbside uses within the Borough are mapped in Figure 20.

KEY TAKEAWAYS

- Most curbside uses are parking and loading related, which predominantly serve single occupancy vehicles and delivery trucks.
- Atherton Street, Park Avenue, University Avenue, Waupelani Drive, and portions of Easterly/Westerly Parkway and Allen Street are the main corridors that do not have curbside parking.
- Outside of small sections of Beaver and College Avenues, dedicated space for transit is not provided.
- The current curbside management system could be enhanced, which may improve both transportation functions and economic vitality.

Figure 20. Parking and Curbside Management



Parking

The project team reviewed both the on-street parking environment and off-street parking in lots and garages in downtown State College.

OFF-STREET PARKING

A 2020 Parking Study identified 7,392 parking spaces in downtown State College, which consists of 859 (11%) on-street spaces, of which 384 are metered, and 475 are unmetered. Additionally, the area has 6,533 off-street spaces, of which 1,753 (24%) are found in publicly accessible lots and garages, and 4,780 (65%) are located in off-street private parking lots or garages. The project team documented costs of parking and loading zone permits across the Borough as shown below:

Beaver, Fraser, & Pugh Garages

- $2.25 per hour special events
- $32.00 Special Event Max Daily Rate
- $1.00 per hour 6 AM to 6 PM
- $0.75 per hour 6 PM to 6 AM
- $18.00 Max Daily Rate

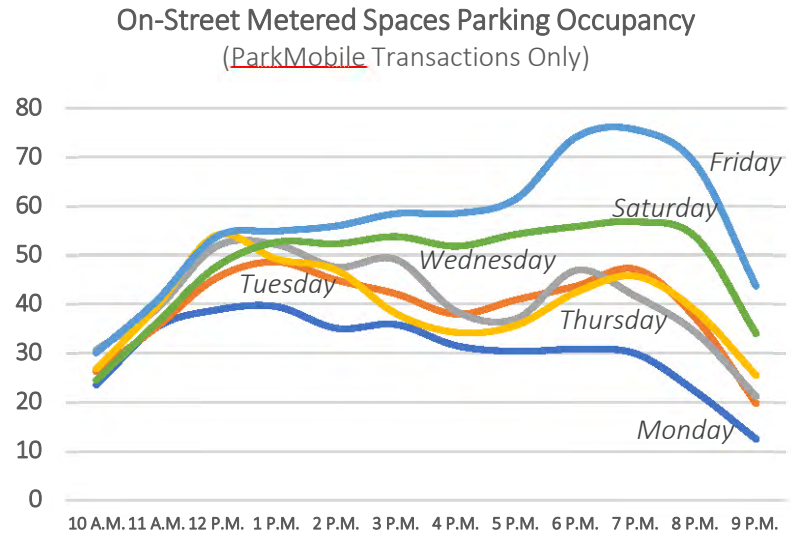
Allen & Beaver Lots, McAllister Deck

- $1.25 per hour 10 AM to 10 PM; five-hour time limit

ON-STREET PARKING

On-street parking in downtown State College is available in unregulated and residential permit parking spaces in the residential areas, and through metered spaces in the commercial district. In the commercial district, meters operate from 10 AM to 10 PM Monday through Saturday. The project team reviewed ParkMobile payment data from September 2022 to understanding trends in meter transactions in the commercial district (Figure 21). Friday evenings between 5:00 and 8:00 PM, with a one-hour peak between 7:00 and 8:00 PM. On a daily basis, Friday also experiences consistently higher numbers parking occupancy rates throughout the day than other weekdays or Saturdays.

Figure 21. Metered Parking Occupancy



Electric Vehicle Infrastructure

Electric vehicle (EV) infrastructure consists mainly of charging stations where EVs can be plugged in to recharge. EV infrastructure represents emerging technology and supports sustainability and clean energy initiatives. Documenting where EV infrastructure is in the Borough can be compared to where demand for these facilities might be and the potential infrastructure and space needed for them. Refer to Figure 22 for the EV charging infrastructure in the Borough.

CHARGING CAPACITY

As shown in Figure 22, data from the Borough's Beaver parking garage shows that there is not a clear pattern for days of the week or times of day when charging is especially in demand. There also does not appear to be alignment between the peak charge days and major campus events such as home football games or graduation nor with holidays.

KEY TAKEAWAYS

- 3 Level 2 chargers (non-Tesla) charging locations in the Borough
- 16 plugs in total
  - 5 plugs in the Nittany P Deck on campus
  - 5 plugs in the West Deck on campus
  - 6 plugs in the Borough's public Beaver Garage
- PSU & Borough chargers are managed by ChargePoint
- See Figure 23 for the EV charging infrastructure in the Borough.

Figure 22. Charging Sessions in Beaver Garage

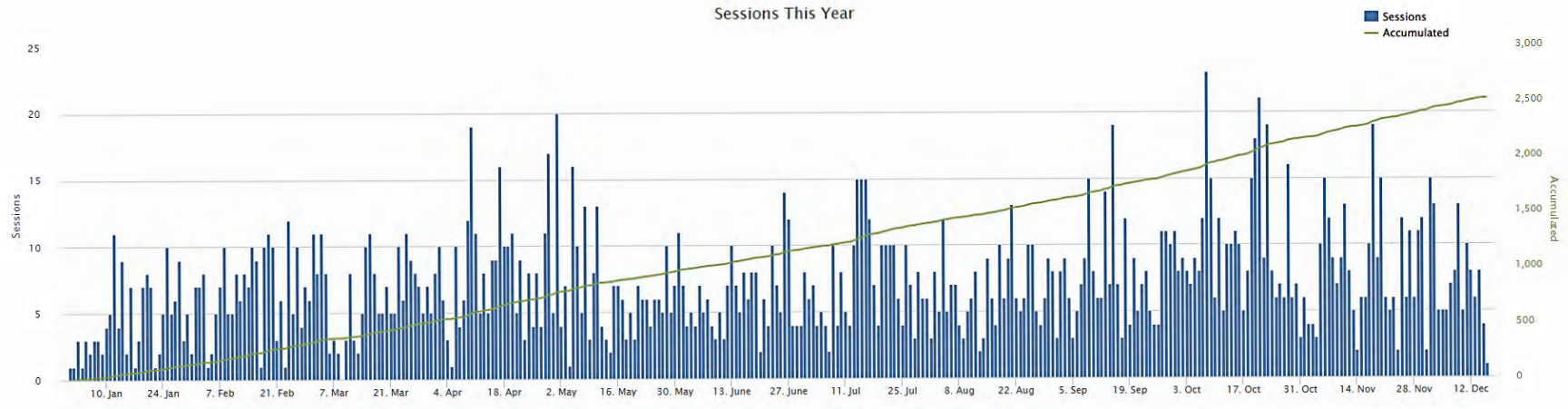


Figure 23. Electric Vehicle Charging Map

Section 5: SAFETY ANALYSIS

Historic crash data occurring within State College Borough from January 2017 through December 2021 (five years of data) was obtained from PennDOT and from the Borough. This crash data consisted of crashes classified as either "reportable" or "non-reportable." The "reportable" data is organized by year and is available for download via PennDOT's Pennsylvania Crash Analysis Information Tool (PCIT) public website (https://crashinfo.penndot.gov/PCIT). "Non-reportable" crash data was supplied by the State College Borough Police Department. The non-reportable crash data was analyzed; however, it is not as comprehensive as the data from the PCIT.

The crash analysis included crash severity, crash type, weather, roadway surface conditions, and lighting conditions. Trends were identified, where applicable. This memorandum summarizes the main findings from the crash analysis; see Appendix B for the full crash analysis.

Reportable Crash Data

A total of 848 reportable crashes occurred within the study area over the 5-year period (Table 3). This includes three fatal crashes (less than 1 percent), 422 injury crashes (50 percent), and 423 property damage only crashes (no injuries or fatalities) (50 percent). Two of the fatal crashes occurred on South Atherton Street south of the downtown area of the Borough; one was an angle crash in the vicinity of East Whitehall Rd and Norma Street, and the other was a hit fixed object crash that occurred at the West Nittany Avenue intersection. The third fatal crash was also a hit fixed object collision that occurred on West Whitehall Road in the vicinity of the Stonebridge residential community.

Table 3. Crash Severity (Reportable Crashes)

Severity	Count
PDO	423 (50%)
Injury	422 (49%)
Fatal	3 (<1%)
Total	**848 (100%)**

*Crash frequencies represent number of crashes (5-year total), not the number of injuries or fatalities

PDO: Property Damage Only (no injuries)

Four crash types account for nearly 90% of all reportable crashes. Angle crashes (381 crashes / 45 percent) occur the most frequently within the study area followed by rear end crashes (166 crashes / 20 percent) (Table 4).

Table 4. Crash Types (Reportable Crashes)

Type	Count
Angle	381 (45%)
Rear-end	166 (20%)
Hit Fixed Object	106 (13%)
Hit Ped	102 (12%)
Side-swipe (Same)	40(5%)
Head-On	21(2%)
Non-Collision	13(1%)
Sides-wipe (Opp.)	11(1%)
Other	8(1%)
Total	**848 (100%)**

Further detailed examination of the reportable crash database regarding crashes that involved bicyclists showed the following:

- 38 bicyclists were involved in 37 reportable crashes. The most frequent crash types were angle crashes (28 crashes) followed by sideswipe crashes (five crashes).
- Five of the 38 crashes involving bicycles occurred during rainy weather conditions.

Further detailed examination of the reportable crash database regarding crashes that involved pedestrians showed the following:

- 108 pedestrians were involved in 102 reportable crashes. All resulted in injuries to some degree, but no fatalities.
- 13 of the 102 pedestrian crashes occurred during rainy weather conditions.
- 81 pedestrian crashes occurred at an intersection, while 21 occurred midblock.
- 52 pedestrian crashes occurred during daylight; 42 occurred during darkness in areas with streetlights on. The remaining eight crashes occurred during times of dusk or darkness without street lighting.

Weather and lighting (see Table 5 and Table 6, respectively) do not seem to be a significant factor in most crashes in the study area as 701 crashes (83 percent) occurred in conditions classified as “clear.” There were 95 crashes (11 percent) in the rain and another 32 crashes in the snow (4 percent). Additionally, 584 crashes (69 percent) took place in the daylight with 206 crashes (24 percent) taking place in areas with streetlights, accounting for 93 percent of the total crashes.

Table 5. Weather Condition (Reportable Crashes)

Weather Condition	Count
Clear	701 (83%)
Rain	95 (11%)
Snow	32 (4%)
Cloudy	14 (2%)
Other	6 (<1%)
Total	**848 (100%)**

Table 6. Illumination Condition (Reportable Crashes)

Illumination Condition	Count
Daylight	584 (69%)
Streetlights	206 (24%)
Dark	39 (5%)
Dusk	14 (2%)
Other/Unknown	5 (<1%)
Total	**848 (100%)**

As shown in Table 7, 655 (77 percent) of the crashes in the study area occurred with a dry road condition compared to 156 (18 percent) on wet roads.

Table 7. Road Condition (Reportable Crashes)

Road Condition	Count
Dry	655 (77%)
Wet	156 (18%)
Snow/Slush	28 (3%)
Ice	7 (1%)
Other	2 (1%)
Total	**848 (100%)**

Non-Reportable Crash Data

There were 1,509 non-reportable crashes within the study area over the 5-year period. These crashes are generally property damage only; however, one injury was noted. Table 8 provides a summary of the types of non-reportable crashes.

Table 8. Crash Types (Non-Reportable Crashes)

Type	Count
Angle	524 (35%)
Not Recorded	428 (28%)
Rear-end	287 (19%)
Side-swipe	166 (11%)
Fixed Object	81 (5%)
Pedestrian	5 (0.33%)
Other/Unknown	18 (1%)
Total	**1509 (100%)**

No crash type was identified for nearly 430 of the 1,509 non-reportable crashes. Of the non-reportable crashes that had an identified crash type, angle crashes occurred most frequently, followed by rear-end crashes. Only five of the more than 1,500 non-reportable crashes involved a pedestrian, and none involved a bicyclist.

The intersection of Atherton Street and University Drive had the largest number of non-reportable crashes, with 31 crashes in five years. Non-reportable crashes along College Avenue between High Street and Buckhout Street accounted for 349 crashes, while Beaver Avenue had 218 crashes during the same timeframe.

Crash Concentration: All Crashes

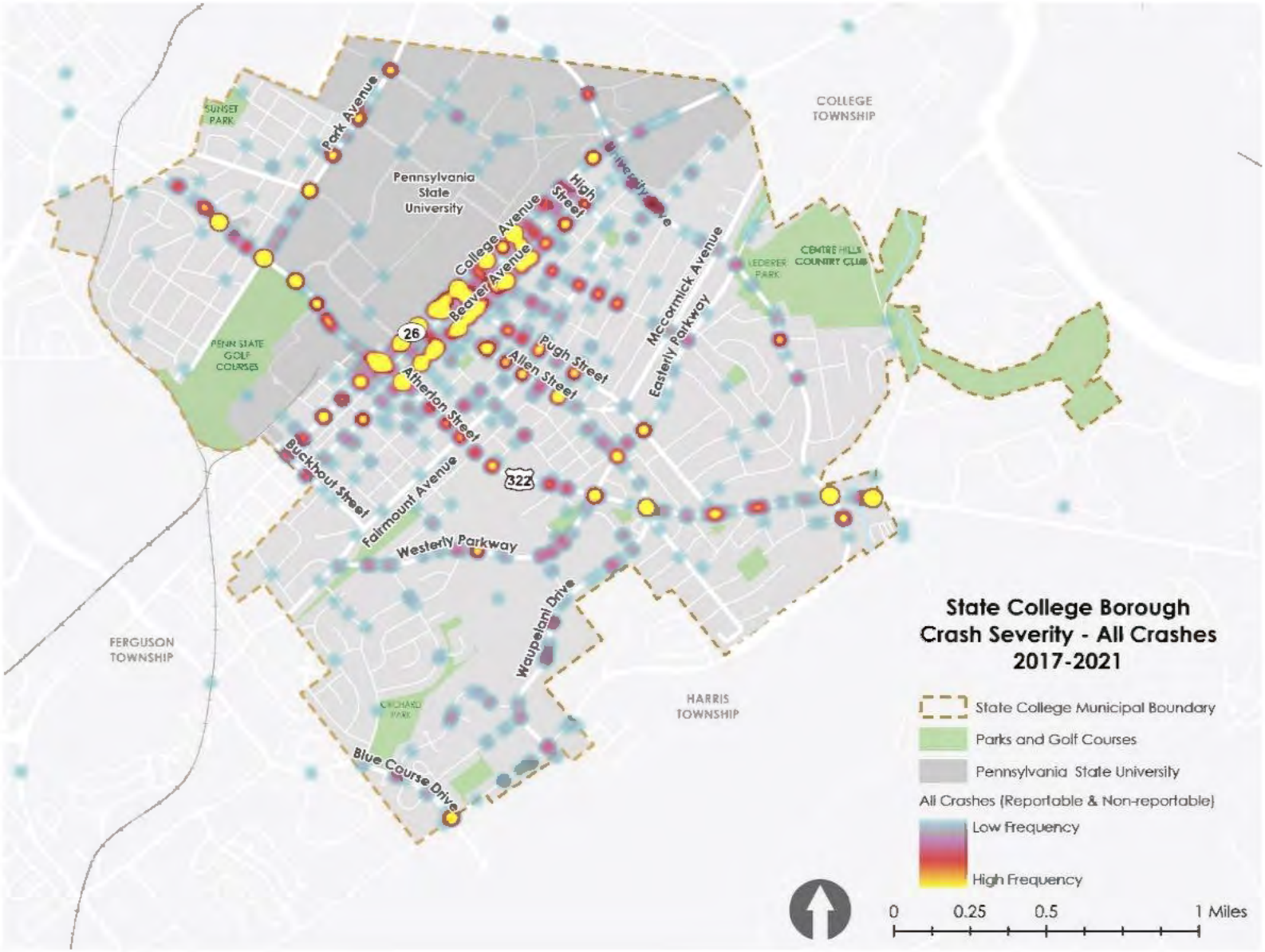
Figure 24 shows all crashes from 2017-2021, both reportable and non-reportable. Crash density was used to show where high frequencies of crashes occurred. This was used to identify safety priority corridors and intersections.

KEY TAKEAWAYS

Corridors with high frequencies of crashes were identified:

- Atherton Street
- College Avenue
- Beaver Avenue
- Allen Street
- Pugh Street
- Park Avenue
- University Drive
- Garner Street

Figure 24. All Crashes (Reportable and Non-Reportable)



Crash Severity

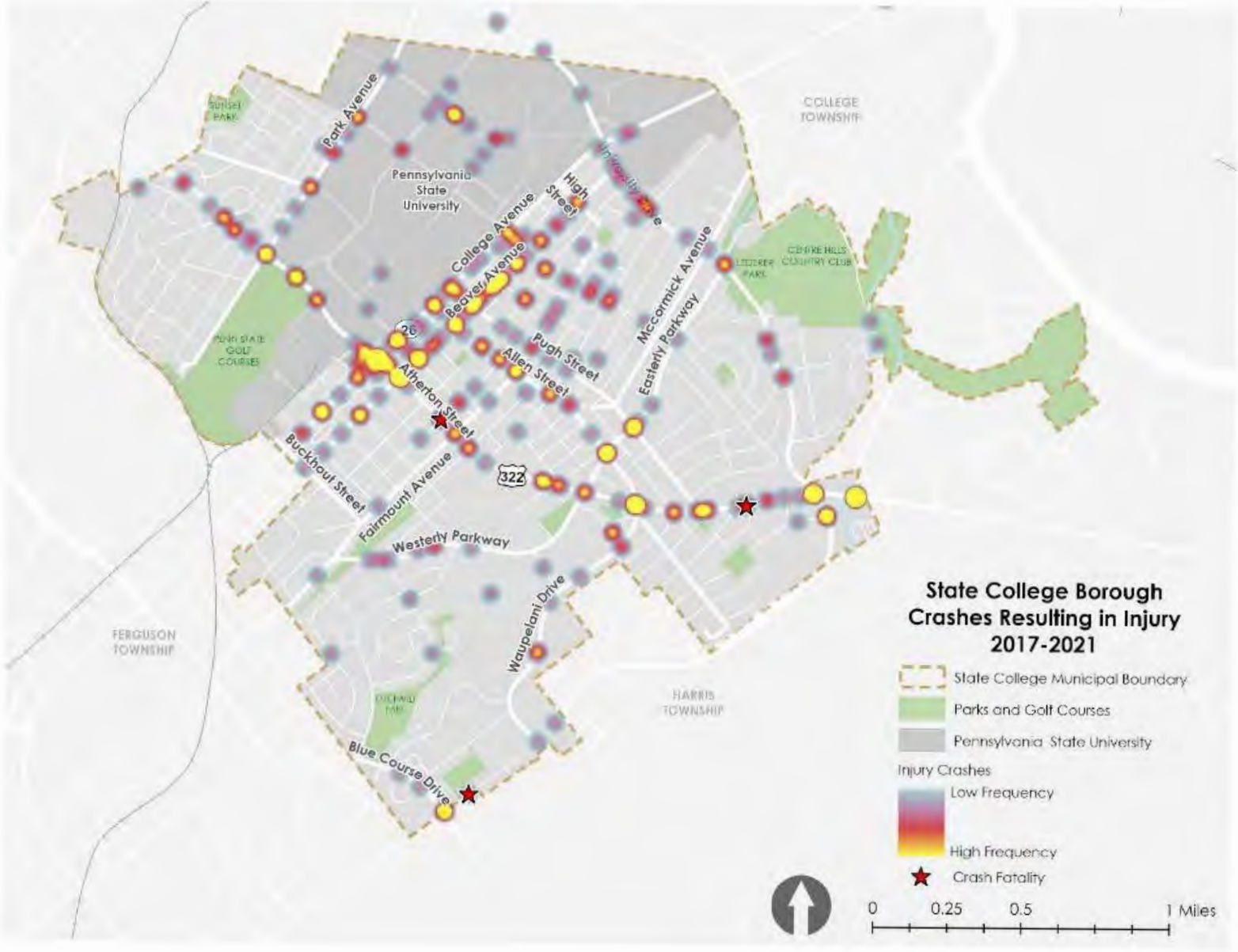
Figure 25 illustrates injury crashes from 2017-2021. Crash density was used to show where high frequencies of injury crashes occurred. Crashes that resulted in a fatality are also identified.

KEY TAKEAWAYS

Crash corridors with high frequencies of injury crashes were identified:

- Most injuries occurred in the downtown core area along Atherton Street, College Avenue, and Beaver Avenue
- Several intersections along Atherton Street, College Avenue, Beaver Avenue, Easterly / Westerly Parkway, and Allen Street experience frequent injury crashes
- 3 fatal crashes (2 on Atherton Street and 1 on Whitehall Road)

Figure 25. Fatal and Injury Crashes



Pedestrian Crashes

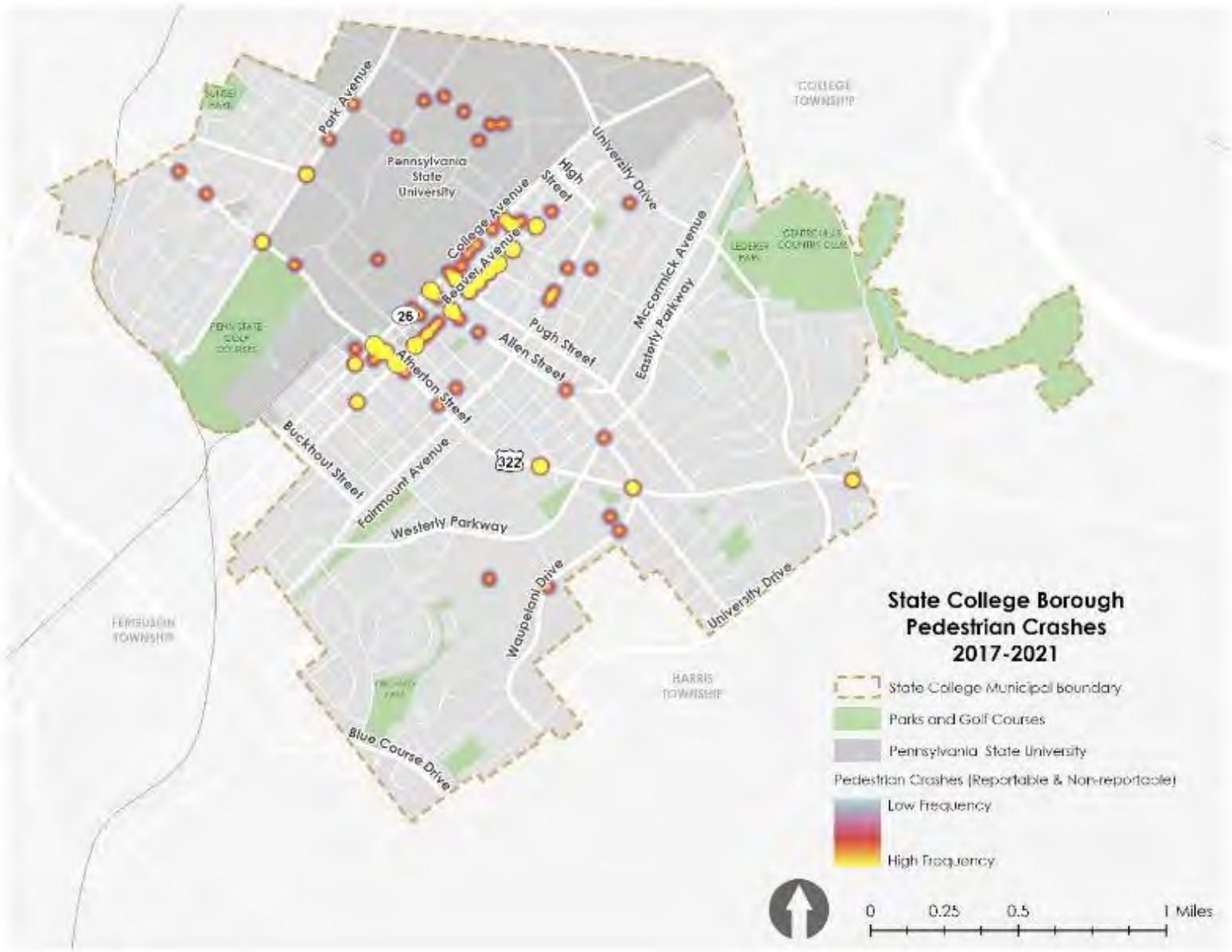
Figure 26 shows pedestrian crashes from 2017-2021. Crash density was used to show where high frequencies of pedestrian crashes occurred.

KEY TAKEAWAYS

Crash corridors with high frequencies of pedestrian crashes were identified:

- Most pedestrian crashes occur in the downtown core and on Fairmount Avenue between Garner Street and Pugh Street
- More frequent crash intersections include:
  - Atherton Street / Branch Road
  - Atherton Street / Allen Street / Waupelani Drive
  - Atherton Street / Logan Avenue
  - Atherton Street / Park Avenue
  - Park Avenue / Allen Street

Figure 26. Pedestrian Crashes



Safety Areas of Concern

The NextGen areas of concern were identified by synthesizing key information from the safety data analysis, anecdotal safety information gathered during the Borough tours, and feedback on safety issues received during public engagement. These categories of information are shown in Figure 27.

- Safety analysis includes areas that had high crash densities across all crashes, injury crashes, and pedestrian crashes.
- Multimodal analysis includes corridors and intersections that were either PLOC and BLTS scores of 3 and 4, highlighting areas that were the most uncomfortable or stressful in the three analyses.
- Public and stakeholder feedback includes corridors, intersections, and areas of the Borough that bot residents and the PMT identified as areas of concern. This includes feedback identified throughout Phase 1 of public engagement such as survey results, map comments, and conversations and discussions on the driving and bike tours.

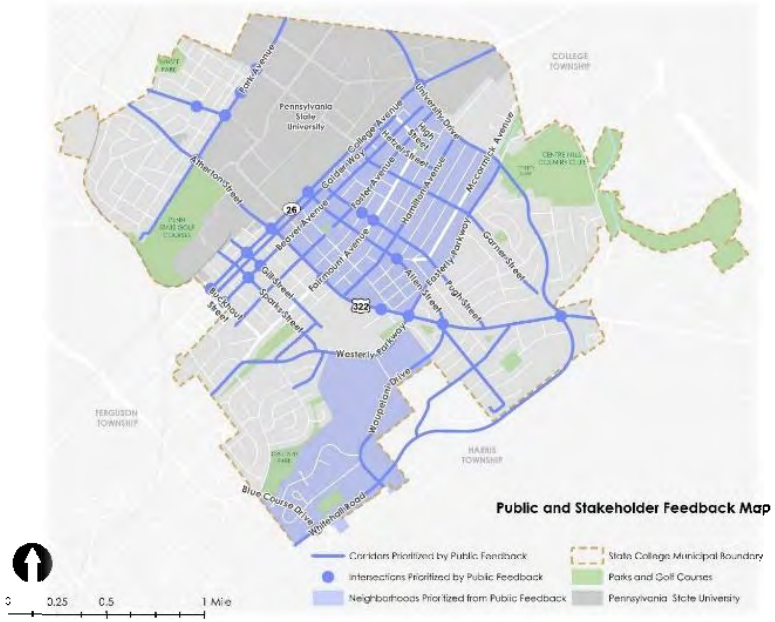
Figure 27. Areas of Concern

Safety

Figure 27 (continued)

Multimodal Considerations

Public Feedback



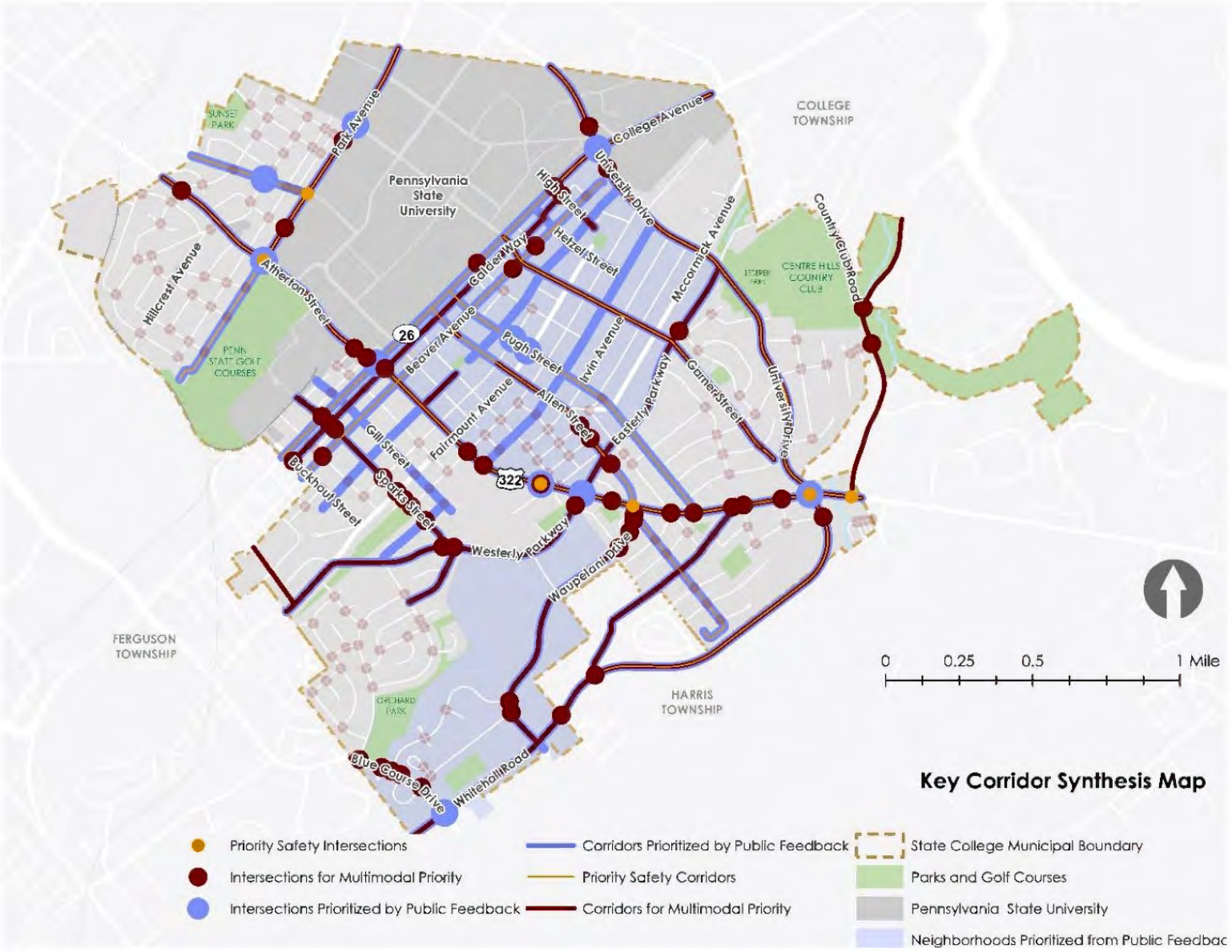
Summary

All findings for safety were overlaid to identify key corridors that serve as the basis for recommendations in the NextGen Plan (Figure 28).

KEY CORRIDORS

- Atherton Street
- Allen Street
- Garner Street
- Park Avenue
- Beaver Avenue
- College Avenue
- University Drive
- Hamilton Avenue
- Easterly / Westerly Parkway
- Waupelani Drive
- Pugh Street
- Foster Avenue

Figure 28. Synthesis of Key Corridors and Intersections



Section 6:
PROJECTS & STRATEGIES

Multimodal Network

The NextGen Plan proposes a long-term vision for a multimodal network in State College. This vision, shown in Figure 29, identifies key corridors for the multimodal network that are categorized by transportation mode priority. The network is a combination of existing and proposed facilities, and it responds to the safety areas of concern identified in the previous chapter.

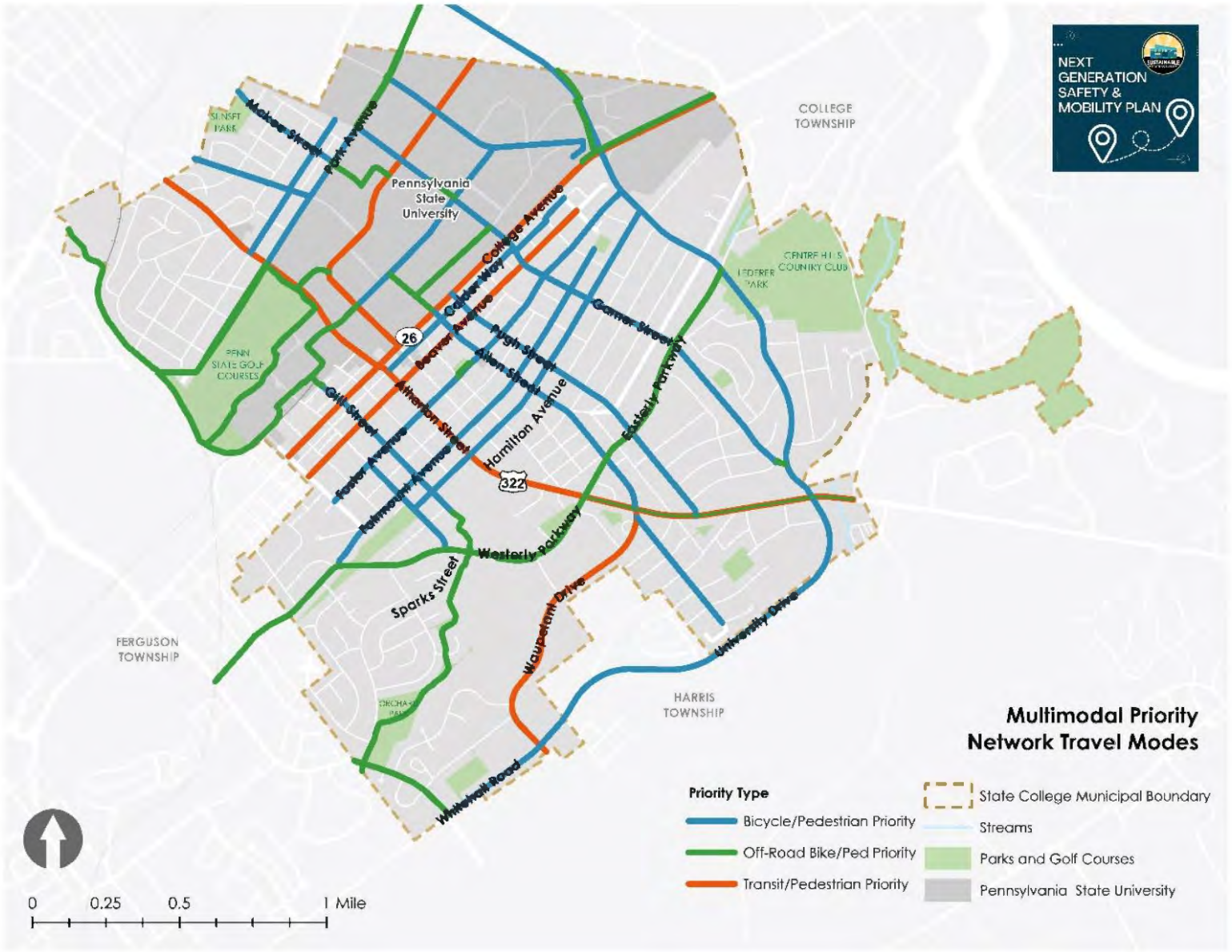
There are often limitations and constraints that require modal tradeoffs within the transportation system. Most streets do not have the width or other functional attributes to serve all modes equally or fully. As such, it is important to consider the role that each facility serves within a complete multimodal network to best identify safety and mobility strategies in the Borough.

Given the "Next Generation" character of this plan, bicycle, pedestrian, and transit safety and mobility are prioritized. Pedestrians are prioritized on all streets in the multimodal network. It can be challenging to balance the needs of both bicyclists and bus service on some streets.

As such, streets that are key to the transit network are prioritized for bus service. This includes streets like Atherton Street, College Avenue, Beaver Avenue, and Waupelani Drive. Bicycle priority traffic is proposed on other streets in the network, including Garner Street, Pugh Street, Allen Street, Gill Street, Calder Way, Foster Avenue, Fairmount Avenue, and University Drive. The off-street trail network is also used to provide connectivity for pedestrians and bicyclists.

Based on this exercise to establish modal priority, projects were developed by applying various strategies related to the role that each facility plays in the overall network.

Figure 29. Multimodal Network Vision

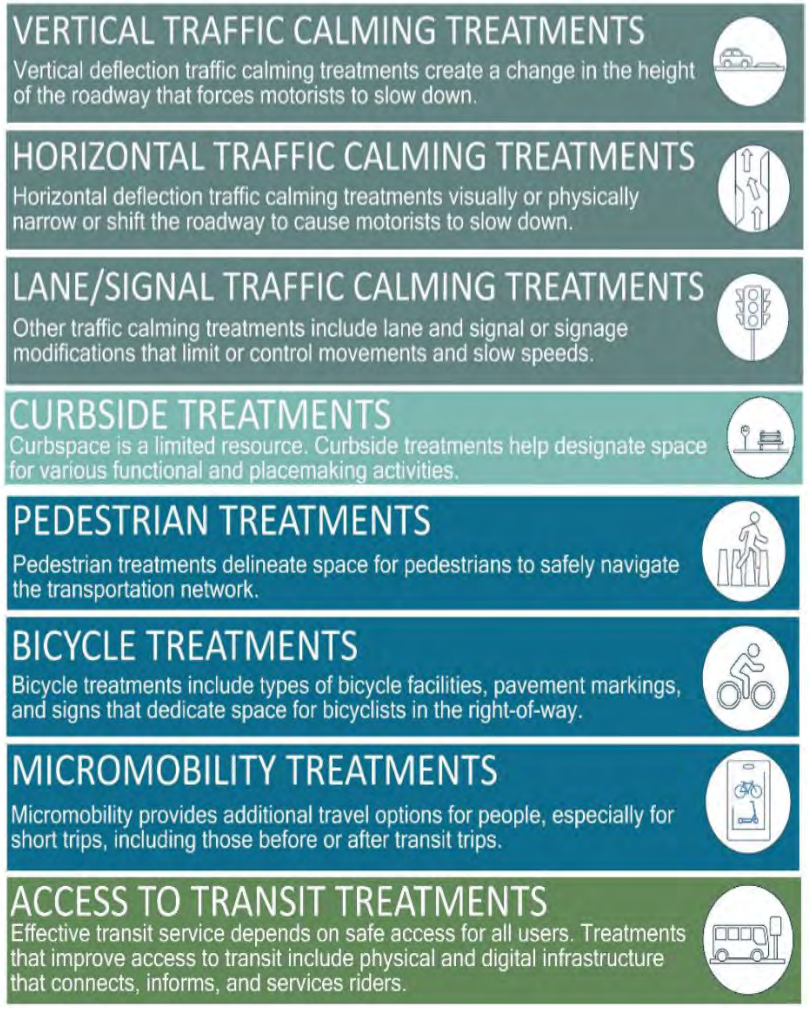


Multimodal Toolkit

The multimodal toolkit offers a menu of treatments that can be applied in the Borough to advance safe mobility. The toolkit includes treatments for each plan topic area as represented by the colors and icons shown on this page.

The Multimodal Toolkit places an emphasis on Federal Highway Administration (FHWA) proven safety countermeasures. These measures have been shown to reduce crashes, particularly those that result in fatalities and severe injuries. Each tool includes a general description and details on potential applications in the Borough. Various maintenance and operational concerns may be relevant, such as emergency vehicle access, site context, and maintenance. A high-level consideration of cost is also included, with one dollar sign ($) representing a relatively low-cost treatment, two dollar signs ($$) representing a relatively moderate-cost treatment, and three dollar signs ($$$) representing a relatively high-cost treatment.

This toolkit serves as a reference for the design to be performed as part of project implementation. Some tools may be more applicable along transit-prioritized streets, while others are most appropriate on bicycle-prioritized streets. The tools tend to focus on dedicating space for different travel modes, increasing visibility of vulnerable road users, slowing motor vehicle traffic, and accessing emerging transportation technologies. The Borough can refer to these strategies throughout the implementation of a variety of corridor and intersection projects, including those proposed in this plan.



TRAFFIC CALMING

VERTICAL TRAFFIC CALMING TREATMENTS

Vertical deflection traffic calming treatments create a change in the height of the roadway that forces motorists to slow down.

HORIZONTAL TRAFFIC CALMING TREATMENTS

Horizontal deflection traffic calming treatments visually or physically narrow or shift the roadway to cause motorists to slow down.

LANE/SIGNAL TRAFFIC CALMING TREATMENTS

Other traffic calming treatments include lane and signal or signage modifications that limit or control movements and slow speeds.

CURB EXTENSION

Description: Curb or sidewalk extended into the street, either at an intersection or mid-block, narrows the street width, reduces pedestrian crossing distance, improves visibility of pedestrians, and reduces right-turn vehicle speeds.

Application: Several curb extensions have already been installed in the Borough. More curb extensions can be installed along other high-pedestrian volume corridors and at key intersections.

$$

SPEED HUMP

Description: Speed humps provide vertical deflection via a change in the height of the roadway (3 to 4 inches) to slow vehicular traffic. Speed humps typically extend nearly the width of the street and are positioned between intersections at approximate 200-foot spacing. Signage and markings warn drivers of the hump.

Application: Speed humps can be applied on neighborhood streets in the Borough, including corridors that are not frequent emergency routes.

$

SPEED CUSHION

Description: Speed cushions have similar dimensions to speed humps. They include two or more raised pavement areas to slow vehicular traffic. Speed cushions have gaps that allow emergency vehicles and bicycles to pass through them.

Application: Speed cushions can be applied on emergency vehicle routes given the gaps. They can be used for neighborhood traffic calming in the Borough.

$

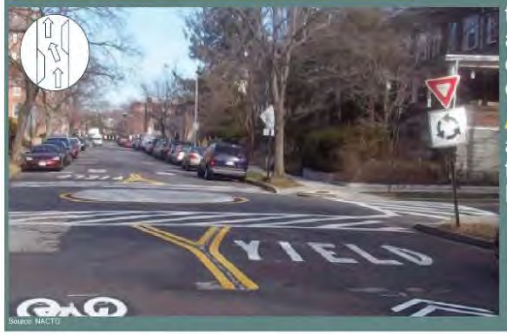
DAYLIGHTING

Description: Daylighting uses pavement markings, flexible delineator posts, curb, or other visual or physical elements to delineate spaces where on-street parking is not allowed. Daylighting is most needed at intersections or driveways where visibility is restricted.

Application: Daylighting is needed in the Borough to improve visibility of pedestrians at intersections. This is especially true for the Calder Way intersections. Planters or bike corrals can be installed in the daylighting to prevent parking and loading.

$

MINI ROUNDABOUT



Description: A mini roundabout is a small roundabout with a fully traversable central island. They are typically used in an urban environments with operating speeds of 30 mph or less.

Application: This treatment can be applied in Borough neighborhoods to slow traffic, such as around the High School.

$$

RAISED MEDIAN

Description: A raised median provides horizontal deflection to slow vehicles along a roadway. Raised medians provide an opportunity to incorporate a pedestrian refuge or green stormwater infrastructure.

Application: Medians can be applied in Borough neighborhoods where traffic calming is needed.

$$

SLOW TURN WEDGE

Description: A slow turn wedge requires turning vehicles to make slower, broader turns. These treatments can be installed using pavement markings and delineator posts or curb.

Application: Slow turn wedges are important where parking separated bike lanes are installed so that turning drivers better see cyclists before a conflict occurs.

$

NEXT GENERATION SAFETY & MOBILITY PLAN

TRAFFIC CALMING

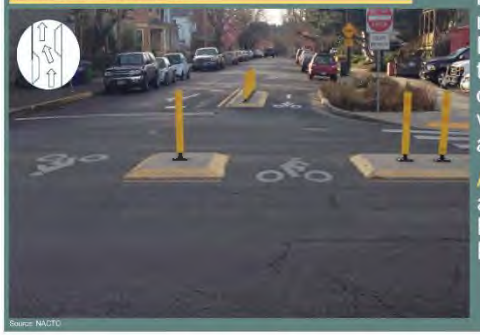
CHICANE

Description: Chicanes include a series of fixed objects, using curb extensions or pavement markings and delineator posts, that create a zig-zag path to slow vehicles. Chicanes can be created by alternating on-street parking between sides of the street.

Application: Chicanes can be installed on neighborhood streets in the Borough, such as around the High School.

$$

DIVERTER



Description: A semi-diverter (as shown) maintains bicyclist movements while restricting vehicular movements. Diagonal diverters direct vehicles to turn onto intersecting streets that carry higher traffic volumes. Reducing vehicle volumes on bike boulevards allows for greater biking comfort.

Application: This treatment can be applied on bike boulevards in the Borough, such as Foster Avenue, Fairmount Avenue, or Gill Street.

$$

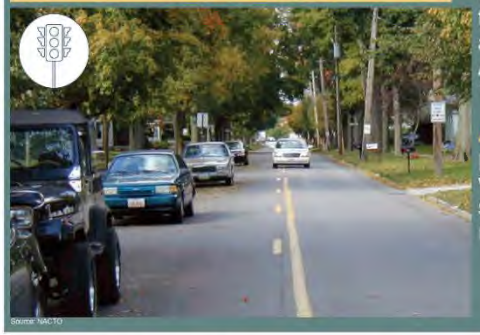
HARDENED CENTERLINE

Description: A hardened centerline involves a physical barrier along the roadway centerline using flexible delineators or curbing to require left turning vehicles to make a broader, slower turn.

Application: This treatment can be used along bicycle priority or traffic calming corridors to improve multimodal safety in the Borough.

$

LANE MODIFICATION



Description: Reducing vehicular lane widths, converting one-way streets to two-way, and reducing speed limits are other treatments that calm traffic. According to NACTO, lane widths of 10 feet are appropriate in urban areas.

Application: On transit and bicycle priority streets in the Borough, lane widths can be reduced to make space for other modes while slowing motorists.

$

SIGNAL MODIFICATION

Description: Eliminating right turns on red is a simple signal modification that allows pedestrians more exclusive time to cross the street. Signal timing can also be modified to reduce incentive to speed.

Application: Right on red can be eliminated in Downtown or across the entire Borough as some municipalities have implemented.

$

AUTOMATED ENFORCEMENT

Description: Automated speed enforcement with the use of cameras can reduce motorist speeds where physical infrastructure is less feasible. Other automated enforcement treatments can enforce traffic calming measures and controls, such as to reduce red-light running.

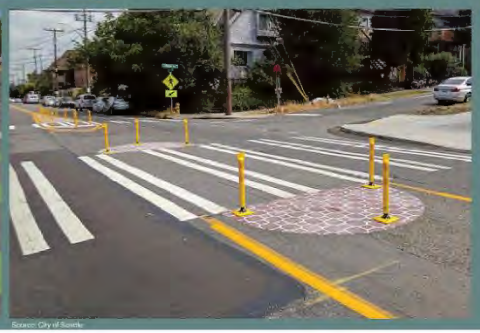
Application: Speed enforcement cameras can be used along higher volume, higher speed streets, such as along Atherton Street, University Drive, and/or Park Avenue.

FHWA Proven Safety Countermeasure

"Speed enforcement can reduce crashes on urban principal arterials up to 54% for all crashes and 47% for injury crashes."

$

PAINT & POST TREATMENTS



Description: Temporary installations of pavement markings and flexible delineator posts slow traffic and prioritize street space. Quick build treatments can be installed to test efficacy and get feedback before installing more permanent improvements. Fun paint colors and patterns can give more life to the roadway network.

Application: Flex posts have not been used broadly yet in the Borough. While they come with maintenance challenges, they are a low cost treatment that enforces the delineation of space and prioritizes modes. The Borough can use flex posts to separate bike lanes and enforce daylighting areas.

$

CURBSIDE MANAGEMENT

NEXT GENERATION SAFETY & MOBILITY PLAN

CURBSIDE TREATMENTS

Curbspace is a limited resource. Curbside treatments help designate space for various functional and placemaking activities.

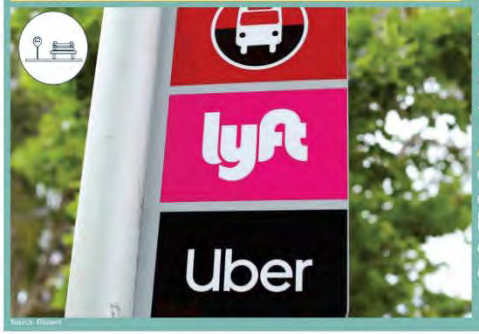
PARKING

Description: Transportation / Parking Demand Management treatments include performance / dynamic parking, incentivizing other modes, parking enforcement, development code modifications, effective wayfinding, and ADA parking.

Application: Parking should be managed in Downtown rather than simply increased.

$$

RIDESHARE DROPOFF



Description: Designated rideshare dropoff zones provide space for vehicles to load and unload passengers without needing to stop in a vehicular or bicycle lane. EV charging might also be considered for rideshare vehicles in these zones.

Application: Borough residents have experienced congestion and safety challenges due to vehicles loading in bike and general purpose lanes. More designated zones can alleviate these concerns.

$

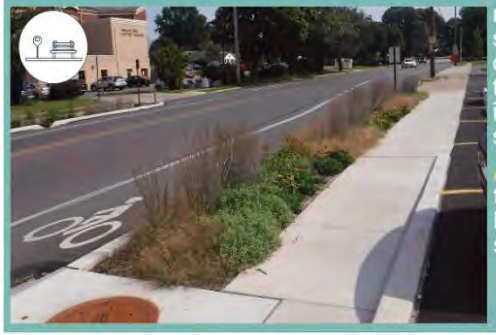
STREET FURNITURE

Description: Street furniture includes seating, information kiosks, wayfinding, and trash cans. These treatments enhance the pedestrian experience and encourage pedestrian activity along the curb. Similar treatments can be used on trails.

Application: Street furniture is most pertinent in Downtown and/or around parks and key community places in the Borough. It can be placed within the cartway or on the sidewalk.

$

GREEN STORMWATER

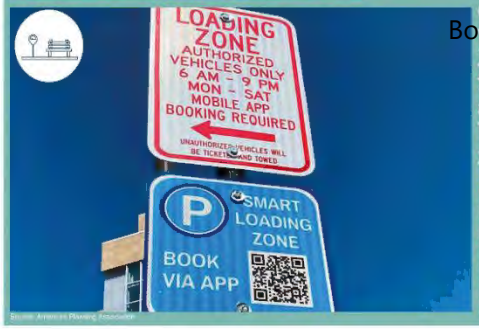


Description: Green Stormwater Infrastructure (GSI) in sidewalks, medians, and curb extensions collects stormwater runoff from streets and other impervious surfaces and filters it through special soil and plants before it soaks into the ground or is released slowly back into the sewer system.

Application: GSI can be considered throughout the Borough as a means of beautifying the network and increasing sustainability.

$$

LOADING ZONES



Borough of State College

Description: Designated loading zones ensure space for vehicles to stall [illegible] of traffic. Zones can be dedicated full-time or they can alternate between parking and loading at different times of day. Technology can be used to optimize zone use.

Application: Borough residents have experienced congestion and safety challenges due to vehicles loading in bike and general purpose lanes. More designated zones can alleviate these concerns.

$

BUS-ONLY ZONES

Description: Bus-only lanes provide dedicated space for transit service. Bus lanes might be implemented along a full corridor or at key locations. They can be applied with red paint, Transit Signal Priority (TSP), queue jumps, and other signage or pavement markings to delineate this priority.

Application: Bus-only lanes are applicable along the bus priority corridors in the Borough, such as along College Avenue, Beaver Avenue, or Atherton Street.

$$

EV CHARGING

Description: Electric Vehicle (EV) charging can be offered on-street and in off-street parking facilities. There will be an increased need for fast charging access in the future.

Application: More EV parking is needed in public garages as well as on-street in the Borough. The focus should be on Level 2 and 3 charging. Private EV parking might also be incentivized through development policies. EV parking does not, however, reduce parking demand in the Borough.

$$

CURB PLACEMAKING

Description: The curb can be used for placemaking, including for commercial uses and sidewalk dining. The curb space should be balanced to provide core functions as well as to facilitate engaging places.

Application: Curb placemaking is most pertinent in Downtown and/or at other activity nodes in the Borough.

$

PEDESTRIANS, BICYCLISTS, & MICROMOBILITY

PEDESTRIAN TREATMENTS

Pedestrian treatments delineate space for pedestrians to safely navigate the transportation network.

BICYCLE TREATMENTS

Bicycle treatments include types of bicycle facilities, pavement markings, and signs that dedicate space for bicyclists in the right-of-way.

MICROMOBILITY TREATMENTS

Micromobility provides additional travel options for people, especially for short trips, including those before or after transit trips.

RAISED CROSSWALK

Description: A pedestrian crossing area raised higher increases visibility of people crossing, provides ADA Accessibility, and slows motorists. Raised crosswalks can be located at areas where people have difficulty crossing the street.

Application: The Borough can install raised crosswalks in Downtown and at mid-block crossings where improved visibility and traffic calming would be most beneficial.

$$

CROSSWALK VISIBILITY

Source: FHWA

Description: Signage and warning beacons can be used in advance of marked pedestrian crossings to increase driver yielding.

Application: These treatments should be applied at mid-block crosswalks in the Borough.

FHWA Proven Safety Countermeasure

"Crosswalk Visibility Enhancements can reduce pedestrian crashes up to 25%."

$

SIDEWALK

Source: NACTO

Description: A complete and connected sidewalk network increases pedestrian access and safety.

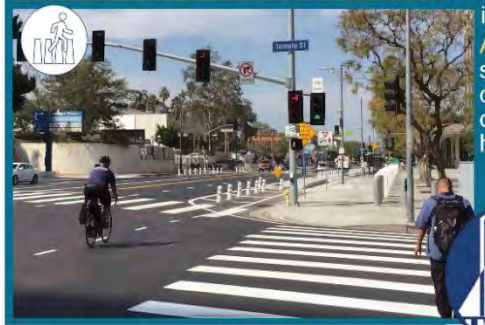
Application: The Borough should fill gaps and widen sidewalks, especially between key pedestrian origins and destinations, such as near transit stops, parks, schools, and shopping centers.

FHWA Proven Safety Countermeasure

"65-89% reduction in crashes involving pedestrians walking along roadways."

$$

MARKED CROSSWALK



Description: Reflective crosswalk markings should be incorporated at intersections and priority crossings.

Application: The Borough should systemically install more marked crosswalks. At higher pedestrian crossing locations, these should be high-visibility marked crosswalks.

FHWA Proven Safety Countermeasure

"A high-visibility marked crosswalk can reduce pedestrian crashes up to 40%."

$

RAISED INTERSECTION

Source: City of Cambridge

Description: The entire area of an intersection can be raised above the typical pavement surface level to reduce vehicle speed through the intersection and provide a better view of pedestrians.

Application: The Borough can install raised intersections in Downtown and at other key multimodal intersections. This might include the intersection of Allen Street and College Avenue.

$$

REFUGE ISLAND

Source: NACTO

Description: A pedestrian median refuge island provides added protection for pedestrians and bicyclists crossing at an intersection or mid-block. The refuge improves pedestrian visibility, reduces conflict points, and reduces crossing distance.

Application: Pedestrian refuges can be installed on divided roadways or in place of on-street parking on neighborhood streets.

FHWA Proven Safety Countermeasure

"56% reduction in pedestrian crashes."

$$

CURB RAMP

Source: PBOT

Description: An accessible curb ramp with a detectable warning surface provides access from the sidewalk to an intersection or mid-block crossing.

Application: The Borough should install accessible ramps at all crossing locations to improve accessibility for all.

$

NEXT GENERATION SAFETY & MOBILITY PLAN

PEDESTRIANS, BICYCLISTS, & MICROMOBILITY

NEXT GENERATION SAFETY & MOBILITY PLAN

COUNTDOWN SIGNAL

Source: Ned Gerard

Description: A pedestrian countdown signal includes an accessible push button, appropriate signage, and a pedestrian signal that indicates remaining walk time. Fixed, rather than actuated, signals are most preferred in urban areas.

Application: The Borough can upgrade existing pedestrian signals to be countdown where they are not currently.

$

LEADING PED INTERVAL

Source: Go Active Long Beach

Description: A leading pedestrian interval (LPI) gives pedestrians advance signal time to begin crossing before conflicting vehicles start turning.

Application: LPIs are applicable in downtown and at major intersections, such as those along Atherton Street.

FHWA Proven Safety Countermeasure
"13% reduction in pedestrian-vehicle crashes at intersections."

$

RRFB

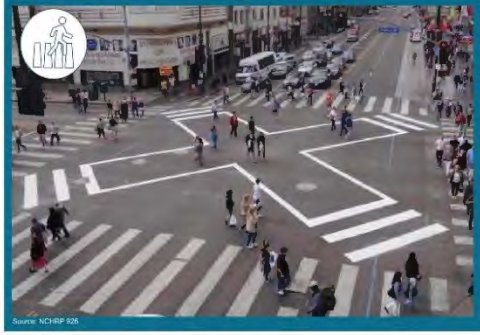
Description: Rectangular Rapid Flash Beacons (RRFBs) include a flasher that lets motorists know pedestrians are crossing. These are especially applicable at un-controlled, mid-block or trail crossings.

Application: An RRFB might be appropriate at key mid-block or trail crossings in the Borough.

FHWA Proven Safety Countermeasure
"Can reduce pedestrian crashes up to 47% and increase driver yield rates up to 98%."

$$

ALL WALK PHASE



Source: NCHRP 926

Description: An all walk pedestrian signal phase is dedicated to pedestrian movements only.

Application: An all walk phase might be applicable at some Downtown intersections, such as at Allen Street and College Avenue.

$

CLIMBING BIKE LANE

Source: Google Streetview

Description: A climbing bike lane is a dedicated bike lane on the uphill side of the street. Cyclists would share space with vehicles in the opposite direction. This dedicated lane gives cyclists a separate space where they may be moving slower uphill.

Application: A climbing bike lane might be applicable on Sparks Street in the northbound direction. Offering a buffer or physical separation would provide additional comfort.

$

BICYCLE BOULEVARD

Source: NACTO

Description: Bicycle boulevards are low-volume, low-speed streets where bicycles and motorized vehicles share road space, but where bicycle movements are prioritized and optimized through use of restrictions, traffic calming, and crossing treatments.

Application: Some bicycle-priority corridors in the Borough, such as Gill Street, might benefit from systemic treatments that slow traffic and indicate priority.

$$

1-WAY BIKE LANE PAIRS

Source: NACTO

Description: Providing one-way bike lane pairs on two parallel streets allows cyclists to travel in dedicated space in two directions with fewer impacts on vehicular operations.

Application: Providing one-way bike lane pairs on Allen Street and Pugh Street will add bicycle capacity without changing operations for vehicular traffic.

FHWA Proven Safety Countermeasure
"Bicycle lanes can reduce crashes up to 30% on 2-lane undivided collectors and local roads."

$$

SEPARATED BIKE LANE

Source: Aditya Irandar

Description: A separated bike lane is within the street right-of-way and separated from motor vehicle traffic by a physical barrier, such as planters, flexible delineator posts, or a mountable curb. These types of bike lanes can be raised to sidewalk level for additional safety and comfort.

Application: Separating bike lanes in the Borough, such as on Allen Street, will help create a low-stress bike network. Concrete parking stops will provide separation while accomodating trash collection vehicles.

$$

PEDESTRIANS, BICYCLISTS, & MICROMOBILITY

SHARED USE PATH

Description: This facility is shared between people biking and walking. A shared use path (SUP) or trail provides the highest level of separation and the lowest level of traffic stress for cyclists.

Application: An SUP will be constructed along Easterly / Westerly Parkway and might be applicable along similar higher-volume facilities in the Borough, such as Atherton Street and Park Avenue.

$$$

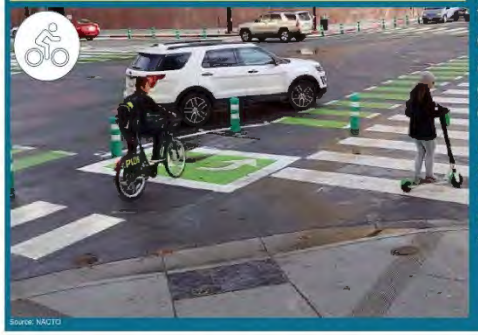
BICYCLE BOX

Description: Bike Boxes allow bicyclists to position themselves in front of the vehicle queue for improved visibility.

Application: Bike boxes might be most applicable where bicycle facilities interact with roadways that have higher vehicle volumes and speeds.

$

GREEN PAINT



Description: Green and/or white pavement markings draw attention to cyclists moving through or past conflict areas, including intersections and driveways. Bike lanes can include green paint to further delineate and emphasize use and space.

Application: Conflict markings and green paint are most applicable where bicycle facilities interact with roadways or driveways that have higher vehicle volumes and speeds.

$

BICYCLE SIGNAL

Description: Bicycle signals indicate when bicyclists can cross. They also restrict conflicting vehicle movements. Bicycle-only signals can be used at intersections to provide a separate signal phase that is dedicated to bicyclists.

Application: Bike signals can be incorporated in the Borough along with corridor-long improvements to prioritize cyclist movements and improve safety across major intersections, such as those on Atherton Street.

$$

PROTECTED INTERSECTION

Description: A protected intersection physically separates modes to reduce cyclist exposure, merging, and weaving. Separate signal phases eliminate conflict points.

Application: Protected intersection treatments can be applied at major intersections in the Borough, such as those on Atherton Street.

$$$

WAYFINDING

Description: Signs direct pedestrians and bicyclists toward destinations in the area, typically including distance and average walking and biking times. Bicycle wayfinidng can help guests determine which streets have dedicated bicycle facilities.

Application: Wayfinding in the Borough can lead cyclists along the low-stress network and connect people that are walking and biking to key destinations and facilities.

$

BICYCLE PARKING

Description: Secure bike parking makes local attractions and businesses accessible to people biking. Racks should be placed near the locations they serve without blocking the entrance. Bike corrals can be created on the street by repurposing a parking space or using daylighting areas. Covered bike parking should be provided in areas with higher biking activity.

Application: Additional bike parking is needed throughout the Borough.

$

MICROMOBILITY

Description: Micromobility treatments include the use of parking corrals for micromobility vehicles, providing charging for electric micromobility vehicles, and disseminating information around the use and operation of micromobility vehicles. Micromobility services can be integrated with transit service through easy payment methods, clear wayfinding, and trip planning resources.

Application: Having designated bikeshare parking corrals can reduce the bike parking challenge occurring in the Borough.

$$

NEXT GENERATION SAFETY & MOBILITY PLAN

ACCESS TO TRANSIT

ACCESS TO TRANSIT TREATMENTS

Effective transit service depends on safe access for all users. Treatments that improve access to transit include physical and digital infrastructure that connects, informs, and services riders.

TDM

Description: Transportation Demand Management (TDM) encompasses a mix of strategies to increase mobility options for people. This could mean disseminating information, trip planning resources, reward incentive programs, and adjusting development requirements.

Application: A mobile app could be developed for people to navigate the network. It might offer real time bus information, nearby bikeshare availability, and wayfinding on the low-stress bike network.

$$

BUS STOP LIGHTING

Borough of State College

Description: Pedestrian-scale lighting improves pedestrian security and comfort at transit stops.

Application: The Borough should prioritize lighting improvements near transit stops, especially those with higher ridership and/or those around more vulnerable communities.

FHWA Proven Safety Countermeasure

"Intersection lighting can reduce pedestrian crashes up to 42%."

$

TRANSIT SHELTERS

Description: Transit shelters provide a more comfortable and safe waiting space for riders. This might make transit a more convenient and appealing mode of travel. Shelters might also include benches, trash cans, and lighting.

Application: The Borough should build out more transit shelters, especially at high-ridership stops and/or at stops near fast moving traffic, such as along Atherton Street.

$

TRANSIT AMENITIES

Description: Transit amenities might include kiosks with local news or weather, access to cell phone charging, and access to city services or resources, such as emergency assistance.

Application: More robust transit amenities should be offered at high-ridership stops.

$$

IMPROVED CROSSINGS

Description: Transit riders are often looking to cross the street near transit stops. Providing high-visibility, marked and where applicable, controlled crossings at transit stops improves safety and reduces pedestrian crashes.

Application: The Borough can prioritize crossing improvements near transit stops.

$$

SIDEWALK ACCESS

Description: Providing sidewalk access to transit stops increases mobility options for people. Sidewalks near transit stops should be wide, flat, and separated from fast moving vehicular traffic.

Application: The Borough should prioritize filling sidewalk gaps and installing accessible ramps near transit stops to improve service and extend transit access.

$$

BUS STOP BULB

Description: A bus stop bulb provides a curb extensions with dedicated waiting space for transit riders. This might improve the efficiency of boarding. Bulbs may extend into parking lanes.

Application: Bus stop bulbs can be applicable on bus-priority corridors in the Borough, such as Beaver Avenue.

$$

SHARED BUS/BIKE LANE

Description: A shared bus/bike lane allows buses to stop curbside at stops in conjunction with a separated bike lane.

Application: Where separated bike lanes are proposed along bus routes, buses and bicyclists can share space. This is applicable if a separated bike lane is implemented on Pugh Street.

$$

Proposed Projects

Proposed projects were identified along key corridors in the multimodal network. These projects are shown in Figure 30 and Table 9. The proposed projects were identified through the existing conditions analysis, safety analysis, and stakeholder and public feedback. Projects are numbered by facility type, and prioritization and implementation priority of the identified projects is described in the "Implementing the Plan" chapter. Typical treatments and facilities may vary along project corridors.

OVERVIEW OF FACILITY TYPES

Bicycle Boulevard: Bicycle boulevards are low-volume, low-speed streets where bicyclists and motorized vehicles share road space, but where bicycle movements are prioritized and optimized. They sometimes include elements to reduce the volume and speed of motor vehicle traffic.

Bicycle Route: On-street bicycle routes are where cyclists share the street with motorists. This would maintain existing on-street parking in downtown areas.

Separated Bicycle Lane: Separated bicycle lanes, as the name indicates, incorporate physical separation from moving motor vehicle traffic by vertical treatments. One form of separation is low concrete parking stops, which provide protection while accommodating drainage and refuse pickup vehicles.

Shared Street: A shared street prioritizes the movement of bicyclists and pedestrians rather than motor vehicles. Generally, motor vehicle speeds are very low and though traffic is minimized, with drivers being treated as "guests.". Shared streets might include pavers, bricks, or other materials to delineate spaces for travel, loading, or other activity.

Shared Use Path: Shared use paths (SUPs) are off-road facilities that are shared by people bicycling and walking. A SUP or trail provides the highest level of separation from traffic and the lowest level of traffic stress for cyclists.

Traffic Calming and Intersection Improvements: Such improvements might include speed humps, speed cushions, raised crosswalks and/or intersections, pedestrian refuge islands, and bicycle wayfinding. The priority is to slow vehicles and make intersections safer.

Transit Access Treatments: The priority along these corridors is to improve bus stops by adding transit shelters and amenities. Projects would be implemented to ensure there are safe crossings, wide sidewalks, and ADA ramps near transit stops.

Transit Priority Treatments: Portions of these corridors could be dedicated partially or fully to bus lanes. Transit Signal Priority (TSP) would also improve operations for buses. Intersections throughout the downtown would be reconfigured to prioritize pedestrian safety.

Figure 30. Proposed Projects and Facility Types

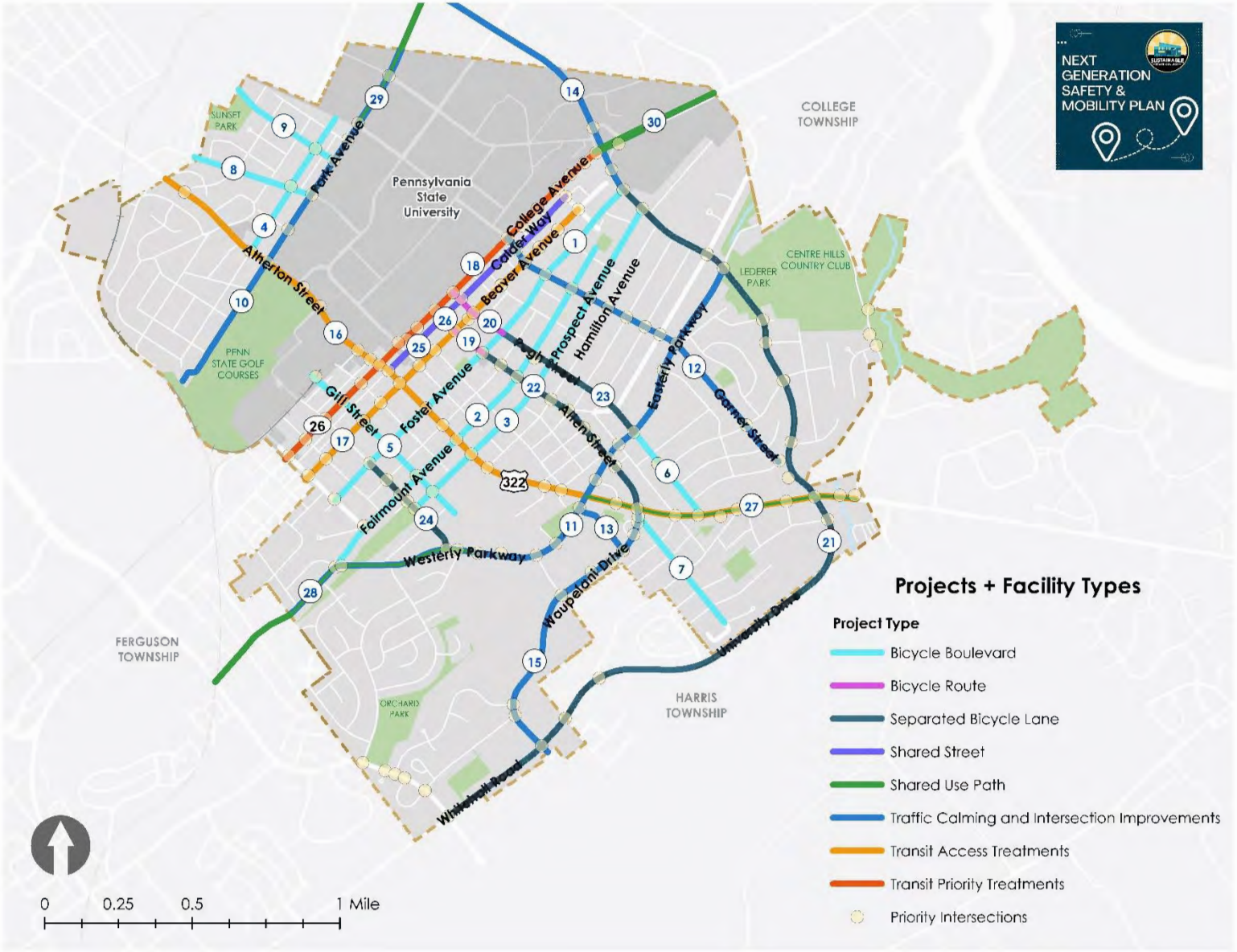


Table 9. Proposed Projects and Facility Types

ID	Street Name	From	To	Facility Type
1	Foster Avenue	S Buckhout Street	University Drive	Bicycle Boulevard
2	Fairmount Avenue	Westerly Parkway	Hetzel Street	Bicycle Boulevard
3	Prospect Avenue	S Sparks Street	University Drive	Bicycle Boulevard
4	Ridge Avenue/Hartswick Avenue	N Atherton Street	Schreyer Lane	Bicycle Boulevard
5	S Gill Street	PSU Campus	Orchard Park Trail	Bicycle Boulevard
6	S Pugh Street	Easterly Parkway	S Atherton Street	Bicycle Boulevard
7	S Allen Street	S Atherton Street	Dead End	Bicycle Boulevard
8	N Allen Street	E Park Avenue	BSC Border	Bicycle Boulevard
9	McKee Street	E Park Avenue	BSC Border	Bicycle Boulevard
10	Park Avenue	Dead End	BSC Border	Traffic Calming & Intersection Improvements
11	Westerly/Easterly Parkway	BSC Border	University Drive	Traffic Calming & Intersection Improvements
12	S Garner Street	E College Avenue	University Drive	Traffic Calming & Intersection Improvements
13	Oneida Street	Westerly Parkway	Waupelani Drive	Traffic Calming & Intersection Improvements
14	University Drive	E College Avenue	E Park Avenue	Traffic Calming & Intersection Improvements
15	Waupelani Drive	S Atherton Street	W Whitehall Road	Traffic Calming & Intersection Improvements
16	Atherton Street	BSC Border	E Branch Road	Transit Access Treatments
17	Beaver Avenue	S Buckhout Street	High Street	Transit Access Treatments
18	College Avenue	S Buckhout Street	University Drive	Transit Priority Treatments
19	S Allen Street	Beaver Avenue	Foster Avenue	On-Street Bicycle Route
20	S Pugh Street	E College Avenue	E Foster Avenue	On-Street Bicycle Route
21	University Drive/Whitehall Road	E Foster Avenue	Blue Course Drive	Separated Bicycle Lane
22	S Allen Street	Foster Avenue	S Atherton Street	Separated Bicycle Lane
23	S Pugh Street	E Foster Avenue	Easterly Parkway	Separated Bicycle Lane
24	S Sparks Street	W Foster Avenue	Westerly Parkway	Separated Bicycle Lane
25	Calder Way	S Atherton Street	Hetzel Street	Shared Street
26	S Allen Street	College Avenue	Beaver Avenue	Shared Street
27	S Atherton Street	Westerly Parkway	E Branch Road	Shared Use Path
28	Westerly Parkway	Blue Course Drive	Bike Path Crossing	Shared Use Path
29	E Park Avenue	Schreyer Lane	University Drive	Shared Use Path
30	College Avenue	University Drive	BSC Border	Shared Use Path

BSC = Borough of State College PSU = Pennsylvania State University

More detailed concepts and descriptions are provided for key projects on the following pages, including projects along Allen Street, Pugh Street, Calder Way, Foster Avenue, University Drive, Atherton Street, College Avenue, Beaver Avenue, and Waupelani Drive. Each page includes an overview of the project, potential safety benefits, applicable toolkit treatments, and implementation considerations.

For implementation, "Phasing" specifies when the project is likely to be designed and constructed. Phasing timelines include:

- Short-Term projects are anticipated for design and implementation in the next 0 to 5 years.
- Short/Mid-Term projects are at least partially anticipated for design and/or implementation in the next 0 to 5 years.
- Mid-Term projects are anticipated for design and implementation in the next 5 to 10 years.
- Long-Term projects are anticipated for design and implementation in the next 10+ years.

Potential construction cost ranges are estimated on a planning level. These ranges include:

- $ represents a relatively low-cost project (likely less than about $1M).
- $$ - represents a relatively moderate cost project (likely about $1M to $5M).
- $$$ - represents a relatively high-cost project (likely about $5M to $10M).

While implementation considerations are offered for select projects below, key considerations, champions, and challenges are also detailed later in this report.

Key Project List

Key projects were identified:

- S Allen Street and S Pugh Street Separated Bike Lanes
- College Avenue Bus Only Lanes
- Beaver Avenue Transit Access and Sidewalks
- Downtown Intersections
- Calder Way Shared Street
- 100 Block of S Allen Shared Street
- S Atherton Street Shared Use Path
- University Drive Separated Bike Lane
- Foster Avenue Bicycle Boulevard
- Waupelani Drive Traffic Calming

Cut sheets were created to provide more detail on potential safety benefits, key recommendations, and implementation strategies (pages 84-103).

Key Project

S ALLEN & S PUGH SEPARATED BIKE LANES

NEXT GENERATION SAFETY & MOBILITY PLAN

Project Description

S Allen Street and S Pugh Street are recommended as a separated bike lane (SBL) pair. This treatment physically separates bike lanes from moving motor vehicle traffic by vertical treatments. Allen Street will have one northbound bike lane, and Pugh Street will have one southbound bike lane to reduce impact to existing motor vehicle lanes.

Facility Type: Separated Bike Lane

Extents: Foster Avenue to S Atherton Street (S Allen Street); E Foster Avenue to Easterly/Westerly Parkway (S Pugh Street)

Key Intersections: Foster Avenue, Fairmont Avenue, Prospect Avenue, Hamilton Street, Irwin Avenue, Easterly/ Westerly Parkway, Atherton Street

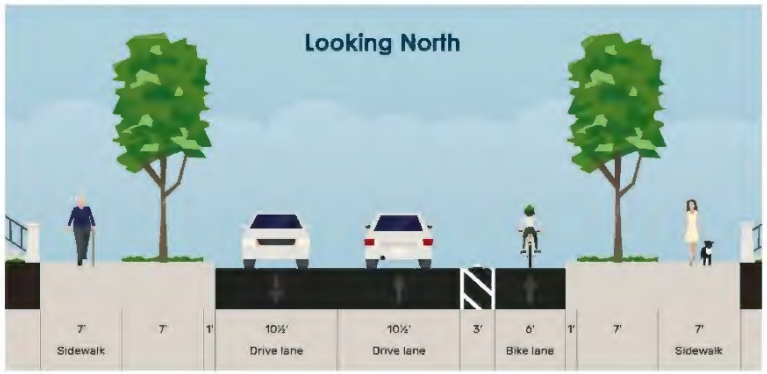
Allen & Pugh Street Separated Bike Lanes will create a high quality, low stress bicycle facility providing north/south connectivity throughout the Borough and to/from Penn State's campus.

SAFETY BENEFITS

- Converting traditional bicycle lanes to SBL can reduce bicycle/vehicle crashes up to 53% (FHWA)
- Helps support a low-stress bicycle network and network connectivity
- Vertical elements—such as flexible delineator posts, curbs, or vegetation—between the bicycle lane and motorized traffic lanes provide additional safety benefits (FHWA)

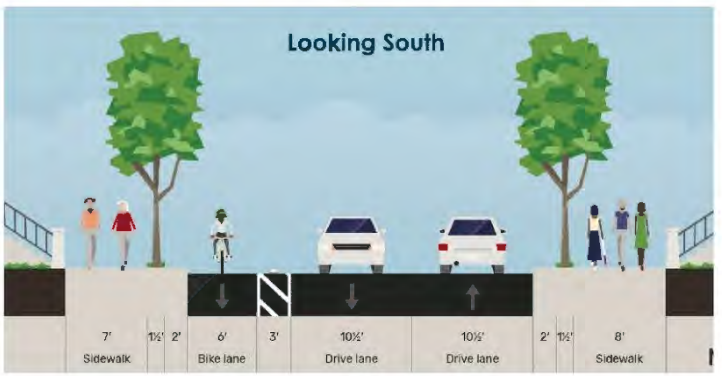
S ALLEN STREET - POTENTIAL SECTION

Typical treatments and facilities may vary along the corridor.



S PUGH STREET - POTENTIAL SECTION

Typical treatments and facilities may vary along the corridor.



Multimodal Toolkit Elements

SEPARATED BIKE LANE

BIKE PARKING

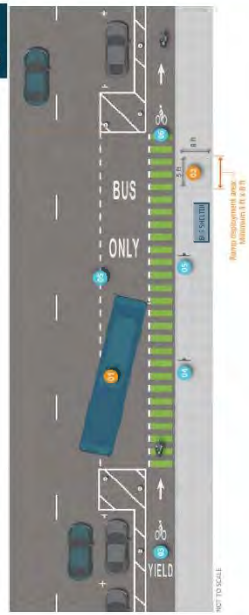
HIGH VISIBILITY CROSSWALK

BICYCLE SIGNAL

IMPLEMENTATION

PHASING	Short/Mid-Term
PRIORITY	High Priority
COSTS	$$
PARTNERS	CATA, PennDOT, Highlands Neighborhood Association, DID, CBICC

Separated Bike Lane at Transit Stop



Source: FHWA Separated Bike Lane Guide

Implementation Considerations

Implementing separated bike lanes on S Allen Street and S Pugh Street will change the curbside operations of the streets. Selection of vertical separation, with considerations for trash pickup and snow removal, will be an essential component of design. It is recommended that rubber or concrete parking stops, pills, or "armadillos" be used as physical separation so that service vehicles can access the bike lane and curb space.

Coordination with partners on existing projects will be required, such as coordination with PennDOT for the S Atherton Street. CATA is also a key partner for implementation and operation, specifically where bike lanes along Pugh Street might need to become shared bus-bike lanes where there are CATA bus stops. Coordination with residents on parking loss on S Pugh Street as well as downtown between Nittany Street and Foster Avenue may also need to be accommodated elsewhere. Closer to downtown, project implementation will require coordination with DID and local businesses.

Key Project

COLLEGE AVENUE BUS ONLY LANES

Project Description

College Avenue is recommended to have dedicated bus only lanes. College Avenue is a high priority transit corridor with several CATA transit stops and routes. Portions of the corridor could be dedicated fully to bus lanes by removing a parking lane. Both motor vehicle lanes would be preserved. Intersections throughout the downtown would be reconfigured to prioritize pedestrian safety

Facility Type: Transit Priority Lane

Extents: S Buckhout Street to University Drive

Key Intersections: Buckhout Street, Gill Street, Atherton Street, Allen Street, Pugh Street, Garner Street, High Street, University Drive

A College Avenue bus lane and signal priority will improve operations for CATA transit. Intersections along College Avenue will also be reconfigured to improve pedestrian safety.

Borough of State College

SAFETY BENEFITS

- Curb bumpouts increase pedestrian visibility and reduce turning speeds (FHWA)
- Crosswalk visibility enhancements can reduce pedestrian crashes up to 25% (FHWA)
- Restricting right turns on red and installing Leading Pedestrian Intervals (LPI) reduces conflicts between turning motor vehicle and bicyclists or pedestrians (FHWA)

COLLEGE AVENUE - EXISTING

COLLEGE AVENUE - POTENTIAL SECTION

Typical treatments and facilities may vary along the carridor.

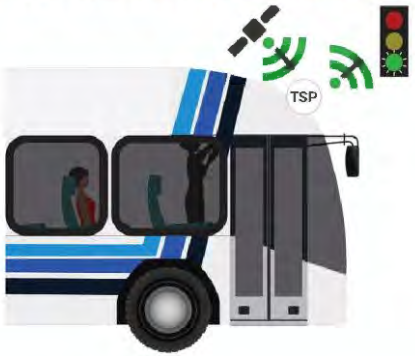
Multimodal Toolkit Elements

TRANSIT SHELTERS

HIGH VISIBILITY CROSSWALK

CURB BUMPOUT

TRANSIT SIGNAL PRIORITY



MOBILITY HUB

BUS ONLY LANE

IMPLEMENTATION

PHASING	Mid-Term
PRIORITY	High Priority
COSTS	$$$
PARTNERS	CATA, PennDOT, DID, CBICC

**State Route

Implementation Considerations

This project will require significant coordination between the Borough, PSU, PennDOT, and CATA. Project implementors will also need to engage the DID and downtown businesses. The project will remove parking. It should not impact snow, leaf, or trash removal. Painted red bus lanes may require additional routine maintenance.

Key Project

BEAVER AVENUE TRANSIT ACCESS & SIDEWALKS

NEXT GENERATION SAFETY & MOBILITY PLAN

Project Description

Beaver Avenue is recommended to have widended sidewalks and intersection safety enhancements, espeically near transit stops. Beaver Avenue has CATA transit stops and routes, but this corridor has much less transit demand in comparison to College Avenue. A high priority for Beaver identified through engagement was removing the existing parking/loading on the south side of the street and widening the sidewalks on the north side of the street in downtown. The priority along Beaver Avenue would also be to improve bus stops by adding transit shelters and amenities.

Facility Type: Transit Access

Extents: S Buckhout Street to High Street

Key Intersections: Buckhout Street, Gill Street, Atherton Street, Allen Street, Pugh Street, Locust Lane, Garner Street, High Street

SAFETY BENEFITS

- Crosswalk visibility enhancements can reduce pedestrian crashes up to 25% (FHWA)
- Curb bumpouts increase pedestrian visibility and reduce turning speeds (FHWA)
- Enhances pedestrian network connectivity

Beaver Avenue projects would be implemented to ensure there are safe crossings, wide sidewalks, and ADA ramps near transit stops.

BEAVER AVENUE - EXISTING

BEAVER AVENUE - POTENTIAL

Multimodal Toolkit Elements

HIGH VISIBILITY CROSSWALK

SIDEWALK ACCESS

TRANSIT SHELTERS

CURB EXTENSION

IMPLEMENTATION

PHASING	Short/Mid-Term
PRIORITY	High Priority
COSTS	$$$
PARTNERS	Borough, PennDOT, CATA, DID
SIMILAR PROJECTS	Atherton Street

**State Route

Implementation Considerations

Widening the sidewalk along portions of Beaver Avenue is a more significant infrastructure change. Coordination with PennDOT and CATA will be key. Project implementors will also need to engage the DID and downtown businesses. There may be some impacts to parking and loading space in downtown.

Additional signs and pavement markings may require additional routine street maintenance. Additional transit shelters and amenities may impact visibility and access along the curb. Projects may be implemented as part of a Highway Occupancy Permit (HOP) process, and all projects need to be coordinated with ongoing downtown development.

Project Description

Intersections in the downtown along College and Beaver Avenues can incorporate a variety of intersection treatments to improve pedestrian safety and provide better access to transit and micromobility options. The diagram of a sample intersection provides a key to the different treatment shown in the example images. These improvements could be made in conjunction with the other proposed improvements on College, Beaver, and Park Avenues as well as University Drive.

SAFETY BENEFITS

- Crosswalk visibility enhancements can reduce pedestrian crashes up to 25% (FHWA)
- Curb bumpouts increase pedestrian visibility and reduce turning speeds (FHWA)
- Hardened center lines can reduce turning speeds and decreased conflicts by 70% (IIHS)
- Enhances pedestrian network connectivity

IMPLEMENTATION

PHASING	Mid-Term
PRIORITY	High Priority
COSTS	$$
PARTNERS	CATA, PennDOT, DID, CBICC, SPIN, PSU

Implementation Considerations

Coordination with PennDOT and CATA will be key. Project implementors will also need to engage the DID and downtown businesses. There may be some impacts to parking and loading space in downtown.

Low-cost safety improvement funding could be used for lower-cost improvements, such as static signs and crosswalks, that could be provided by PennDOT County maintenance. Larger improvements might require HSIP funding. In either case, the Borough would likely take ownership after installation.

DOWNTOWN INTERSECTIONS IMPROVEMENT DIAGRAM

10 SIGNAL UPGRADES

Signalized Intersections
- Leading Pedestrian Interval
- Pedestrian Countdown Signal
- Transit Signal Priority
- Restrict conflicting movements
- Standard pedestrian recall phase

Non-Signalized Intersections
- Rectangular Rapid Flashing Beacon

Key Project

CALDER WAY SHARED STREET

Project Description

Calder Way is recommended as a shared street. A shared street prioritizes the movement of bicyclists and pedestrians rather than motor vehicles. Generally, motor vehicle speeds are very low and though traffic is minimized. Implementing a shared curbless street along Calder Way would mean allowing vehicles to load and park, but discouraging through traffic. This corridor would be a two-way east/west connector for pedestrians and bicyclists. Parking and loading would be maintained.

Facility Type: Shared Street

Extents: S Atherton Street to Hetzel Street

Key Intersections: Atherton Street, Allen Street, Pugh Street, Garner Street, High Street

The Calder Way Shared Street will create a shared pedestrian and bicyclist street and provide low stress multimodal connectivity.

SAFETY BENEFITS

- Crosswalk visibility enhancements can reduce pedestrian crashes up to 25% (FHWA)
- Enhances pedestrian network connectivity
- Enhances bicycle network east-west connectivity

CALDER WAY - EXISTING

CALDER WAY - POTENTIAL

Multimodal Toolkit Elements

PEDESTRIAN STREET

WOONERF

WAYFINDING

CURB PLACEMAKING

DAYLIGHTING

HIGH VISIBILITY CROSSWALK

IMPLEMENTATION

PHASING	Short-Term
PRIORITY	Medium
COSTS	$$$
PARTNERS	PennDOT, DID, CBICC

Implementation Considerations

Implementation of the Calder Way shared street will be done in conjunction with the ongoing project to bury utilities along the corridor. Maintenance operations on Calder Way are not anticipated to change significantly with implementation of the shared street project. Different street paver materials and increased landscaping may require some specialized maintenance routines or partnerships. Additional coordination will be needed with downtown businesses and buildings that use Calder Way for access and loading. Successful implementation of the Calder Way project will require safer intersections and particularly enforcement of parking restrictions to maintain corner visibility. Project implementation will require coordination with DID and local businesses.

Key Project

100 BLOCK OF S ALLEN SHARED STREET

Project Description

The 100 Block of S Allen Street is recommended as a shared street. A shared street prioritizes the movement of bicyclists and pedestrians rather than motor vehicles. S Allen Street between College and Beaver Avenues provides an opportunity to create a curbless street that prioritizes bicycle and pedestrian travel and community gatherings.

Motor vehicle traffic would be allowed, but could be restricted during specific times and events. Short term parking would still be available. Generally, motor vehicle speeds are very low and though traffic is minimized.

Facility Type: Shared Street

Extents: College Avenue to Beaver Avenue

Key Intersections: College Avenue, Calder Way, Beaver Avenue

The 100 Block of Allen Shared Street will create a shared pedestrian and bicyclist street and provide low stress multimodal connectivity.

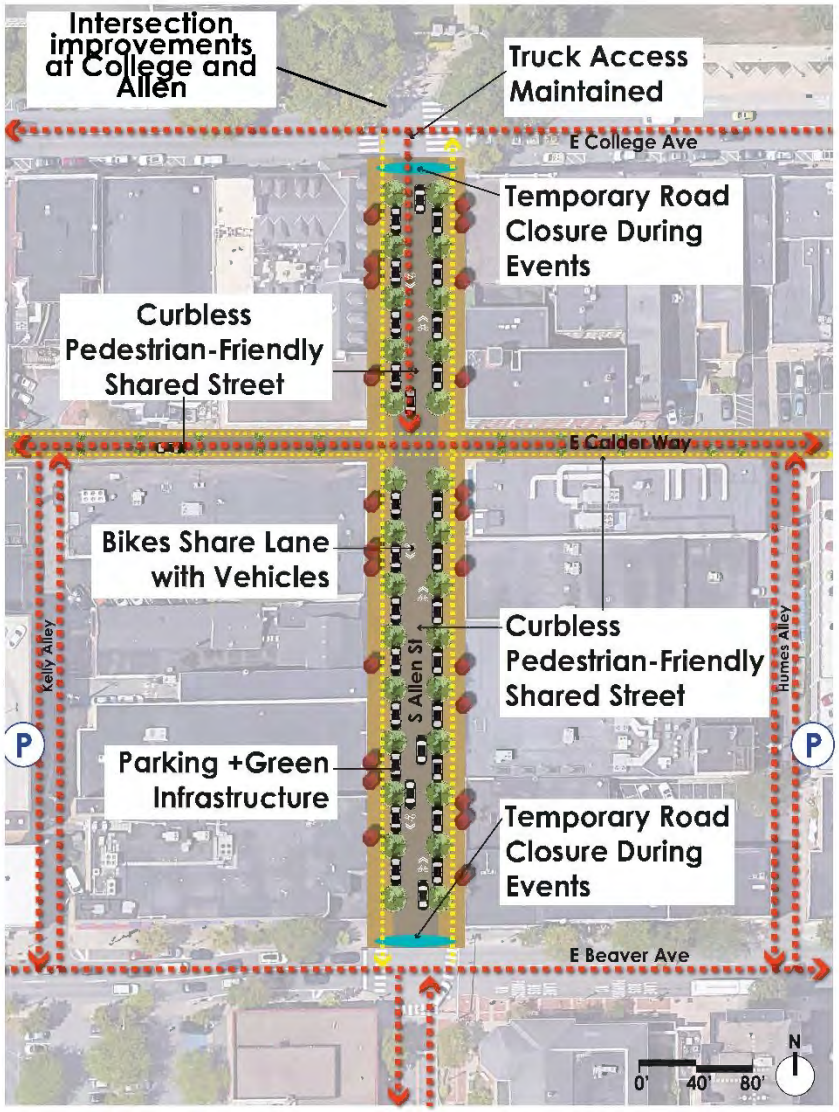
SAFETY BENEFITS

- Reduced motor vehicle speeds (NACTO)
- Enhances pedestrian network connectivity
- Enhances bicycle network connectivity

100 BLOCK OF S ALLEN - EXISTING

100 BLOCK OF S ALLEN - POTENTIAL

Concept Plan



IMPLEMENTATION

PHASING	Mid-Term
PRIORITY	Medium Priority
COSTS	$$
PARTNERS	PennDOT, DID, CBICC, Penn State, CATA

Implementation Considerations

Implementation of a shared street for the 100 block of S Allen Street will require close collaboration with the DID and downtown businesses. There may be impacts to on-street parking. Short-term interim closures should be used to test out design ideas. Different street paver materials and increased landscaping may require some specialized maintenance routines or partnerships. Coordination with emergency service operations may also be necessary to ensure alternate routes for access.

Key Project

S ATHERTON STREET SHARED USE PATH

NEXT GENERATION SAFETY & MOBILITY PLAN

Borough of State College

Project Description

A shared use path along S Atherton Street from Westerly Parkway to E Banch Road is recommended. A shared use path (SUP) or trail provides the highest level of separation and the lowest level of traffic stress for cyclists. This facility is shared between people biking and walking. Both a road diet and shared use path could be implemented as part of PennDOT's ongoing work on the corridor.

Facility Type: Shared Use Path

Extents: Westerly Parkway to E Branch Road

Key Intersections: Westerly/Easterly Parkway, Waupelani Drive, Whitehall Road, Norma Street, University Drive, Branch Road

The S Atherton Street shared use path improvements would reduce vehicle speeds and prioritize multimodal access on a high-stress street.

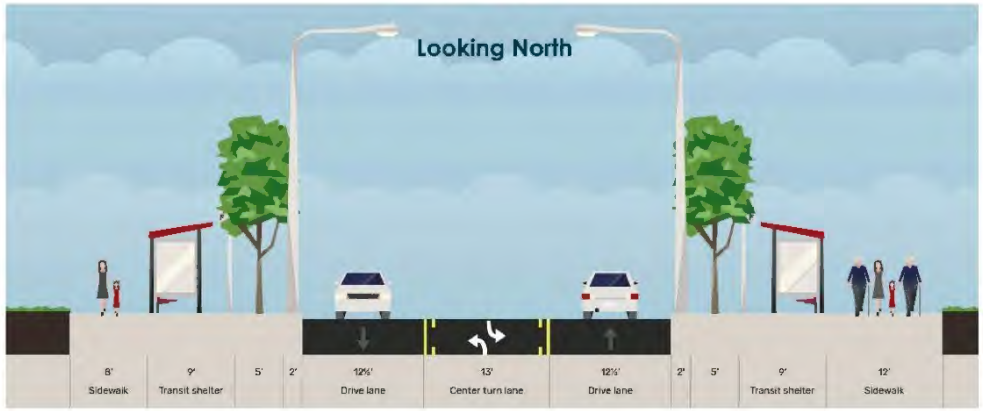
SAFETY BENEFITS

- Paths separated from motor vehicles offer a reduced risk of some crash types (FHWA)
- Road diets can reduce speed and reduce crashes up to 47% (FHWA)
- Pedestrian refuge islands can reduce pedestrian-related crashes by up to 46% (FHWA)

S ATHERTON STREET - EXISTING

S ATHERTON STREET - POTENTIAL SECTION

Typical treatments and facilities may vary along the corridor.



Multimodal Toolkit Elements

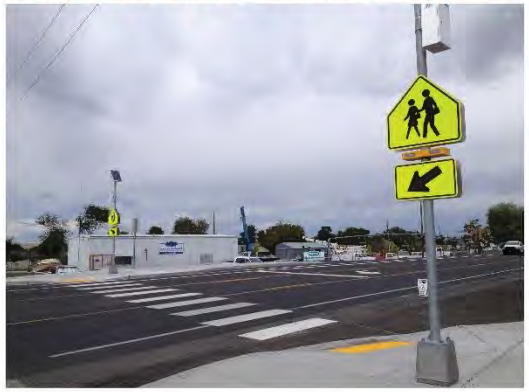
SHARED USE PATH

REFUGE ISLAND

LANE MODIFICATION

SLOW TURN WEDGE

RECTANGULAR RAPID FLASHING BEACON



IMPLEMENTATION

PHASING	Mid-Term
PRIORITY	High Priority
COSTS	$$$
PARTNERS	CATA, PennDOT
SIMILAR PROJECTS	College Avenue, Park Avenue, Westerly Parkway

**State Route

Implementation Considerations

Implementation of a shared use path along S Atherton Street will require coordination with PennDOT and CATA. Design will be led by PennDOT as part of the ongoing S Atherton Street improvement project. Future analysis will need to be conducted to assess feasibility of a road diet on Atherton Street. Access management considerations may be applicable to reduce potential conflicts between vehicles and more vulnerable road users on the path. Utility conflicts should also be explored during project design and implementation.

Key Project

UNIVERSITY DRIVE SEPARATED BIKE LANE

NEXT GENERATION SAFETY & MOBILITY PLAN

Project Description

University Drive/Whitehall Road is recommended to have a separated bike lane. This treatment physically separates bike lanes from moving motor vehicle traffic by vertical treatments. The bike lanes would be separated from traffic via concrete parking stops, which provide protection while accommodating drainage and trash pick up vehicles.

Facility Type: Separated Bike Lane

Extents: E Foster Avenue to Blue Course Drive

Key Intersections: Blue Course Drive, Waupelani Drive, Atherton Street, Royal Road, Easterly Parkway, Prospect Avenue, Foster Avenue

The University Drive/White Hall Road separated bike lane will create a high quality, low stress bicycle facility providing peripheral connectivity throughout the Borough that connects to other existing and proposed bike facilities.

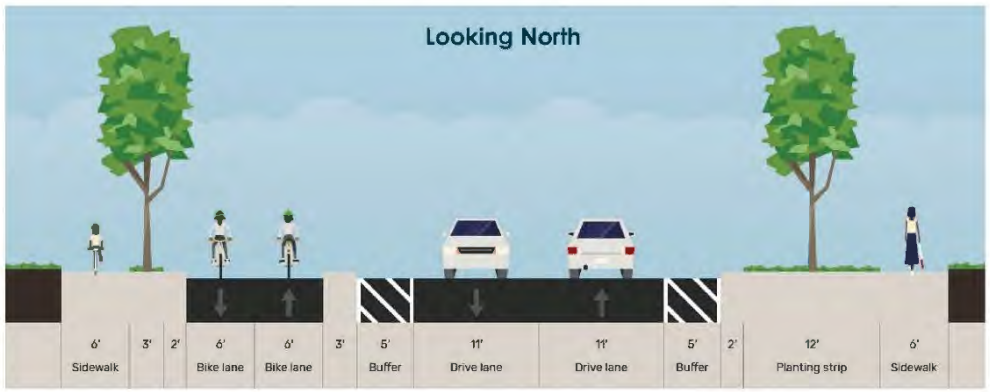
SAFETY BENEFITS

- SBL reduce bicycle/vehicle crashes (FHWA)
- Bicycle signals separate bicycle movements from conflicting motor vehicle or pedestrian movements
- Crosswalk visibility enhancements can reduce pedestrian crashes up to 25% (FHWA)

UNIVERSITY DRIVE - EXISTING

UNIVERSITY DRIVE - POTENTIAL SECTION

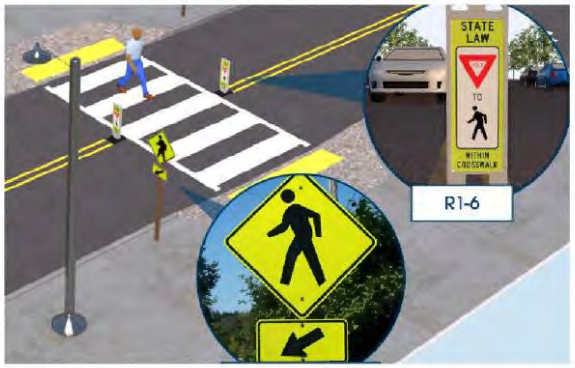
Typical treatments and facilities may vary along the corridor.



Multimodal Toolkit Elements

SEPARATED BIKE LANE

HIGH VISIBILITY CROSSWALK



BICYCLE SIGNAL

REPURPOSE CENTER TURN LANE

IMPLEMENTATION

PHASING	Mid-Term
PRIORITY	Medium Priority
COSTS	$$
PARTNERS	PennDOT, PSU, College Township

**State Route

Implementation Considerations

Providing a separated bike lane on University Drive will require that snowplow and street cleaning vehicles travel within the bike lane space when needed. Trash collection is less applicable along most of University Drive but may require that receptacles be placed at the curb alongside the motor vehicle lanes where necessary. This project will require coordination with Harris Township, PennDOT, and CATA. Future speed, safety, and traffic analyses should be considered.

Implementation of University Drive should take place in phases, with future consideration given to the appropriate facility types for different land use and roadway contexts. The separated bike lane should be prioritized for the segment of University Drive from Blue Course Drive to Atherton Street. Traffic calming and intersection improvements may be more appropriate for residential sections of University Drive from Easterly Parkway to Foster Avenue.

Key Project
FOSTER AVENUE BICYCLE BOULEVARD

NEXT GENERATION SAFETY & MOBILITY PLAN

Borough of State College

Project Description

Foster Avenue is recommended as a bicycle boulevard. Bicycle boulevard treatments slow motor vehicle traffic and prioritize bicyclist movements in the street. The Foster Avenue facility provides low-stress, east-west connectivity in the Borough just south of downtown.

Facility Type: Bicycle Boulevard

Extents: S Buckhout Street to University Drive

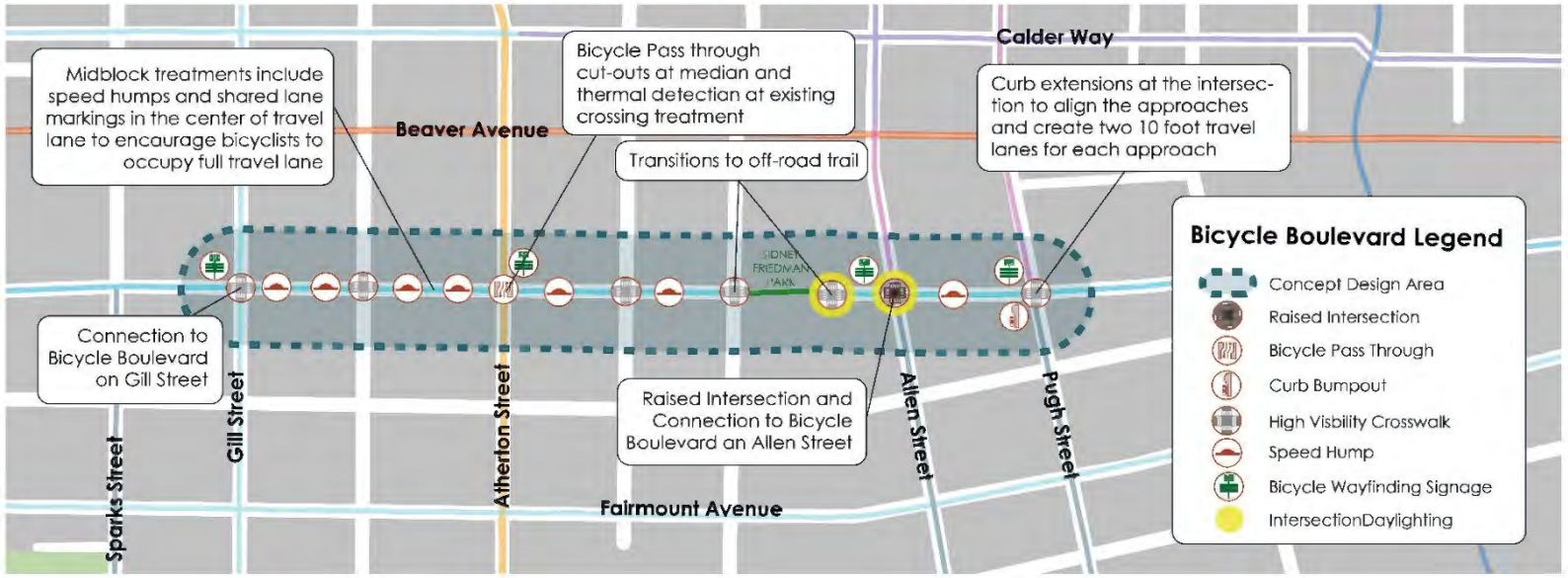
Key Intersections: Buckhout Street, Atherton Street, Allen Street, Pugh Street, Garner Street, University Drive

The Foster Avenue Bicycle Boulevard will enhance bicyclist safety, reduce motor vehicle speeds, and improve intersections for all modes.

SAFETY BENEFITS

- Speed humps can be effective at reducing speeds by nearly 10 mph (FHWA)
- Crosswalk visibility enhancements can reduce pedestrian crashes up to 25% (FHWA)
- Supports east/west bicycle network connectivity

FOSTER AVENUE- POTENTIAL



Multimodal Toolkit Elements

SPEED HUMP

DAYLIGHTING

HIGH VISIBILITY CROSSWALK

BIKE PARKING

WAYFINDING

IMPLEMENTATION

PHASING	Short-Term
PRIORITY	Medium Priority
COSTS	$
PARTNERS	PennDOT
SIMILAR PROJECTS	McKee Street, Ridge/ Hartswick Avenue, Fairmount Avenue

Implementation Considerations

Bicycle boulevard treatments might require modification to maintenance and emergency operations. Speed humps, mini-roundabouts, medians, and other traffic calming measures can be designed to be traversed by emergency vehicles and buses. Curb extensions should consider trash collection and snow removal. Additional signs and pavement markings may require additional routine street maintenance. Enforcement of parking restrictions that maintain intersection visibility is important for safe mobility along a bicycle boulevard. Project implementation should involve engagement with the local neighborhood association.

Key Project

WAUPELANI DRIVE TRAFFIC CALMING

NEXT GENERATION SAFETY & MOBILITY PLAN

Project Description

Waupelani Drive is recommended to have traffic calming and intersecton enhancements. Waupelani Drive is also a high priority CATA corridor. This corridor would have enhanced crossings at intersections as well as new midblock crossings at transit stops. The existing bicycle lanes on Waupelani drive would be preserved.

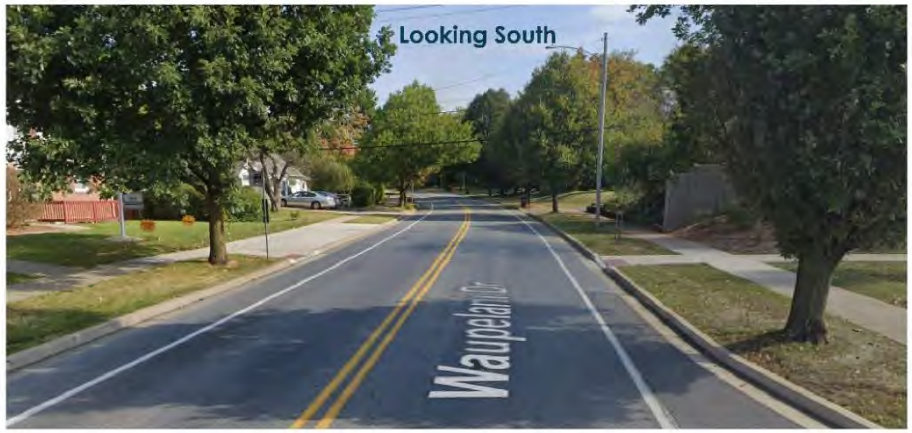
Facility Type: Traffic Calming & Intersection Improvements

Extents: S Atherton Street to W Whitehall Road

Key Intersections: Atherton Street, Onieda Drive, O'Bryan Lane, Southgate Drive, Stratford Drive, Whitehall Road

Waupelani Drive will reduce speeds and mode conflict through traffic calming and crossing enhancements. Transit stop and amenities enhancements will increase service quality and ADA accessibility.

WAUPELANI DRIVE - EXISTING



Borough of State College

SAFETY BENEFITS

- Rectangular Rapid Flashing Beacons (RRFB) can reduce pedestrian crashes up to 47% and increase driver yield rates up to 98% (FHWA)
- Enhances pedestrian network connectivity

WAUPELANI DRIVE - POTENTIAL

Multimodal Toolkit Elements

FLASHING BEACON

HIGH VISIBILITY CROSSWALK

TRANSIT SHELTERS

SPEED HUMP

IMPLEMENTATION

PHASING	Short-Term
PRIORITY	Low Priority
COSTS	$$
PARTNERS	CATA
SIMILAR PROJECTS	Park Avenue, Garner Street, Oneida Street

Implementation Considerations

Improving safety along Waupelani Drive is especially focused on intersection improvements and enhancements near transit stops. Coordination with CATA is important. Additional signs and pavement markings may require additional routine street maintenance. Additional transit shelters and amenities may impact visibility and access along the curb. New midblock crosswalk locations should be coordinated with PennDOT.

Borough-Wide Strategies

In addition to corridor and intersection projects, implementing next generation safety and mobility in State College will involve Borough-wide strategies. These strategies focus on the transportation network as a connected system of corridors, making improvements that better facilitate multimodal mobility holistically.

SHARED USE PATH UPGRADES

State College has a robust off-street trail and shared use path network, including an existing path along Blue Course Drive and a planned path along Easterly / Westerly Parkway. A path connects Orchard Park at Blue Course Drive and Bayberry Drive to the Community Fields at Prospect Avenue and Atherton Street. Investing in improving and expanding this off-street infrastructure will contribute to better multimodal access in the Borough. The following strategies might be considered:

- Widen trails and paths where they are less than 10 feet wide.
- Fill gaps in the shared use path network.
- Improve uncontrolled trail crossings and intersections where path users interact with motor vehicle traffic.
- Connect to the regional trail system.
- Improve trail and path wayfinding.
- Modify development requirements to require developers to help build out the off-street network.

E-BIKE PLANNING

Planning for next generation transportation requires thinking about the increasing electrification of micromobility vehicles. Electric bicycles are growing in popularity and are becoming lighter in weight and more affordable. They expand bicycle access and geographic reach for people of various abilities. Cargo bikes and electric scooters are other vehicles to plan for in the Borough. E-scooters, though illegal in Pennsylvania, are commonly found on or near the PSU campus.

Strategies for adapting the transportation network to expanding micromobility include:

- Providing e-bike charging as part of public bicycle parking.
- Provide bicycle parking that can accommodate larger and smaller vehicles.
- Expand the widths of existing and proposed bicycle facilities to accommodate larger vehicles such as tricycles and cargo bikes.
- Consider expansion of the existing shared micromobility program.

BICYCLE PARKING

Residents said that there is insufficient bicycle parking currently available in the Borough. This creates an obstacle for biking to many destinations. The SPIN bikes distributed throughout the Borough often take up scarce room on bike racks.

More bike parking is recommended at key destinations such as schools, parks, shopping plazas, and bus stops. Racks should be distributed throughout downtown and offered outside apartment complexes and office buildings.

Improved bike parking can be achieved through the following strategies:

- Modify development standards to require more public and private bicycle parking.
- Refine design guidelines to ensure well-lit, secure bike parking that accommodates larger bikes like SPIN bikes. Include charging considerations for e-bikes.
- Facilitate a bike rack sponsorship program.
- Build more bike racks via Capital Improvement Program funding and grants.
- Prioritize construction at key community origins and destinations.
- Use intersection daylighting areas for bike racks.
- Use wayfinding and maps to illustrate where public bike parking available.
- Establish dedicated parking zones for SPIN bikes.

TRAFFIC CALMING

Traffic calming is an important tool for improving multimodal safety and access. Slowing motor vehicle speeds can improve Pedestrian Level of Comfort, reduce Bicycle Level of Traffic Stress, and create safer shared streets. The Borough's Traffic Calming Guidebook can be revised to incorporate current Complete Streets best practices. Corresponding policies should be reviewed to better allow traffic calming improvements on all streets.

The Borough could facilitate traffic calming through several approaches. This includes providing traffic calming treatments in spot locations where there have been crashes, where residents have raised concerns, or where a specific request has been made. The Borough can also implement traffic calming through a neighborhood slow zone request program or within a Borough-identified slow zone. Traffic calming might also be achieved through development with appropriate modifications to the development code.

PARKING AND CURBSIDE STRATEGIES

The recent parking study performed for the Borough's downtown found that the study area experiences a surplus of 1,116 parking spaces during the weekday peak period. However, off-street parking is over capacity.

The Parking Study recommended the following strategies:

- A progressive parking rate program for on street parking depending on land use contexts and time periods.
- Increased pricing for on-street parking to encourage higher turnover rates and leave parking garages for longer term parking.
- Enforcement of on-street parking regulations and time limits.
- Mandated shared parking for developments with underutilized parking spaces.
- Curbside accommodations for loading zones and rideshare.
- ADA compliant parking spaces.
- Replacement of the Parking Soft System.
- Removing reassignments of parking enforcement officers to customer service representatives.

Using real estate for parking in the commercial area is not the highest and best use of that land. A holistic approach to managing parking requires incorporating programmatic and policy strategies to reduce reliance on parking in the commercial core and incentivize residents, employees, and visitors to use other modes of transportation whenever possible.

The following motor vehicle parking strategies are divided into three categories: 1) Development Review Process, 2) Curbside Parking Strategies, and 3) Programmatic Strategies.

Development Review Process: New developments add single occupancy vehicles to streets in the Borough. A revamped transportation development review process would allow developments to contribute to a more multimodal network.

- Incorporate multimodal spot and corridor mitigation improvement projects to offset vehicle trip generation.
- Require developer contributions to bus priority lanes, bus amenities, and bike and pedestrian facilities.
- For developers with surplus parking, stipulate parking management conditions.
- Encourage transit and bikeshare pass subsidies for residents in lieu of parking spaces.
- Require increased bike parking for developments targeting students.

Curbside Parking Strategies: Curb space is a limited resource. It must be shared among commercial uses, loading and service activities, street furniture, landscaping, and vehicle parking, among other needs. As such, careful management of curbside parking is key.

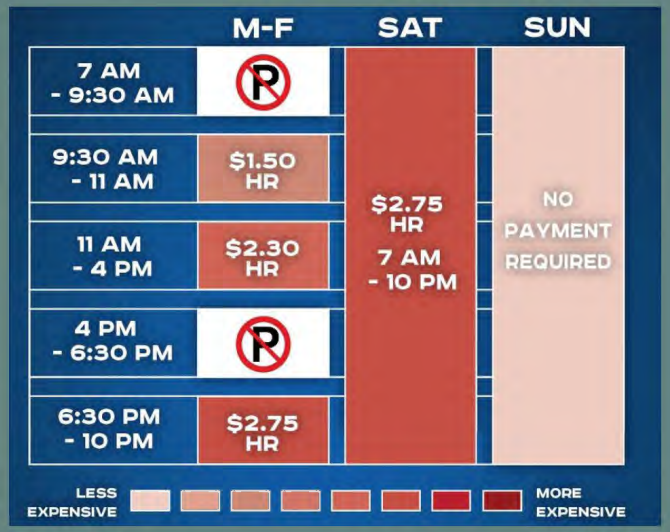
- Implement a performance/dynamic parking structure (see additional information in the box on the next page).
- Add car share parking, motorcycle parking, and ADA compliant parking.
- Create short term parking spaces (30 minutes or less) for pickup/drop off, loading zones, and food delivery.
- Roll out a user-friendly parking app that will enforce time limits in parking zones.
- Provide consistent parking enforcement across downtown and other commercial areas.

Programmatic Strategies: A holistic approach to managing parking requires incorporating programmatic and policy strategies to influence behavior and reduce reliance on parking in the commercial core as well as incentivize residents, employees, and visitors to use other modes whenever possible.

- Reduce the cost of bikeshare and buses on event days.
- Perform public outreach and host education events.
- Require Transportation Demand Management (TDM) plans in development review processes.
- Encourage employers to incentivize employees to use sustainable transportation options by participating in pre-tax transit programs or offering other incentives.

PERFORMANCE / DYNAMIC PARKING

Performance / dynamic parking involves managing parking based on demand. For instance, during busier times of the day, prime on-street parking may be more expensive or may be time-restricted. An example of this is shown below.



MOBILITY HUBS

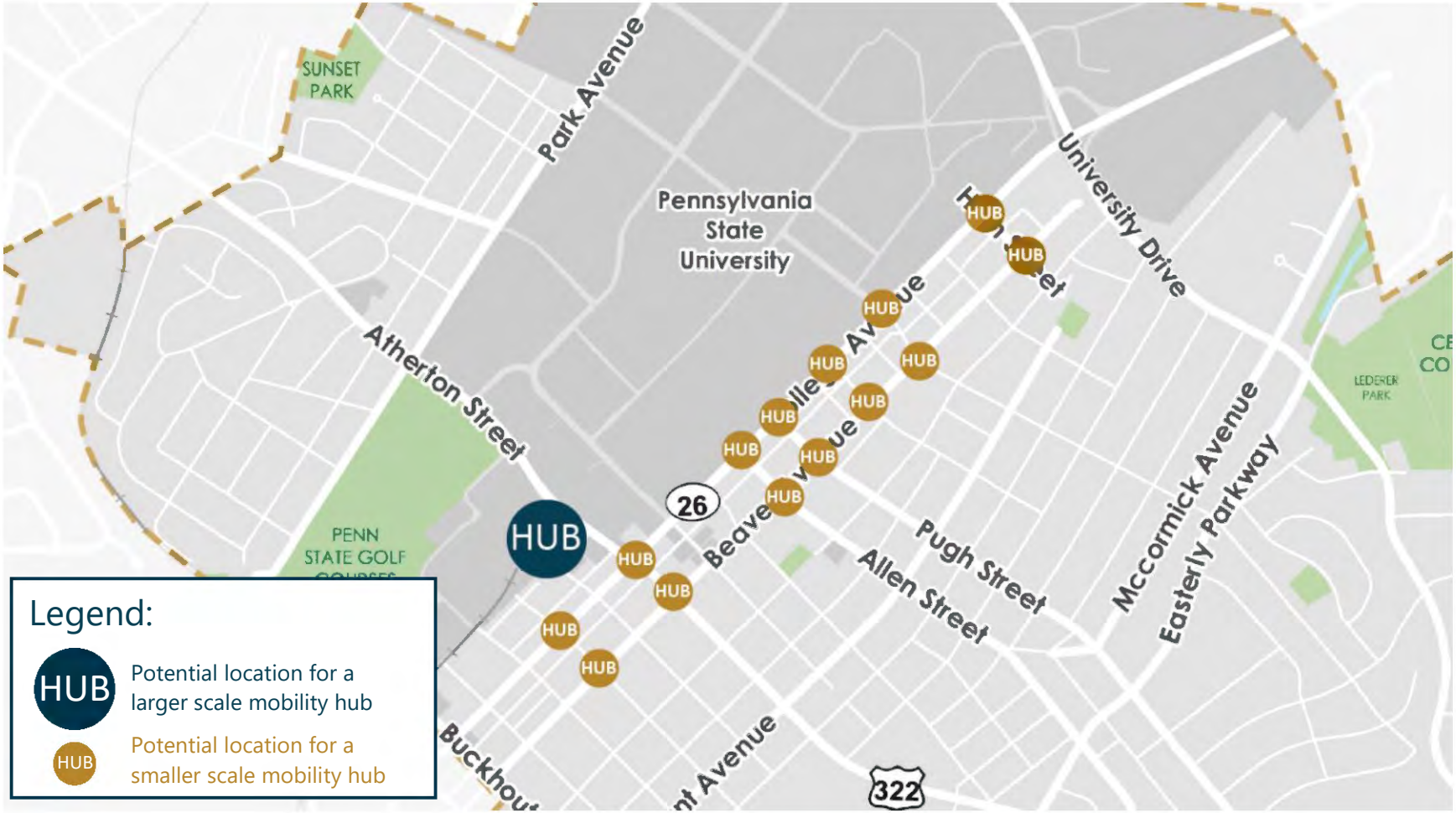
A mobility hub provides access to multiple modes of transportation within close proximity to each other. The hub might be connected by physical and/or digital infrastructure. It might include access to rideshare, bikeshare, public transit, parking, electric vehicle charging, as well as other modal equipment and activity. A mobility hub provides convenient, safe connections between modes to increase mobility options. This is particularly critical in State College, which has a very well-used transit system without a transfer center.

Mobility hubs can come in a variety of scales. A smaller hub might link bikeshare and rideshare. A larger hub might include bike parking, access to bus service, EV charging, and other strategically connected transportation options.

One location for a larger scale mobility hub might be the Greyhound bus station. This could be a future location where State College workers or visitors arrive by bus and then pick up a shared vehicle to reach their destination.

Smaller scale mobility hubs might be considered at major intersections throughout downtown as shown in Figure 31.

Figure 31. Mobility Hub Concept*



*right of way and property considerations will be required for mobility hub feasibility and development process

VISION ZERO POLICY

Consistent with Vision Zero, the Borough of State College is committed to eliminating traffic-related fatalities and serious injuries within its transportation system. A Vision Zero policy sets a framework for an agency to increase "safe, healthy, equitable mobility for all" (Vision Zero Network). This framework typically involves a safe systems approach, including equitable investment in infrastructure, education, and enforcement.

State College should adopt a Vision Zero Policy that sets the Borough up to invest in infrastructure and programs that eliminate fatal and severe crashes. This policy should prioritize pedestrian and bicyclist safety and consider Complete Streets best practices that slow vehicle speeds and increase walkability. The policy should promote transit ridership and other modes of sustainable transportation. It should dedicate funding, assign authority, establish interagency partners, determine a schedule, refer to this Action Plan, and track progress.

Non-Engineering Strategies

Non-engineering transportation safety countermeasures supplement infrastructure and policy recommendations to address crash trends and improve access. These countermeasures are intended to complement the engineering countermeasures described herein and generally are intended to address behavioral factors contributing to crash risk. Countermeasures are grouped into education approaches and enforcement approaches.

EDUCATION

Education strategies are focused on teaching road safety principles. These strategies can include interactive activities, comprehensive teaching notes, and information on road safety messages and concepts that can be taught at school or in off-school activities. The following five education-related strategies were identified:

1. School-Related Road Safety Education
2. Speed Monitoring Awareness Radar Trailer
3. Education Regarding Vulnerable Road Users
4. Conspicuity Enhancements and Education
5. High-Visibility Cell Phone and Text Messaging Media Campaign

School-Related Road Safety Education

Road safety education for children includes strategies such as safe routes to school, walking school buses, and bicycle trains that promote road safety to all users, along with associated driver education.

A safe routes to school program encourages and enables children to walk and bike to school. This can improve their health, safety, and well-being. This also results in less traffic congestion and emissions caused by school-related travel.

Walking school buses and bicycle trains encourage groups of children walking or biking to school, with one or more adults. These practices have shown communities and families that walking and biking can be viable and safe transportation options, and thus can be incorporated into their own daily travel patterns.

School-focused road safety education for drivers is an important complement to road safety education for children. Transportation safety campaigns scheduled at times when higher numbers of children may walk or bike to school (e.g., beginning of the school year, after spring vacation) can foster community awareness of a shared responsibility for road safety near schools.

Speed Monitoring Awareness Radar Trailer

A speed trailer is an educational device that helps drivers become more aware of their speed in relation to the posted speed. This awareness tool can also help residents survey the traffic speeds in their own neighborhood. This trailer is usually deployed in a street or neighborhood for a few days so the residents can monitor the speeds on their own streets and become aware of their own driving behaviors.

Education Regarding Vulnerable Road Users

Road safety education regarding vulnerable road users like pedestrians and bicyclists includes strategies involving education from police officers. If the driver encroaches into the bike lane or fails to yield to the pedestrian at the crossing, the police officer pulls the driver over and hands them a flyer that has the information for drivers to adapt their behavior towards all road users; this can be in addition to a citation.

Conspicuity Enhancements and Education

In addition to educating drivers on safe driving to prevent crashes with bicyclists and pedestrians, communities can also educate vulnerable road users.

The purpose of enhancing conspicuity for pedestrians is to increase the opportunity for drivers to see and avoid pedestrians, particularly when it is dark. Over 70% of national pedestrian fatalities occur in the dark, and pedestrians who are more visible are less likely to be struck.

The use of high visibility clothing and protective gear enhances safety. Educating pedestrians to wear reflective clothing and walk in well-lit areas can be implemented as targeted campaigns. These campaigns can include giveaways of wearable lights and reflectors for people to use when traveling at night. There is some limited evidence to suggest that a program aimed at increasing conspicuous and protective clothing could be successful.

High-Visibility Cell Phone and Text Messaging Media Campaign

The High Visibility Enforcement model combines dedicated law enforcement with paid and earned media supporting the enforcement activity. Paid media includes advertisements on TV, radio, online, and via billboards, while earned media includes things like press events and news releases covering the efforts. Both types of media support enforcement activity by helping the public become aware of the enforcement activity, and to create the impression that violators will be caught.

ENFORCEMENT

Even when engineering countermeasures are implemented, travelers failing to adhere to traffic laws can result in crashes of varying severity. Police enforcement can increase driver awareness and consequently reduce crashes. Potential enforcement strategies to address crash patterns and trends are presented below. However, enforcement strategies should be undertaken with due caution to avoid inequitable enforcement activities and evaluated to determine the strategy's impact. The following considerations can help lead to more successful outcomes for roadway safety enforcement strategies:

- Police officers should be trained properly beforehand.
- Campaigns should be tailored to suit the needs of different neighborhoods and demographics and should be designed and carried out to avoid targeting disadvantaged communities.
- Enforcement should be conducted with the help of staff support and awareness of the courts.
- Enforcement operations should begin with warnings and flyers before moving on to issuing citations.

Crash data can help identify priority intersections and/or street segments and the times of the day when the crashes have occurred. This information can inform and guide the type of enforcement strategy to be selected at the most appropriate locations and time periods. Borough staff can also help monitor the impact of the enforcement strategy by coordinating with the Police Department to obtain and analyze enforcement records to help evaluate effectiveness and equity considerations.

Progressive Ticketing

Progressive ticketing is a method for introducing ticketing through a three-staged process. Issuing tickets is the strongest strategy of an enforcement program and it is usually reserved for changing unsafe behaviors that other strategies failed to change or that pose a real threat to the safety of road users. There are three main steps of an effective progressive ticketing program:

1. ***Educating*** - Establish community awareness of the problem. The public needs to understand that drivers are speeding and the consequences of this speeding for road safety. Raising awareness about the problem will change some behaviors and create public support for the enforcement efforts to follow.
2. ***Warning*** - Announce what action will be taken and why. Give the public time to change behaviors before ticketing starts. Flyers, signs, newspaper stories and official warnings from officers can all serve as reminders.
3. ***Ticketing*** – After the "warning" period, hold a press conference announcing when and where the police operations will occur. If offenders continue their unsafe behaviors, officers issue tickets.

Speed Enforcement in School Zones

Strict enforcement of speed laws in school zones is one law enforcement tool that can reduce the risk of fatal and serious injury crashes for children walking and bicycling to school as well as drivers. A "zero tolerance" policy for speeders in school zones and increased fines for drivers who violate the posted school zone speed limit are potential approaches.

High Visibility Saturation Patrols

A saturation patrol (also called a blanket patrol or dedicated DWI patrol) consists of many law enforcement officers patrolling a specific area to look for drivers who may be impaired. These patrols usually take place at times and locations where impaired driving crashes commonly occur. Like publicized sobriety checkpoint programs, the primary purpose of publicized saturation patrol programs is to deter driving after drinking by increasing the perceived risk of arrest.

Section 7:
IMPLEMENTING THE PLAN

Prioritization

Projects proposed in this Next Generation Safety & Mobility Plan are prioritized based on project goals developed through public outreach and interagency partnerships. The methodology for prioritizing projects is summarized below.

The main goal of this plan is to eliminate severe crashes. As such, projects that address corridors and intersections with higher frequency of pedestrian crashes, fatal crashes, injury crashes, and overall crashes are prioritized.

Next generation mobility in the Borough is intended to be multimodal. As such, projects that reduce Bicycle Level of Traffic Stress and improve Pedestrian Level of Comfort are prioritized. Priority is also given to projects that have the potential to improve transit rider experience and projects that provide high quality, physically separated multimodal facilities.

Residents in the Borough desire a transportation network with options that provide connectivity between key origins and destinations. As such, projects that connect new multimodal facilities to existing multimodal facilities are prioritized. So are projects that connect to transit, connect to high frequency transit, connect to parks and open space, and connect to other key destinations, like schools.

Providing equitable mobility and access requires serving historically marginalized communities and prioritizing people that may have few transportation options. As such, projects are prioritized if they overlap with census block groups that have dense population, dense employment, high percentage of low-income households, high percentage of zero-vehicle households, and high percentage of Black, Indigenous, and People of Color (BIPOC) households. Projects that address specific community concerns are also prioritized.

Considering existing and ongoing projects streamlines the implementation process. As such, projects that correspond with existing PennDOT, CATA, and local road projects are prioritized. Projects that require more significant construction disruptions are deprioritized.

A data-driven prioritization process was performed to create the priority scoring shown in Figure 32. The weights and example considerations for each category are described below.

PRIORITIZATION RUBRIC

Enhance Safety for All (40%)

- ✓ Along a road with higher frequencies of pedestrian crashes between 2017 and 2021

Increase Multimodal Comfort (10%)

- ✓ Project is a shared use path or separated bicycle facility

Connect Facilities and Destinations (20%)

- ✓ Project is within 1/8 mile of a key destination

Respond to Future and Current Needs (10%)

- ✓ Project was identified through public input
- ✓ Project serves disadvantaged or high density areas

Coordinate with Other Projects (20%)

- ✓ Location corresponds to planned or programmed municipal or PennDOT efforts

Phasing

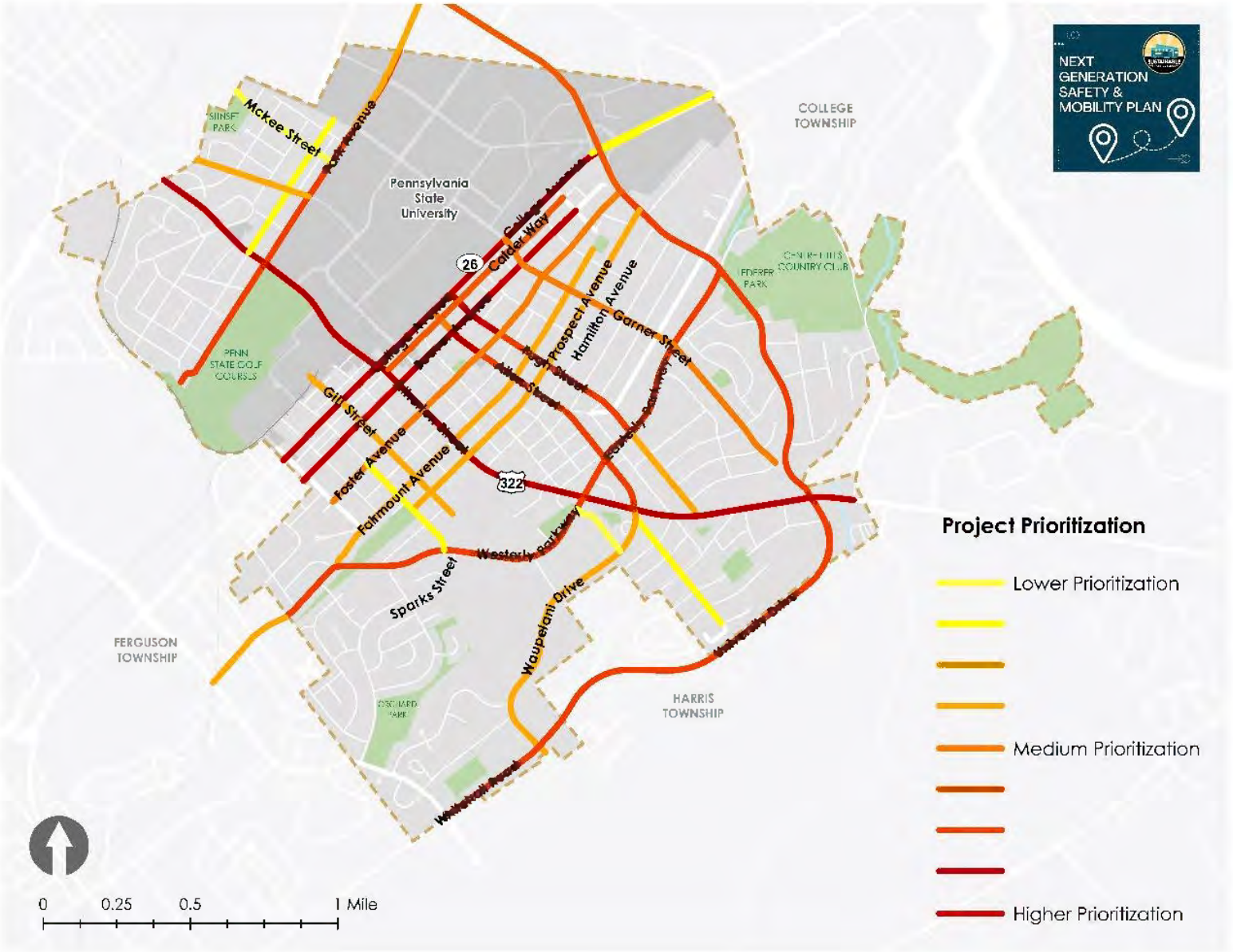
The prioritization process described above is meant to serve as a framework for tackling the corridor projects outlined in this Plan. This priority level will likely need to be adapted as funding becomes available, new considerations arise, and partnerships evolve. Some projects may need to be done in phases to achieve the ultimate result. It is anticipated that upon project selection, the following activities will be carried out:

1. Environmental review
2. Preliminary design
3. Final design
4. Right-of-way acquisition
5. Construction
6. Maintenance

For implementation, "Phasing" specifies when the project is likely to be designed and constructed. Phasing timelines include:

- Short-Term projects are anticipated for design and implementation in the next 0 to 5 years.
- Short/Mid-Term projects are at least partially anticipated for design and/or implementation in the next 0 to 5 years.
- Mid-Term projects are anticipated for design and implementation in the next 5 to 10 years.
- Long-Term projects are anticipated for design and implementation in the next 10+ years.

Figure 32. Project Prioritization



Implementation Partners

Several agencies and organizations will be involved in implementing the corridor projects and Borough-wide strategies proposed herein. These partners were involved in the development of the Next Generation Safety & Mobility Plan. The Borough could facilitate an ongoing task force comprised of these partners to implement the Plan.

PennDOT – Atherton Street, College Avenue, Beaver Avenue, Park Avenue, and part of University Drive are owned, maintained, and operated by PennDOT. Improvements to these corridors as well as corridors that intersect with them will involve partnership with PennDOT. PennDOT coordination is also needed for changes to signals and midblock crossings.

Penn State University – Developing a safe, multimodal network will require seamless interaction between the Borough's transportation system and the University's network. Much of this plan focuses on key routes that travel to, from, and through the campus. This is especially important for the employees and students that live off campus in the Borough.

CATA – Bus service operates on University Drive, College Avenue, Beaver Avenue, Pugh Street, Atherton Street, and Waupelani Drive among other streets in the Borough. Projects along or intersecting with these corridors will involve collaboration with CATA to be sure bus stops are connected and accessible and that street geometry provides adequate access for CATA's vehicles.

Community & Business Organizations – Coordination with local community and business organizations such as neighborhood associations, the Downtown Improvement District (DID), and the Chamber of Business & Industry of Centre County (CBICC) will also be key, particularly in coordinating changes or impacts to driveways, on-street parking, and loading zones.

Regional Agencies – Regional inter-agency coordination, such as with Centre County, Centre County Metropolitan Planning Organization (CCMPO), and neighboring municipalities like College, Ferguson, Harris, and Patton Townships will be most relevant for facilities that connect to or extend beyond the Borough's boundaries as well as those that serve a role in the regional transportation network.

Borough Departments – Inter-departmental coordination at the Borough will also be necessary to carry out this Plan. Monthly meetings with Police, Public Works, Utilities, and other engineering, planning, or development-related Departments will provide a venue to discuss safety, bicycle and pedestrian infrastructure build out, and key downtown issues. This group of representatives can be used as the core members of the task force for implementing upcoming projects.

Operations & Maintenance Considerations

The corridor-specific and Borough-wide projects proposed in this plan resemble other multimodal improvements being made throughout the state and country. These similar examples provide context for how implementation considerations can be planned for, evaluated, and addressed. Some key considerations are described below.

Street Maintenance – Maintaining streets in the Borough involves snow removal, leaf collection, and street sweeping. The Borough also maintains signs ,pavement markings, and signals. Some street improvements, such as separated bike lanes, may require revised street maintenance routines. The Borough might consider a phased approach to maintaining streets with physically separated bike lanes, with Phase 3 as the ultimate goal:

- **Phase 1** – Not plowing, collecting leaves, or street sweeping in the separated bike lanes.
- **Phase 2** – Adapting existing equipment to clear bike lanes of snow, leaves, and debris.
- **Phase 3** – Purchasing new equipment to clear bike lanes of snow, leaves, and debris, as shown in the photo.

The Borough can also install signs that warn snowplow drivers where curbs or other raised infrastructure are located. This Plan recommends using concrete or rubber parking stops or "armadillos" as a form of physical separation to reduce maintenance needs. These devices can be traversed by buses, trucks, and snowplows. They will require periodic replacement by Borough maintenance. Green and red paint will also increase maintenance needs and should be considered in future operational budgets.

Borough Service Operations – Several services operate alongside the curb, including refuse collection, mail delivery, and bus service. Similar to the phased approach for plowing snow, the Borough could purchase new refuse collection equipment in the future. In the meantime, a new routine may be needed in select locations, such as requiring that refuse bins be placed in the bike lane buffer. However, it is anticipated that refuse trucks can also traverse the rubber parking stops or armadillos. This may pose a temporary disruption to bicycling during refuse collection times.

Transit Operations – There are several options for operating bus service with improvements like separated bike lanes. Shared bus-bike lanes can be implemented where there are bus stops. Well-designed floating bus stops are another option.

Emergency Service Operations – One responsibility of the transportation network is to provide clear, direct access for emergency vehicles. Speed humps and other traffic calming devices can be designed to limit impacts to emergency vehicles on streets that are key emergency routes. Further coordination with emergency service providers during project development and design is recommended.

Other Curbside Needs – The curbside space serves many needs. Therefore, implementing improvements along the curb, such as separated bike lanes, may require solutions that balance tradeoffs. Commuter on-street parking may need to be relocated. Loading and rideshare pick up zones may need to be delineated or coordinated.

Deployed John Deere Skid Steer. Source: Boston Dept. of Public Works

Potential Funding Sources

Funding the projects outlined in this plan in their entirety will require several sources, including at the local, regional, state, and federal level.

LOCAL FUNDING SOURCES

Capital Improvement Plan Funding (CIP) – the Borough's CIP funds various types of projects and programs. Improvements outlined herein could be eligible for future CIP funding. Link: https://www.statecollegepa.us/400/Capital-Improvement-Plan-CIP-Learning-Ce

Maintenance and Resurfacing – simple improvements like signs and pavement markings could be achieved through street resurfacing and maintenance activities. There may also be savings achieved by tacking simple transportation improvements onto other projects being carried out through Borough departments, such as utility, stormwater, and parks projects.

Local Development – Improvements to the transportation system can be realized through private investment and public-private partnerships. Depending on development scale and land use, private construction could build out curb extensions, improved crosswalks, greenway trails, and other multimodal accommodations.

STATE FUNDING SOURCES

PennDOT Multimodal Transportation Fund (MTF) – PennDOT has funding available for bicycle and pedestrian improvements that contribute to a safe and reliable transportation system. This program provides funding to local agencies to enhance communities, improve pedestrian safety, and revitalize transit service. Link: https://www.penndot.pa.gov/ProjectAndPrograms/MultimodalProgram/pages/default.aspx

Green Light Go – This is a is a competitive state grant program designed to improve the efficiency and operation of existing traffic signals in Pennsylvania. Link: https://www.dot.state.pa.us/public/Bureaus/BOMO/Portal/TSPortal/FUNDGLG.html

PennDOT Automated Red Light Enforcement (ARLE) – This program is a competitive grant program generated from the net revenue of fines collected through Automated Red Light Enforcement Systems and Automated Speed Enforcement Systems. Grant applications are accepted annually during the month of June. Link: https://www.dot.state.pa.us/public/Bureaus/BOMO/Portal/TSPortal/FUNDARLE.html

PennDOT Transportation Improvement Program (TIP) – PennDOT assigns funding to planned projects on the TIP over a short-range, four-year period. The Centre County MPO helps facilitate this process every 2 years. Link: https://www.crcog.net/tip#:~:text=The%20Centre%20County%20TIP%20details,Range%20Transportation%20Plan%20(LRTP)

Department of Conservation and Natural Resources (DCNR) – DCNR offers two grant programs that may be relevant to this plan: the Community Conservation Partnerships Program and the recreational trails program. In the context of this plan, these grants would be limited to trails and shared use paths, but they can provide funding for all project phases from land acquisition and planning through final design and construction.

Link: https://www.dcnr.pa.gov/Communities/Grants/pages/default.aspx

Department of Community and Economic Development (DCED) Multimodal Transportation Fund – This fund (different from PennDOT's fund of the same name) provides grants for a variety of transportation improvements that "encourage economic development and ensure … a safe and reliable system of transportation." Link: https://dced.pa.gov/programs/multimodal-transportation-fund/

Tax Increment Financing (TIF) – This state-operated program funds local economic development projects. It is meant to promote and stimulate the welfare of communities and can be used for infrastructure projects. Link: https://dced.pa.gov/programs/tax-increment-financing-tif-guarantee-program/

FEDERAL FUNDING SOURCES ADMINISTERED BY THE STATE

PennDOT Transportation Alternatives Set-Aside (TASA) – PennDOT administers federal funding for a variety of transportation facilities under this program, particularly those focused on walking, bicycling, and access to public transportation. This has been a common source for Pennsylvania communities to obtain funding for sidewalks, bicycle facilities, transit stop improvements, trails, streetscapes, and similar project types. Funding for PennDOT's Safe Routes to School (SRTS) program falls under TASA. Link: https://www.penndot.pa.gov/ProjectAndPrograms/Planning/Pages/Transportation%20Alternatives%20Set-Aside%20-%20Surface%20Trans.%20Block%20Grant%20Program.aspx

PennDOT Highway Safety Improvement Program Funding (HSIP) – Each year, PennDOT invests in low-cost safety improvements as well as larger scale projects that address multimodal safety. PennDOT Engineering District 2-0 and the Centre County Metropolitan Planning Organization should be consulted, as they collaborate on HSIP applications annually. Link: https://www.penndot.pa.gov/TravelInPA/Safety/Pages/Safety-Infrastructure-Improvement-Programs.aspx

OTHER FEDERAL FUNDING SOURCES

Safe Streets and Roads for All Funding (SS4A) – As part of the Bipartisan Infrastructure Law, this program funds projects that reduce serious crashes. There are Planning and Demonstration Grants offered as well as Implementation Grants. This plan is structured as a Safety Action Plan under SS4A, which sets up the Borough to be able to apply for SS4A implementation funding. Link: https://www.transportation.gov/grants/SS4A

Active Transportation Infrastructure Investment Program (ATIIP) This program is a competitive grant program to construct projects to provide safe and connected active transportation facilities in active transportation *networks* or active transportation *spines*. ATIIP will award two types of grants: Planning and Design grants and Construction grants. Link: ATIIP - Bicycle and Pedestrian Program - Environment - FHWA (dot.gov)

Rebuilding American Infrastructure with Sustainability and Equity Discretionary Grants (RAISE) – This grant program helps communities carry out surface transportation infrastructure projects that have a significant local or regional impact. Funding is available for capital projects as well as for planning efforts. Link: https://www.transportation.gov/RAISEgrants

Thrive Communities Program – This federal funding program typically focuses on building capacity and improving mobility and access in under-resourced communities. It has a focus on "community-driven economic development, health, environment, mobility, and access goals." Link: https://www.transportation.gov/grants/thriving-communities

MORE INFORMATION

The Pennsylvania Downtown Center has more information on active transportation funding sources in the state here: https://padowntown.org/wp-content/uploads/2023/04/AT-Funding-Resources_One-Pager-with-Intro.pdf

The Federal Highway Administration (FHWA) also provides additional detail for federal funding initiatives focused on bicycle, pedestrian, and transit infrastructure: https://www.fhwa.dot.gov/environment/bicycle_pedestrian/funding/funding_opportunities.pdf

Plan Evaluation

It is recommended that this plan be reevaluated every three to five years for updates. Project prioritization may be modified between plan updates as funding becomes available.

Implementation Matrix

The following matrix outlines key considerations for project implementation, including potential funding sources, construction cost ranges, implementors and collaborators, and project timelines. The matrix contemplates the types of coordination that may be relevant based on the project's proximity to Penn State's campus or downtown as well as the maintenance, ownership, operations, and functions of the street. The projects are ordered according to their priority level as discussed in detail above.

This matrix can be refined with subsequent plan evaluation and revisions. It should be a resource to guide implementation and carry out future project phases.

Next Generation Connectivity & Mobility Plan

Borough of State College

Implementation Matrix - Corridor Projects

Priority Level Legend:
0.45 to 1.00 represents a higher priority per project objectives
0.29 to 0.44 represents a medium priority per project objectives
0.00 to 0.28 represents a lower priority per project objectives

Project Information						Project Implementation																
											Coordination Needed										
ID	Street Name	Facility Type	From	To	Priority Level	Potential Funding Sources	Potential Cost Range	Implementors & Collaborators	Timeline	State Route (yes/no)	Penn-DOT	CATA	PSU	Down-town	Street Sweep	Snow Plow	Refuse Truck	Parking	ROW	Other Proj.	Notes
16	Atherton Street	Transit Access Treatments	BSC Border	E Branch Road	1.00	MTF, GLG, ARLE, TIP, TASA, DCED, TIF, SS4A	$$$	Borough, PennDOT, CATA, PSU, MPO, DID	Mid Term	Yes	X	X	X	X	X	X	X			P	PennDOT street reconstruction project from Park Avenue to Westerly Parkway.
18	College Avenue	Transit Priority Treatments	S Buckhout Street	University Drive	0.72	CIP, MTF, GLG, ARLE, TASA, TIP, DCED, TIF, SS4A	$$$	Borough, PennDOT, CATA, PSU, MPO, MPO, DID	Mid Term	Yes	X	X	X	X	X	X	X	X	X	C	Road diet and streetscape project proposed in CIP.
17	Beaver Avenue	Transit Access Treatments	S Buckhout Street	High Street	0.68	CIP, MTF, GLG, ARLE, TASA, HSIP, TIP, DCED, TIF, SS4A	$$$	Borough, PennDOT, CATA, MPO, DID	Short/Mid Term	Yes	X	X		X	X	X	X	X		C	Road diet and streetscape project proposed in CIP.
20	S Pugh Street	On-Street Bicycle Route	E College Avenue	E Foster Avenue	0.64	M&R, CIP, MTF, ARLE, TASA, ATIIP	$	Borough, CATA, DID	Short Term	No		X		X	X			X		C, R	Type I street reconstruction project in CIP. 2028 reconstruction project.
19	S Allen Street	On-Street Bicycle Route	Beaver Avenue	Foster Avenue	0.63	M&R, CIP, MTF, ARLE, TASA, ATIIP	$	Borough, CATA, DID	Short Term	No				X	X			X			
22	S Allen Street	Separated Bicycle Lane	Foster Avenue	S Atherton Street	0.59	CIP, MTF, ARLE, TASA, TIP, SS4A, ATIIP	$$	Borough, CATA, DID, PennDOT	Short/Mid Term	No		X				X	X	X			
21	University Drive / Whitehall Road	Separated Bicycle Lane	E Foster Avenue	Blue Course Drive	0.57	HSIP, TIP, MTF, ARLE, TASA, SS4A, ATIIP	$$	Borough, PennDOT, CATA, MPO, Harris Township*	Mid Term	Yes	X	X				X	X				
27	S Atherton Street	Shared Use Path	Westerly Parkway	E Branch Road	0.57	Dev, MTF, ARLE, TASA, HSIP, TIP, DCNR, SS4A, ATIIP	$$$	Borough, PennDOT, CATA	Mid Term	Yes	X	X							X		PennDOT street reconstruction project from Park Avenue to Westerly Parkway.
23	S Pugh Street	Separated Bicycle Lane	E Foster Avenue	Easterly Parkway	0.56	CIP, MTF, ARLE, TASA, TIP, SS4A, ATIIP	$$	Borough, CATA, DID, PennDOT	Short/Mid Term	No		X				X	X	X		C, R	Future reconstruction project, timeline TBD
11	Westerly / Easterly Parkway	Traffic Calming & Intersection Improvements	BSC Border	University Drive	0.55	CIP, MTF, ARLE, TASA, TIP, SS4A, ATIIP	$$	Borough	Short Term	No										C, R	SUP under construction from Orchard Park bike path crossing to University Drive. 2027 reconstruction project.
10	Park Avenue	Traffic Calming & Intersection Improvements	Dead End	BSC Border	0.54	MTF, ARLE, TASA, HSIP, TIP, SS4A, ATIIP	$$	Borough, PSU, PennDOT	Short Term	Yes	X		X								Counts might be performed this Spring.
14	University Drive	Traffic Calming & Intersection Improvements	E College Avenue	E Park Avenue	0.44	MTF, ARLE, TASA, HSIP, TIP, SS4A, ATIIP	$$	Borough, PennDOT, PSU, MPO, College Township*	Long Term	Yes	X										Included in PSU's plan as a collaborative project.
25	Calder Way	Shared Street	S Atherton Street	Hetzel Street	0.42	CIP, MTF, ARLE, TASA, TIP, DCED, SS4A, TIF, ATIIP	$$$	Borough, PSU, DID	Short Term	No			X	X	X					C	Utility project currently underway. Infrastructure project in CIP.
26	S Allen Street	Shared Street	College Avenue	Beaver Avenue	0.41	MTF, ARLE, TASA, TIP, DCED, SS4A, ATIIP	$$	Borough, PSU, DID, CATA	Mid Term	No			X	X	X						
12	S Garner Street	Traffic Calming & Intersection Improvements	E College Avenue	University Drive	0.41	MTF, ARLE, TASA, SS4A, ATIIP	$	Borough, DID	Mid Term	No				X	X						
1	Foster Avenue	Bicycle Boulevard	S Buckhout Street	University Drive	0.40	M&R, MTF, ARLE, TASA, ATIIP	$	Borough	Short Term	No										R	2025 resurfacing project (either side of Atherton Street to Sparks Street).
6	S Pugh Street	Bicycle Boulevard	Easterly Parkway	S Atherton Street	0.36	M&R, CIP, MTF, ARLE, TASA, ATIIP	$	Borough, CATA	Mid Term	No		X								R	2027 resurfacing project from Easterly Parkway to Ellen Ave.
2	Fairmount Avenue	Bicycle Boulevard	Westerly Parkway	Hetzel Street	0.36	M&R, CIP, MTF, ARLE, TASA, ATIIP	$	Borough	Short Term	No										C	Type I street reconstruction project in CIP. 2026 to Westerly Parkway.
28	Westerly Parkway	Shared Use Path	Blue Course Drive	Bike Path Crossing	0.34	Dev, MTF, ARLE, TIP, SS4A, TASA, DCNR, ATIIP	$$$	Borough, MPO, Ferguson Township*	Short Term	No									X	C, R	SUP from Orchard Park bike path crossing to University Drive. 2026 resurfacing project.
3	Prospect Avenue	Bicycle Boulevard	S Sparks Street	University Drive	0.33	M&R, MTF, ARLE, TASA, ATIIP	$	Borough	Mid Term	No										R	2024/2027 resurfacing projects.
5	S Gill Street	Bicycle Boulevard	PSU Campus	Orchard Park Trail	0.32	M&R, CIP, MTF, ARLE, TASA, ATIIP	$	Borough, PSU	Short Term	No			X							C, R	Streetscape improvements proposed in CIP. 2024 resurfacing project.
29	E Park Avenue	Shared Use Path	Schreyer Lane	University Drive	0.28	Dev, HSIP, TIP, MTF, ARLE, TASA, DCNR, SS4A, ATIIP	$$	Borough, PennDOT, PSU, MPO, College Township*	Long Term	Yes	X		X						X		
15	Waupelani Drive	Traffic Calming & Intersection Improvements	S Atherton Street	W Whitehall Road	0.28	CIP, MTF, ARLE, TASA, TIP, SS4A, ATIIP	$$	Borough, CATA	Short Term	No		X								C	Installation of street lights in CIP.
8	N Allen Street	Bicycle Boulevard	E Park Avenue	BSC Border	0.25	M&R, MTF, ARLE, TASA, ATIIP	$	Borough	Short Term	No										C, R	Type I street reconstruction project in CIP. 2024 reconstruction project.
24	S Sparks Street	Separated Bicycle Lane	W Foster Avenue	Westerly Parkway	0.23	M&R, MTF, ARLE, TASA, ATIIP	$$	Borough, CATA	Mid Term	No		X				X	X				
4	Ridge / Hartswick Avenue	Bicycle Boulevard	N Atherton Street	Schreyer Lane	0.22	M&R, MTF, ARLE, TASA, ATIIP	$	Borough	Mid Term	No											
30	College Avenue	Shared Use Path	University Drive	BSC Border	0.21	Dev, HSIP, TIP, MTF, ARLE, TASA, DCNR, SS4A, ATIIP	$$	Borough, PennDOT, CATA, PSU, MPO	Long Term	Yes	X	X	X						X		
7	S Allen Street	Bicycle Boulevard	S Atherton Street	Dead End	0.20	M&R, CIP, MTF, ARLE, TASA, ATIIP	$	Borough	Short Term	No										C, R	Type I street reconstruction project in CIP. 2024 reconstruction project.
13	Oneida Street	Traffic Calming & Intersection Improvements	Westerly Parkway	Waupelani Drive	0.16	M&R, MTF, ARLE, TASA, SS4A, ATIIP	$	Borough	Mid Term	No											
9	Mckee Street	Bicycle Boulevard	E Park Avenue	BSC Border	0.12	M&R, MTF, ARLE, TASA, ATIIP	$	Borough	Mid Term	No											

Legend

Project ID is randomly applied

Project Types include:
- Bicycle Boulevard
- On-Street Bicycle Route
- Separated Bicycle Lane
- Shared Street
- Shared Use Path
- Traffic Calming & Intersection Improvements
- Transit Access Treatments
- Transit Priority Treatments

Priority level is based on:
- 0.45 to 1.00 represents a higher priority per project objectives
- 0.29 to 0.44 represents a medium priority per project objectives
- 0.00 to 0.28 represents a lower priority per project objectives

Funding Sources include:
- Capital Improvement Plan Funding (CIP)
- Borough or PennDOT Maintenance and Resurfacing (M&R)
- Local Development (Dev)
- PennDOT Multimodal Transportation Fund (MTF)
- PennDOT Green Light Go (GLG)
- PennDOT Automated Red Light Enforcement (ARLE)
- PennDOT Transportation Alternatives Set-Aside (TASA)
- PennDOT Highway Safety Improvement Program Funding (HSIP)
- PennDOT Transportation Improvement Program (TIP)
- Department of Conservation and Natural Resources (DCNR)
- Department of Community and Economic Development (DCED) Multimodal Transportation Fund
- Tax Increment Financing (TIF)
- Safe Streets and Roads for All Funding (SS4A)
- Active Transportation Infrastructure Investment Program (ATIIP)
- Rebuilding American Infrastructure with Sustainability and Equity Discretionary Grants (RAISE)
- Thrive Communities Program (Thrive)

Potential Cost is based on:
- $ - represents a relatively low-cost project (likely less than about $1M)
- $$ - represents a relatively moderate-cost project (likely about $1M to $5M)
- $$$ - represents a relatively high-cost project (likely about $5M to $10M)

Implementors & Collaborators include:
- Borough of State College (Borough)
- Pennsylvania Department of Transportation (PennDOT)
- Centre Area Transportation Authority (CATA)
- Pennsylvania State University (PSU)
- Downtown Improvement District (DID)
- Harris Township
- Ferguson Township
- College Township
- *Some projects extend outside of the Borough and might require regional coordination

Timeline is based on:
- Short Term - anticipated for design and implementation in the next 0 to 5 years
- Short / Mid Term - some pieces anticipated for design and/or implementation in the next 0 to 5 years
- Mid Term - anticipated for design and implementation in the next 5 to 10 years
- Long Term - anticipated for design and implementation in the next 10+ years

Coordination Needed:
- Pennsylvania Department of Transportation (PennDOT)
- Centre Area Transportation Authority (CATA)
- Pennsylvania State University (PSU)
- Centre County Metropolitan Planning Organization (MPO)
- Downtown Coordination, including with the Downtown Improvement District (DID)
- Potential Street Sweeping Accommodation
- Potential Snow Plow Accommodation
- Potential Refuse Truck Accommodation
- Potential Parking Impacts
- Potential Right-of-Way Impacts

Other Projects include:
- C - Capital Project
- R - Resurfacing Project
- P - PennDOT Project

Next Generation Connectivity & Mobility Plan

Borough of State College

Implementation Matrix - Borough-Wide Strategies

Project Information			Project Implementation				
ID	Project Name	Project Type	Potential Funding Sources	Potential Cost	Implementors & Collaborators	Timeline	Notes
A	Shared Use Path Upgrades	Infrastructure	CIP, Dev, MTF, TASA, TIP, DCNR, DCED, TIF, SS4A	$$	Borough, PennDOT	Short/Mid-Term	
B	E-Bike Planning	Plan Development	CIP, Dev, SS4A	$	Borough	Short-Term	
C	Bicycle Parking	Infrastructure, Policy	CIP, Dev, MTF, TASA, DCED	$$	Borough	Short-Term	
D	Traffic Calming	Infrastructure, Policy	CIP, M&R, Dev, MTF, TASA, HSIP, TIP, DCED, SS4A	$ / $$	Borough, CATA, PennDOT	Short/Mid-Term	
E	Parking/Curbside Strategies	Policy	CIP, Dev, M&R	$	Borough, CATA, DID	Short-Term	
F	Mobility Hubs	Infrastructure	CIP, MTF, TASA, TIP, DCED, TIF, RAISE	$ / $$$*	Borough, CATA	Short-/Mid-Term	EV charging equipment in the CIP.
G	Vision Zero Policy	Policy	CIP, SS4A	$	Borough	Short-Term	Minimal funding needed for policy development.

*Mobility hubs could be implemented on smaller as well as larger scales

Borough-Wide Strategies are not location specific and thus, are not assigned specific priority