WALKER CONSULTANTS

TEXAS A&M UNIVERSITY
Transportation Services

Transportation Mobility Master Plan

Texas A&M University

College Station, TX

July 2022

WALKER CONSULTANTS FINAL

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July 7, 2022

Debbie Lollar
Executive Director
Transportation Services
Texas A&M University
College Station, TX 77843

Re: Texas A&M University Transportation Mobility Master Plan
Walker Project No. 25-002502.00

Dear Debbie:

Walker is pleased to submit the following Transportation Mobility Master Plan for Transportation Services at Texas A&M University in College Station, Texas. This report presents the details of our study findings, conclusions, and recommendations. Previous iterations of Phases 1 (**Discovery and Diagnosis**) and 2 (**Scenario and Future Planning**) have been reviewed, updated, and are included in this report. Phase 3 (**Plan Development and Path Forward**) has been added to this. Phase 3 has been augmented in the final deliverable with a prioritized **Implementation Plan**—predicated on Texas A&M's vetting of the philosophical and design principles described in Phase 3.

As you review the final Master Plan and associated Implementation Plan, please reach out at any time with comments or questions. We want to make sure that this deliverable meets or exceeds your expectations. If you would like to have a Zoom meeting to review this document together, we are happy to do so.

It has been amazing working with you and your team at Texas A&M! We are truly appreciative for the opportunity to be of service to you on this project. We look forward to discussing this Master Plan with you.

Sincerely,

WALKER CONSULTANTS

David J. Lieb
Principal | National Director of Higher Ed Mobility Planning

John W. Gettings
Deputy Project Manager

Cc: Julie Villarreal
Kenneth Kimball
Madison Metsker-Galarza

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Executive Summary

PROJECT DESCRIPTION

Texas A&M University is embarking on a new mobility future, one that is rooted in fewer single-occupant vehicles traveling to and around campus, one that prioritizes walking, bicycling, and public transportation as essential means of connecting around campus, and one that promotes safety, congestion mitigation, greenhouse gas emissions reductions, and the unique character and quality of life of Texas A&M University.

This new mobility future will include parking on the fringes of campus, a reliance on connected and convenient mobility options, and complete streets that enable safe, convenient, and low-stress access for users of all modes, ages, and abilities. The University wishes to promote the perception of travel safety and comfort among its students, faculty, staff, and visitors. A multimodal transportation system that users continually perceive as safe, comfortable, and convenient is critical in the use of alternate modes and the adoption of behavior change.

Guided by the recent Campus Master Plan, Sustainability Master Plan, and other planning efforts, the Transportation Mobility Plan charts the workplan for Texas A&M University Transportation Services for this new mobility future. This Plan details considerations around the implementation of strategies over the next ten years to establish identified mobility goals. The plan focuses on the timing, cost, benchmarks, and key performance indicators for achieving success, with implementation steps meant to build on one another. Foundational steps necessary to be implemented in the 10-year timeframe to set Texas A&M University Transportation Services up for success beyond the ten-year mark have also been identified.

The Transportation Mobility Plan offers solutions that minimize costs and maximize the mobility experience of those studying on, working at, and visiting the College Station campus. The Plan creates a connected mobility ecosystem, where all modes of transportation are integrated into a seamless experience and aligned with parking and access policies.

Throughout the project, stakeholder engagement has been critical in introducing the initiative to stakeholders and establishing a foundation for buy-in and lasting implementation success. This Transportation Mobility Plan will be a critical tool in engaging internal and external Texas A&M University Transportation Services stakeholders in adopting lasting change in the transportation and mobility landscape.

The Plan is a prescription for implementation and ongoing performance monitoring, and a tool for consensus-building, generating operational and fiscal support, and ensuring the ongoing success of transportation and mobility programs at Texas A&M.

Project Approach

Walker has employed a three-phase process in undertaking this Transportation Mobility Plan, with each phase building on the previous.

- **Phase 1: Discovery and Diagnosis:** In the first phase, we have developed an understanding of the challenges and opportunities facing the mobility and parking system at Texas A&M.
- **Phase 2: Scenario and Future Planning:** In the second phase, we projected future needs and considered alternate scenarios.
- **Phase 3: Plan Development and Path Forward:** In the final phase, we have provided recommendations based on all of the data and feedback gathered, along with applying principles of tactical urbanism. The recommendations, as vetted by Texas A&M University Transportation Services have informed the development of an Implementation Action Plan, including long-term objectives and low-hanging fruit.

Walker Consultants undertook this study with a multifaceted approach that included the collection of significant volumes of quantitative and qualitative data. This data collection and the associated analysis included:

- Research of existing information on-line on Texas A&M web pages and printed information
- Documents requested of the University
- Individual interviews with staff members and administrators
- Stakeholder meetings
- Meetings with outside agencies
- A digital hub (including a project website with opportunities for engagement)
- A mobility booth tabling exercise and in-person mobility workshop (with an online component)
- On-line and in-person Phase 2 focus groups
- A review of the 2019 Texas A&M Transportation Services survey which indicates commute mode share and intra-campus travel patterns
- A peer benchmarking review
- Evaluation of existing transportation demand management (TDM) offerings
- A GIS (geographic information systems) mapping study of commuter employees' and students' home addresses
- Field testing of potential future urban planning initiatives through the use of traffic cones
- A parking supply and demand study, including an analysis of the parking inventory and counts of peak parking occupancy provided by Texas A&M
- A comprehensive transit analysis
- A landscape, tree canopy, shade, and climate analysis
- Camera-based counts of commute volumes by mode, direction, and turning movements at major intersections, along major walking corridors, and conflict points

PHASE 1: DISCOVERY AND DIAGNOSIS

In this phase, Walker researched and evaluated the mobility options on campus in order to create a framework of the challenges and opportunities facing Texas A&M Transportation Services.

Stakeholder Input

With a project website and stakeholder sessions, Walker gathered input from a diverse range of users of the mobility system at Texas A&M University. The following lists key takeaways from these sessions. They are the reiterated stakeholder thoughts and opinions and do not necessarily represent the consultant team's factual findings.

- Bike lanes are frequently blocked by other vehicles, making cycling more dangerous, cumbersome, and frustrating.
- Flexibility is key—many users would like options to choose different modes of transit depending upon their circumstances for that particular day.
- Changes to infrastructure are difficult. Changes to user behaviors and habits might be more of a challenge. Many participants voiced concerns of an unwillingness to embrace changes.

- Marketing the recommendations and changes to be implemented is important. Campus users should be educated on the impacts to their daily commutes and the opportunities for changing those commutes.

Transit

Texas A&M University has one of the largest university transit systems in the nation. With almost 100 vehicles in its fleet, approximately 150,000 service hours annually, and pre-COVID annual ridership of more than 7 million, the transit system is also very productive with an estimated 52 passengers per vehicle hour. The system uses more than 240 part-time students as bus operators. While this large part-time staff adds complexity for hiring, training, and scheduling, the reduced number of full-time bus operators contributes to cost savings and a transit system which overall operates very efficiently.

Many strengths of the existing operation were noted by Walker Consultants on our site visits and also by Texas A&M Transportation Services staff during interviews, however Walker also noted aspects of the operation that should be assessed more closely. The noteworthy strengths and areas for improvement include:

- The current transit operation functions efficiently and effectively, based on observations and staff feedback, as well as comparison with peers.
- The Texas A&M mobile app developed in-house, providing real-time bus arrival info and other features
- Comprehensive service is provided to almost all desired locations both on- and off-campus
- Texas A&M Transportation Services provides on-site testing for Commercial Driver Licenses (CDL)
- Good teamwork and communication within Texas A&M Transportation Services, as noted by many staff
- Transit system growth will likely be needed for both on- and off-campus travel; this growth will require more buses and/or larger vehicles, as well as expanded maintenance and operating facilities.
- The fleet is being updated and renewed, including the addition of battery-electric buses.
- Upgrades to internal and customer-facing information systems should also be considered.
- Capital funding has been a challenge, and FTA formula funds are a potential revenue source to be considered.
- The Texas A&M Transportation Services staff has good teamwork and communication within the department, as noted by many staff

Mobility and Urban Design

The *Mobility & Urban Design* section of this report compares and contrasts several long-range campus plans and deliberates the current conditions of the built environment and how they relate to a users' mobility to, from, in, and around campus. Walker notes the core campus can be thought of as "15-minute city" for pedestrians and cyclists. In any walkable environment where the climate is that of College Station, the sun and heat make shade an omnipresent issue. The newest parts of campus have the least shade, due to the immature vegetation. Crash map analysis suggests the interior of the campus is generally safe, while the perimeter roads are less so. Upon review of the Campus Master Plan, Walker notes that the quads proposed (West Campus, Reed Arena, and Research Park) offer opportunities to enhance transit-oriented development. And, finally, University Drive near College Main is a prime location to (re)connect the campus to the city. Walker has identified several key takeaways from this review:

- The Mobility Master Plan is guided by the Campus Master Plan (CMP).
- The core campus can be thought of as "15-minute city" for pedestrians and cyclists.

- The sun and heat make shade an omni-present issue, particularly in the newer parts of campus.
- The quads proposed in the CMP (West Campus, Reed Arena, and Research Park) offer the opportunity to create transit-oriented development.
- University Drive near College Main is a prime location to (re)connect the campus to the city.
- Crash maps suggest the campus is generally safe, but the perimeter roads are not.

Transportation Demand Management

Texas A&M Transportation Services offers a range of facilities, infrastructure, policies, and programs that support and enable non-single-occupant vehicle commuting and campus travel. A comprehensive TDM program will be critical to the ongoing high quality of life on campus, and the success of the university in achieving its long-term land use, mobility, and sustainability goals. Despite its success, potential exists to improve the breadth of TDM offerings, and leverage TDM more deliberately to influence and promote sustained behavioral change. Walker identified the following as noteworthy opportunities for strengthening the Texas A&M TDM offerings:

- According to a recent user survey, overall drive-alone rates are nearly 68%, including 87% of staff.
- Nearly 63% of general staff and 45% of faculty/research staff indicated they drive alone when they need to travel around campus during the day.
- Texas A&M Transportation Services offers a comprehensive set of infrastructure, services, policies, and programs to support TDM. However, Texas A&M Transportation Services does not leverage pricing, flex commuting, or other incentive-based policies to support and encourage non-single occupant vehicle commuting.
- Survey results indicate a significant lack of familiarity among campus users with Texas A&M Transportation Services offerings, such as the bike lease program and Zipcar.
- An analysis of home addresses suggests a significant potential to encourage more students, faculty, and staff to walk, bike, and take transit to campus.
- To increase walking, bicycling, and transit mode share, attention should be paid to ensuring comfortable and connected walking and bicycling infrastructure that connects to bus stops and the center of campus.

Parking Management

While the most occupied parking facilities represent approximately half of the total capacity and account for nearly 70% of the total demand for parking, there are still thousands of available parking spaces—most of which are located on the periphery of campus. There are opportunities to spread this demand throughout campus more evenly and encourage users to want to park in the currently underutilized locations. The Texas A&M University Transportation Services website is thorough, expansive, and Transportation Services seeks to be forthcoming and transparent with information presented.

- Of 38,451 parking spaces, 84% (32,180) are dedicated to permit holders that include faculty, staff, and students. The remaining 16% (6,271 spaces) are for all other uses such as ADA, metered, loading, and service vehicles.
- At a typical busy period, approximately 70% of all permit parking spaces are occupied.
- The least-occupied parking facilities represent nearly 17% of the entire permit parking capacity but only account for approximately 4% of the parking occupancy.

- The most-occupied parking facilities represent just over 50% of the total capacity but account for nearly 70% of the total demand for parking.
- There are thousands of available parking spaces on the periphery of campus, and more specifically in the southwestern quadrant, that go underutilized during busy periods—there are opportunities to spread demand throughout campus more evenly.
- Overall, the Texas A&M University Transportation Services website is thorough, expansive, and Transportation Services seeks to be forthcoming and transparent with information presented.

Peer Review

Texas A&M's highest parking fees are lower than peer average highest fees for faculty, staff, and commuter students; while, at the same time, the lowest parking fees are higher than peer average lowest fees for all users. This compression of rates may provide some insight into the imbalances of parking demand between the most- and least-desirable parking areas. Texas A&M has many opportunities to bolster and promote new transportation demand management programs and strategies, and has taken steps to incentivize alternative modes as most peers currently do.

PHASE 2: SCENARIOS AND FUTURE PLANNING

What We Heard - Key Themes from Phase II Engagement

1. Remove parking from core campus and consider creative circulation options
2. Seek comfort for all, on all modes–delineation, urban design and shade, expanded accessibility, and more
3. Create better options for connectivity to surrounding communities
4. Don't lose sight of quick fixes like more stops and better headways on transit routes, signal timing, and more

Specific Problem Areas

Walker reviewed all forms of feedback received and discussed in this document—focus group minutes, mobility workshop feedback and comments, and Mentimeter results—and compiled a list of specific areas, corridors, or locations that were identified as problematic.

Key problem areas or corridors mentioned or identified multiple times, with their associated issues, include:

- Ross St. high pedestrian volumes, congestion, and bike/ped/vehicle/delivery/loading conflicts
- Bike lanes on Coke and Bizzell end abruptly at George Bush Dr.

- Inadequate bus stops, no bike lanes, and poor maintenance on Agronomy Rd.
- Streets and intersections around engineering complex are congested and dangerous (Asbury, Bizzell, Ireland, University Dr.)
- Area around Rudder Hall sees high volumes of congestion and bike/ped/vehicle/delivery/loading conflicts
- Area around Lot 100 needs more shade
- Wellborn corridor is especially congested with long delays, especially at intersection with George Bush

PHASE 3: PLAN DEVELOPMENT AND PATH FORWARD

This section is a culmination of the reams of data, analysis, observations, and scenario planning from the previous two sections. In Phase 1, Walker sought to understand the intricacies of the transportation, mobility, and parking ecosystem. In Phase 2, Walker furthered engagement, tested scenarios, and identified problem areas. Phase 3 has worked to alleviate these problem areas through modifications to the transit services provided, minimizing vehicular through traffic, shifting demand through a parking reallocation, recommending continuous and connected cycling routes, and creating shaded respite for pedestrians commuting across campus.

For the development of the plan, we considered the key themes that we heard during engagement in relation to accommodating alternative modes, connecting, and completing the bicycle network and quick fixes that would provide relief to conflict zones and improvements in accessibility. From a mobility and transportation perspective, the Walker team has categorized three strategic ways in which the campus can address continued infill, development, and population growth: urban design, transportation demand management, and parking. The University's preferred weighting of these strategies inform the priorities of the implementation plan.

Urban design and placemaking

Conceptually, the Urban Design and Placemaking approach was categorized in four areas of intervention: creating multifunctional plazas, solving design details, connecting routes and networks, and creating spaces for rest and study or microclimates.

The design concepts and specific recommendations provided in the plan are provided as design guidance only. They are based on a set of examples that were collected during field observations and the engagement phase. They do not intend to be a comprehensive list of changes. However, the hope is that design concepts and recommendations will be used to continue improvement of campus through a set of documented good practices.

Plazas

We use multifunctional plazas to solve pinch and conflict points that occur in areas that get high traffic volumes of pedestrians and bicycles. Three primary examples of these conflict areas are:

- The southern end of Military Walk, where it meets the walkway between MSC and Trigon
- The entrance to Lot 19 which breaks the diagonal route between Rudder and the Evans Library
- Ross Street, where the daily traffic of pedestrians, bicycles and other personal mobility devices is ten (10) times the volume of commercial vehicles and TAMU service vehicles, including buses.

The design changes that are proposed to solve these conflict points seek to create more space for both pedestrians and bicycles and better delineate their routes to reduce conflict points. In the case of Lot 19, this is accomplished by raising the street, eliminating the curb, and creating a free flow plaza where the few vehicles that use Lot 19 during the day are invited to share the space that is designed primarily for pedestrian and bicycle traffic. A similar approach is proposed for Spence Street south of Ross Street. While the proposal for Ross Street involves reducing the width for vehicle traffic to one lane and increasing the space for pedestrians through addition of tactical urbanism elements such as planters and bollards.

Details

A complementary approach is making design changes at specific points to solve isolated problems that will resolve conflicts or complete routes that will make it easier to walk and bike. A good example of this is the pedestrian crossing and bus stop at the Physical Education (PEAP) building on Penberthy Boulevard, across from Lot 100C, which needs to be demarcated as a place to cross the street, as access point to both PEAP and Lot 100C and the Aggie Spirit bus service, and to provide guidance and order to both pedestrians and drivers along Penberthy Boulevard.

Other locations that can be improved and completed with specific interventions are the pedestrian connection between Reed Arena and the Student Recreation Center, and a direct and contiguous pedestrian and bicycle connection among the White Creek Community Center and the White Creek Apartment complex on one side, and the Leach Teaching Gardens on the other. These isolated interventions provide destinations with more direct connections to the walking and bicycle networks and increase access to them for pedestrians and cyclists.

Routes

Another layer on the approach is to continue and connect routes, and more specifically bike routes. Although most major roads entering campus include a bike lane facility, the condition of these facilities is not the best in terms of both surface condition (pavement and paint) and safety conditions (lack of separation and protection from traffic). But in addition to the physical condition of bike lanes entering campus, there are gaps and missing links in the core of campus.

The main recommendation of this plan is to designate and complete the internal bike network, making sure there are connections/joints between bicycle facilities to travel around campus.

The proposed strategy is simple, create a dedicated bike network on the periphery of the historic campus core to provide fast routes to cross campus, and designate a few internal bike corridors inside the core that would work as slow routes in mixed traffic with pedestrians (i.e., Spence Street), and finally, connect the bike network around the core with West Campus and the major roads entering campus.

New slow bike routes are proposed between Lot 10 and Lot 19 as an alternative to Military Walk, between MSC and Trigon in front of Rudder Tower, and through the West Quad to connect Old Main Dr with the White Creek Greenway. Conversely, Gene Stallings Boulevard provides an important fast connection between the northeast and southwest sides of campus, to connect the engineering complex with the sports fields and Lot 100.

Gene Stallings Boulevard was frequently mentioned during the engagement phase as having conflicts between vehicles and pedestrians. At the same time, this street is an important connection between the two-way bike lane in Lamar Street and Pickard Pass. A comprehensive design of the street and its intersections is proposed to resolve conflicts and provide continuity to the bicycle network.

Micro-Climates

Small spaces for rest, study, and socializing provide a respite to the daily movements of campus community members. Texas A&M University has been creating outdoor spots with shade and landscaping that provide a break from the weather or a micro-climate. Several additional opportunities exist on campus to create more of these spaces, especially along pedestrian and bicycle routes to provide a pause and accentuate the placemaking characteristics of these internal routes. A specific example is provided for Spence Street, which is currently designed as a vehicular street, but it is mostly used by pedestrians and cyclists. A shared street environment and small plaza are proposed to create connections with the Langford Architecture building and build a pause on the route.

Transportation Demand Management

The growth strategy delineated in the campus master plan is to reclaim space from parking in the historic core for people and academic activities, and to provide any new parking capacity in the periphery of campus. Lots 30 and 40 are two locations close to the historic core that could be redeveloped to house a parking garage and replace parking losses. The projection, however, is that most parking capacity will be provided in the southwest of campus, around Reed Arena. Making this strategy viable will require improving conditions for all modes to connect with all areas of campus.

The main TDM measures that are proposed to support this strategy include:

- Embrace a “park-once” approach, whereby some parking is provided close to each campus district or functional area, but internal mobility is conducted on foot or riding a micro-mobility device such as a shared bike. Most urban design and placemaking recommendations in this document, are intended to improve the connectivity and effectiveness of walking and cycling networks, in order to support this “park-once” approach.
- Manage parking allocations to ensure all parking capacity is used efficiently and demand is more evenly spread across campus. Currently, there are facilities in the southwest and western parts of campus that have parking availability. Generally, these facilities are far from the core of campus and less convenient for users. A combination of pricing and effective multi-modal access will make use of these facilities viable for reallocating core campus parking demand. The strategies recommended are to connect these parts of campus with the campus core through frequent bus service, easy to identify and comfortable access points to transit, and direct, fast, and protected facilities for cycling and rolling across campus.
- Enhance cross-campus shuttle service to support access to all parking facilities and all parts of campus and reduce the need to drive for cross-campus trips. The recommendations included in this plan seek to consolidate route alignments across campus, increase frequency and reduce complexity, increase seating capacity to reduce overcrowding, and reduce wait and travel times for all users.
- Increase off-campus transit services aimed at improving access and reducing the need to drive to campus. There is a significant market opportunity south of campus, in the City of College Station, for the Aggie Spirit to increase its service and capture additional transit markets for commute trips to campus. This will require implementation of new routes, new service models and/or extension of existing services.
- Promote carpooling and vanpooling. Texas A&M does a great job of promoting ridesharing through carpooling and vanpooling. But it can still do more, especially for those living outside the Bryan and College Station urban areas. The recommendation is to explore new software tools and applications from third-party operators, that can scale up ride-matching efforts, introduce gamification, and provide effective tracking and reporting of participation.

- Identify and manage pickup and drop-off locations. There are many locations on campus that are providing access via pickup and drop-off operations among friends, family, and ride-hailing services (e.g., Uber and Lyft). A primary example is the drop-off at Rudder Tower. Another location, although an informal one, is the west side of Bizzell Street north of Polo Road. Activity here is driven by accessibility and proximity to major activity centers on campus. The recommendation is to recognize their function, formalize their operation, develop policies and standards, and implement physical design changes to reduce impacts on other modes and closely monitor operations.

- Adopt a smart mobility vision. Management of pickup and drop-off locations is one element of a smart mobility vision. The recommendation is to frame curb management within a larger vision and strategy for new mobility and micro-mobility. One that includes operation and management of bike-sharing and personal electric mobility devices such as skateboards and motor-scooters. The rise in use of these modes only highlights the need to provide adequate parking facilities for these devices and complete and continuous cycling and rolling networks throughout campus, that will enable their use and contribute to increasing mobility within campus by modes other than driving alone.

- Finally, TDM programs require of operation of supporting services such as guaranteed ride home, education, marketing and promotion of program and services, and also gamification through pricing incentives and rewards for achieving targets and behaviors. The recommendation is to start leveraging pricing incentives and strengthening marketing and promotion of the TDM program to increase use of transportation options and reduce drive alone mode share to campus.

Parking

Texas A&M University continues to develop and grow. This means an increasing density of building in the historic core, the removal of some centralized surface parking infrastructure, and an ongoing increase in campus population. Based on projections, initially, the campus has excess parking capacity and can reallocate demand from the historic core to currently underutilized parking lots in the western and southern parts of campus.

Texas A&M Transportation Services currently manages permit allocations on a facility-by-facility basis—it is a detailed approach that is recommended to continue moving forward. Walker recommends utilizing this management strategy to spread parking demand more evenly throughout campus, while also shifting demand away from central campus towards more remote facilities in the south and west.

As the campus grows and demand pivots toward the west and south, Walker is recommending that some parking will still need to be replaced on and adjacent to the historic core (in addition to mitigating some demand through transportation demand management (TDM) strategies). These recommendations act as a three-pronged approach to addressing parking: the reallocation of parking demand, mitigating/diminishing of parking demand, and addition of parking capacity.

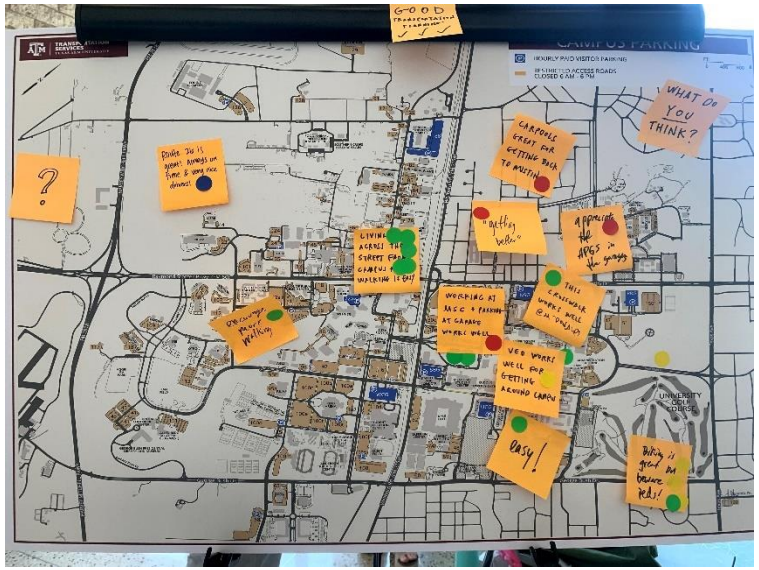
Phase 1: Discovery and Diagnosis

STAKEHOLDER INPUT

Key Takeaways

The following key takeaways are a list of stakeholder thoughts and opinions—they do not represent the consultant team's factual findings.

- *Bike lanes are frequently blocked by other vehicles, making cycling more dangerous, cumbersome, and frustrating.*
- *Flexibility is key—many users would like options to choose different modes of transit depending upon their circumstances for that particular day.*
- *Changes to infrastructure are difficult. Changes to user behaviors and habits might be more of a challenge. Many participants voiced concerns of an unwillingness to embrace changes.*
- *Marketing the recommendations and changes to be implemented is important. Campus users should be educated on the impacts to their daily commutes and the opportunities for changing those commutes.*



Aggies on the M.O.V.E.: Envisioning a New Mobility Future

Guided by the Campus Master Plan and the Sustainability Master Plan, the Transportation Mobility Master Plan will:

1. Chart the workplan for Texas A&M Transportation Services for a new mobility future, where pedestrians, cyclists, and transit users are prioritized, where parking is located at the periphery of campus, drivers park once and rely on other modes to circulate, and the core of campus is repurposed as additional space for living, learning, and engaging with the university community and environment.
    - Microtransit and other new, emerging modes of transportation will be evaluated and integrated into the long-term plan to increase options and mobility for all.
2. Provide a strategy implementation roadmap for the next 10 years to establish identified mobility goals.
3. Focus on the timing, cost, benchmarks, and key performance indicators for achieving success, with implementation steps meant to build on one another.
4. Identify foundational steps to be implemented for long-term success beyond the 10-year mark.

The plan will strive to create a connected mobility ecosystem, where all modes of transportation are integrated into a seamless experience and aligned with parking and access policies. The process of creating the Transportation Mobility Plan will be a critical tool in engaging university and community stakeholders and in adopting lasting change to the transportation and mobility landscape.

Aggies on the M-O-V-E

Mobility enhancements that inspire change
Opportunities that support health and wellness
Vehicle reduction & sustainable alternatives
Equitable access for everyone
Education
Empowering people
Enhancing community wellness
Environmental impact

Aggies on the M.O.V.E.: Public Engagement Portal

From April 18 to May 17, Texas A&M's online public engagement portal for the Transportation Mobility Master Plan received nearly 500 visits. Out of that figure, around 66 visitors engaged with the portal by providing feedback in the discussion forum, answering survey questions, or leaving comments on a map. The community feedback is summarized below.

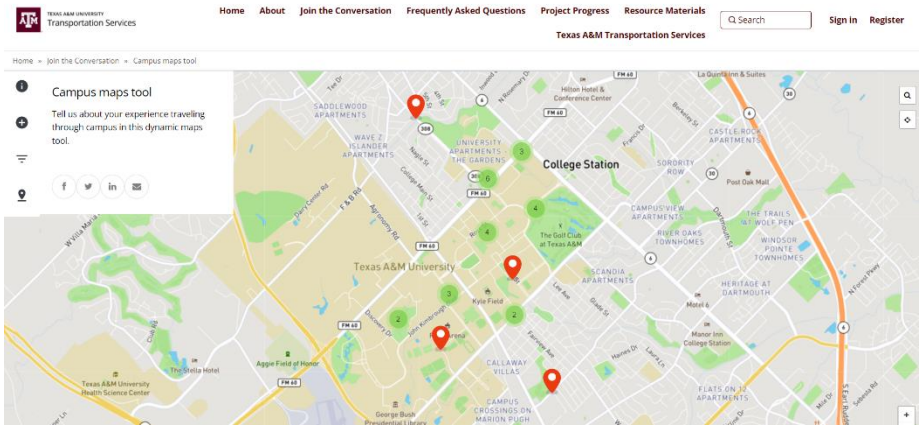
Discussion Forum

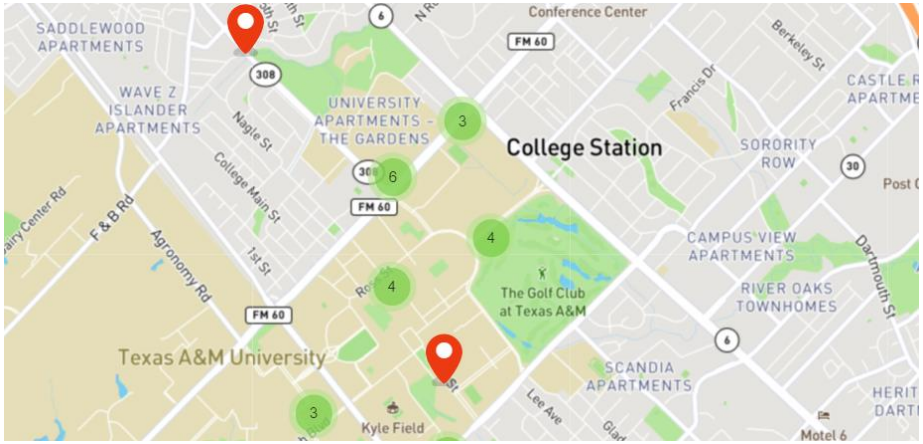
The following is a summary of comments and ideas provided in the open forum. The first group of items that are **bolded** are points for which there was wide agreement from multiple comments or were points commented upon/made multiple times.

- **Diagonal pedestrian "zebra" crossings are a good idea**
- **Green light phases on traffic signals are not long enough to enable safe crossing. University Drive was cited as an example; note that the signal timing has been updated in the last year to lengthen pedestrian crossing times.**
- **Bus system does not reach my neighborhood; should be more stops on edge of campus**
- **All-way walk signals at intersections with heavy pedestrian crossing activity should be added**
- **No rule or law against riding bicycles on sidewalks, which results in an unsafe environment for pedestrians**
- Do not eliminate long-term permits completely and move to daily use permits exclusively
- Parking is expensive
- **Bike lanes frequently blocked by other users/vehicles**
- **Custodial and food service employees may have more difficulty using the bus system given their hours. One respondent noted that custodial and food service employees may have challenges riding the bus as they are not issued SSC IDs, although SSC IDs are not required to ride on-campus buses.**
- **Should have more green space**
- **Infrastructure needs to be designed to encourage cycling and walking**
- Create tram from downtown to campus
- Implement tiered parking permit strategy
- Add incentives for using alternative transportation
- Should be better enforcement of traffic laws for cyclists
- More laws [for cyclists] are not the answer
- Charge people daily for parking
- Staff who remained on campus during pandemic should have been given break on parking fees
- Should have higher costs for daily and event parking
- All busses should have bike racks
- Don't eliminate all parking; some need close-in parking, such as mobility-challenged
- University Dr. is the biggest obstacle to ped and bike access
- Better design is preferable to more enforcement
- Have required bike safety session in order to register bike on campus
- Make CCG employee-only garage

Maps

Visitors were asked to, “tell us about your experiences travelling through campus.” One comment was left regarding the intersection of Ross and Ireland Street. The visitor identified this intersection as highly congested with pedestrians, cyclists, buses, and university vehicles.





Ideas

Two questions were posed to visitors. Their responses are summarized below by question.

How would you like to see parking and transportation improved on campus?

- Monorail that circles campus
- Bike infrastructure overhaul
  - Extra margins, bollards, signage
  - Bikeways and multi-use paths
  - Underpasses at north side of campus and at Wellborn/G.B. intersection
  - Funding should come from 20% increase in visitor parking rates, 5 – 10% increase in parking permit costs
- Expanded bus options, park-n-ride for staff/faculty
- Raise parking fees instead of tuition
- Sloping curbs instead of vertical curbs
- Modify and connect existing bike infrastructure
- Bike boxes at intersections
- Expand EV charging infrastructure
- Incentivize use of low-emission transportation
- Shuttle bus to Houston or Austin

What does a convenient transportation network mean to you?

- Fast and reliable transportation for all the campus community
- A light rail line through the campus (Wellborn, Texas, University, and George Bush) that would connect to the possible future high-speed rail along the IH-30 Freeway.

Mural

In Phase I of foundational campus community engagement, participants from eight different stakeholder groups or entities were asked to provide their ideas and comments relating to four different areas of focus relating to the upcoming Transportation Master Plan.

For each area of focus, the following questions were asked to participants:

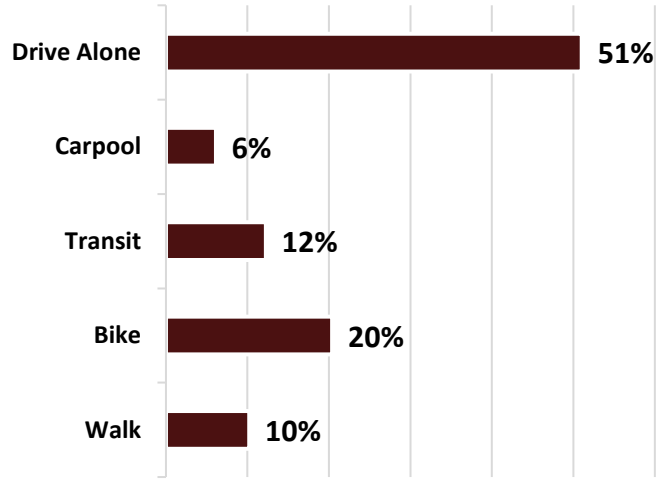
1. "To me, success for the Transportation Mobility Master Plan looks like…"
2. "A fear I have about this project is…"
3. "It might surprise you, but success to me for the Transportation Mobility Master Plan does not look like…"
4. "I think we can harness these fears by…"

The feedback was gathered and recorded in real time using the Mural software platform, which enabled the participants to contribute their ideas and comments on virtual "sticky notes" and apply them to a virtual board. During the period, participants were able to converse and dialogue about the project and ask questions or provide feedback for everyone else's comments as they were written.

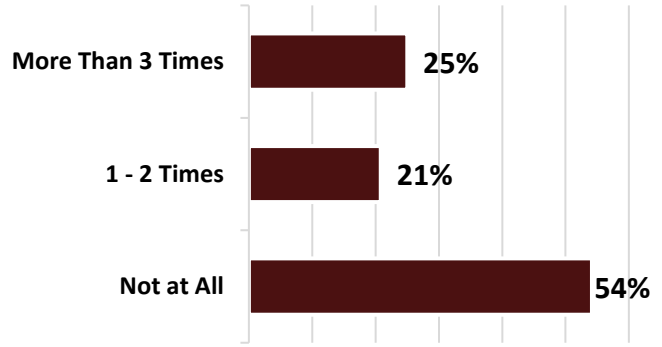
After analysis and review of all the comments left on the boards, some key themes and patterns began to emerge for each of the four questions/areas of focus. They are summarized below and represent input from a total of eight sessions/Mural exercises. For each area of focus, the top five key themes and patterns are described in detail, and the remaining comments are summarized in a list. Note that for purposes of summarization, Walker attempted to group and paraphrase like comments together, and the language used in the summaries below does not constitute a verbatim transcription of language used in comments.

Figure 1: Quick Poll Question

What mode of Transportation did you use to get to campus today?



How many times a week do you use a bike to get around campus?



"To me, success for the Transportation Mobility Master Plan looks like…"

Accessibility/mobility options and incentives. 19 comments were provided that touched on the need for having plenty of different options of travel, as well as the need to provide reasonable and effective incentives to encourage use of alternative options. Having a wide variety of options would enforce and promote greater accessibility across the campus, particularly between the East and West campuses. A few participants commented on the need to have a model in which people park just once, as opposed to moving their vehicles around the campus from lot to lot to avoid having to walk or use other transportation means.

Participants said that flexibility was also important, and that the University should try and educate students, faculty, and staff on their options and the benefits of alternate means of transportation. Finally, at least one participant commented on the need to make sure that options are tailored, and that different options and incentive strategies may be appropriate for different geographical areas.

Priority for bicycles and pedestrians. 11 comments were provided related to the need for prioritizing bicycles and pedestrians over vehicles. Participants said that bike and pedestrian mobility should be integrated and considered in conjunction with micromobility such as scooters and bikeshare, as well as with "on-demand personal transportation." A few participants suggested the creation of pedestrian-only zones.

Safety improvements. 11 comments were left touching on the fact that safety improvements were integral for plan success. In particular, better separation of bicycles from pedestrians and vehicles was suggested. Also, one participant said that skateboarders should be considered as well in relation to the overall safety picture.

Good planning process. Seven comments were left that pertained to the importance of a good and thorough planning process in order to achieve success. Various suggestions included that the plan should: be holistic in approach; address the roots of problems; correct mistakes made in the past and in previous plans; and explore all alternatives. Also, planners should be open to compromise, and they should be doing what they can to make sure that everyone and all voices are heard.

Equity and sustainability. Six comments touched upon the idea that success must take into account and promote social equity, particularly with regard to age, income, and physical ability, as well as be concerned with sustainability concerns. All alternatives and solutions should be sustainable, from a cultural, financial, and environmental perspective.

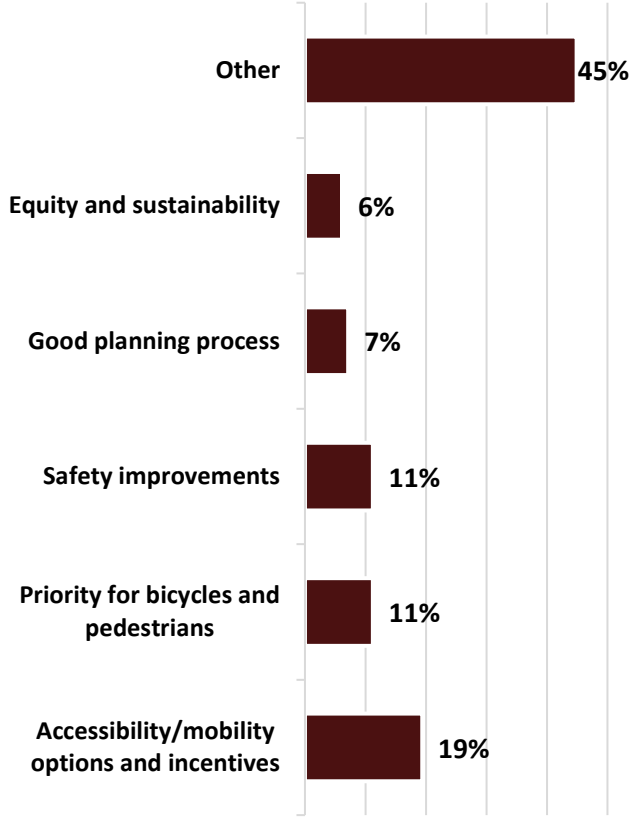
Some other topics and ideas about what success looks like that were echoed or seconded by at least one other participant included:

- Planning for the future and considering the needs of the future, such as electric vehicles and autonomous vehicles
- Making sure that the plan is consistent with and interacts well with other plans
- The need to change the prevailing culture and ensuring that people are not shamed for their mode choice
- Promoting connectivity between the campus and the community
- Striking a balance between mobility, accessibility, and connectivity and reducing travel times
- Addressing ADA and mobility issues and making sure the infrastructure supports those with Mobility challenges
- Ensuring the plan is realistic, implementable, and easily broken down into projects/chunks, as well as ensuring the plan is simple, effective, and works well with the climate, context, and size of the campus
- Adjusting school start times and staggering other schedules
- Providing more green space and trees
- Promoting comfort

The following are other unique ideas or suggestions that were provided:

- The need to think outside the box and think creatively to provide tailored options
- Making sure there is enough parking where needed
- Better signage and wayfinding
- Constructing a people mover
- Remote parking (i.e., park and ride shuttle)
- Air/heat-controlled overpasses

Figure 2: Quick Poll Question



"A fear I have about this project is…"

Resistance to change. By far, the most commented-upon fear (22 comments) related to resistance to change that may happen as a result of this project. A few participants commented on the fact that the prevailing culture at the university, especially amongst staff and faculty, is such that there might be vocal pushback to major changes that are proposed, such as to parking and related fees. Some worried that this resistance would lead to strategies being ignored or not implemented. Others worried that there would not be a great deal of support in the community in general. One said that the prevailing culture prevents innovative solutions from being implemented. Without change and with much resistance, some worried that congestion would continue to worsen despite having a plan.

Funding concerns. There were ten comments relating to a concern that there would be a lack of funding for desired projects or programs. One commented that TxDOT would not be providing funding and was not interested in providing funding for alternative modes or solutions. Other concerns expressed were that strategies would be too costly and that the funding burden would be unduly passed on to cities and/or end users (e.g., parking permit holders). A lack of adequate funding could lead to an overall end product not looking a lot like what the original vision for the project was.

Increased fees and rates. Seven comments related to being concerned about increased fees and increased parking prices. One participant expressed that students especially not approve of being asked to shoulder most of the cost burden of strategies and solutions chosen.

De-prioritization of the car. Six comments touched on the fear that the eventual plan and set of strategies would completely deprioritize, or ignore, the car and single-occupant vehicles, despite the fact that some need them and that this is the best option for some. One feared that restricting vehicle access would make overall access more of a challenge for some faculty and staff. A few worried that some or all parking lots would be closed, and that mass transit/alternative transit would be seen as the only solution.

Lack of clear and defined strategies. Six comments related to the fear that the eventual plan would be too high-level to result in projects actually getting done. Some expressed concerns about projects being too undefined to be successfully constructed or implemented, that there would be a lack of detail or direction, or that the plan would fail to take the needs of the community into consideration.

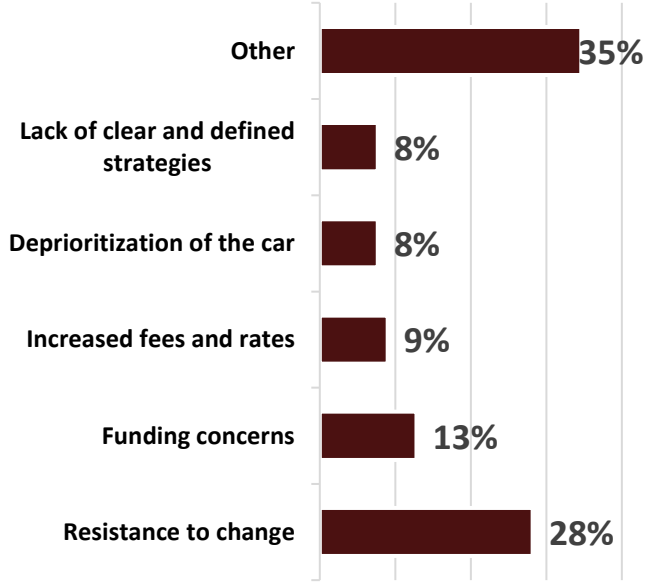
Some other fears that were echoed or seconded by at least one other participant included:

- Safety concerns such as pedestrian/bike conflicts
- Lack of viable options, the plan being a failure, and there not being enough education for and communication to students and others about alternative options
- Geographical scope of plan too limited and does not take into account the broader context of transportation options and availability outside of campus in the surrounding communities
- Adopting strategies that are popular now but may not be in the future, letting the opinions of a few very vocal persons have too much influence, and having too much change
- Moving students farther away from campus and not prioritizing students and faculty
- Weather and climate
- Not addressing mobility/ADA issues and concerns

The following are other unique ideas or suggestions that were provided:

- Bus overload
- Treating microtransit and transit separately
- Golf cart use greatly expanding
- Too much flexibility

Figure 3: Quick Poll Question



"It might surprise you, but success to me for the Transportation Mobility Master Plan does not look like…"

One-size-fits-all solution. 16 comments described how success does not look like a one-size-fits-all solution with regards to mode and mode choice. Many participants were concerned that the Plan would focus solely or mostly on just a single alternative transportation mode such as bicycles or transit/buses.

Auto-centrism. There were eight comments relating to auto-centrism not being their idea of what success looks like. While the Plan should not only focus on alternative modes, it should also not focus solely on autos. The Plan should be about more than just building and improving road infrastructure and adding parking, especially in the interior of the campus. At least a few comments also extended this to suggesting that success does not look like providing cheap parking.

Unrealistic expectations and forcing change. Eight comments expressed that the plan and expectations within the plan should not be unrealistic. On a related note, many felt that the plan should not try and force too much change on people, such as making people use modes other than the car or shaming people who do.

Ignoring cars completely. Five comments were left specifically pertaining to the idea that completely ignoring cars would not lead to success. This includes taking away too much parking and prioritizing all other modes over the car.

Maintaining the status quo. Three comments were left that said that the status quo was not succeeding, and that the plan and the university should not be afraid to try out new things.

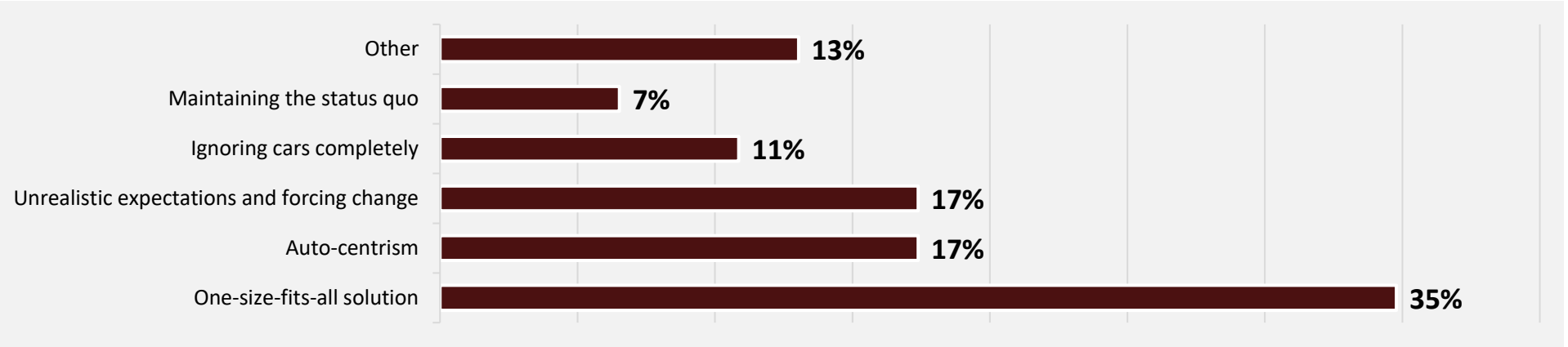
Some other ideas about what success does not look like that were echoed or seconded by at least one other participant included:

- Trying to make everyone happy and trying to fix everything
- Making things overly complicated, or implementing change for change's sake

The following is a unique idea or suggestion that was provided:

- Government-provided transportation

Figure 4: Quick Poll Question



"I think we can harness these fears by…"

Education and communication. 22 comments said that educating stakeholders and the community about goals and the transportation alternatives that exist was the most important way to harness fears. This includes improved efforts and frequency at communication from the university to students, staff, faculty, and other user groups. Education should include, but not be limited to, making more people aware of the bus and shuttle schedules, telling people about how the Plan will accomplish goals related to climate change, and outlining the personal cost savings that students and staff can realize by using alternative modes of transportation, especially when factoring in the costs that the university helps bear.

Having enough options and choice. Seven comments described how a variety of options and choices were necessary to harness fears. Specifically, choices should be affordable, innovative, and should meet the needs of everyone. There should be incentives for transit and other non-SOV usage, and there should be simplicity and ease of access.

Good public engagement. Seven comments were also left that said that fears could be harnessed by making sure that everyone is heard, and that the public engagement process is robust.

Realistic goals and expectations. Four commenters said that realistic goals and expectations would help calm fears.

Thorough planning process. Finally, four comments noted the need to ensure that the planning process is holistic, that a comprehensive approach was taken, that the plan and planners are flexible and adaptable, and that strategies and recommendations are data driven.

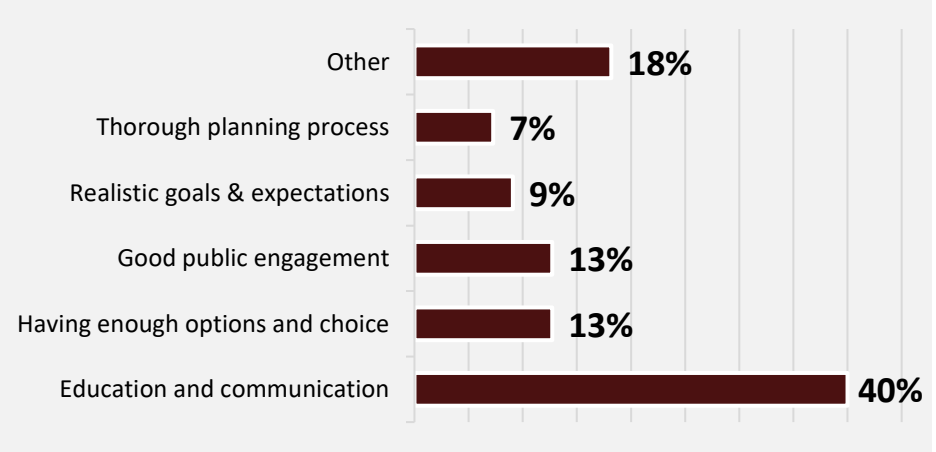
Some other ideas about how fears can be harnessed that were echoed or seconded by at least one other participant included:

- Making costs reasonable, especially for some lower-paid employees, as well as being transparent and adaptable with regards to cost
- Making sure that there is enough funding to implement solutions and having creative funding sources
- Making the best use of what we already have and have done, and being proud of how far we have come

The following are other unique ideas or suggestions that were provided:

- No NIMBYs (i.e., "not in my backyard"); embrace density
- Not making any changes
- Buy-in from senior administration

Figure 5: Quick Poll Question



Mural Boards

Figure 6: Chamber Transportation Committee Mural

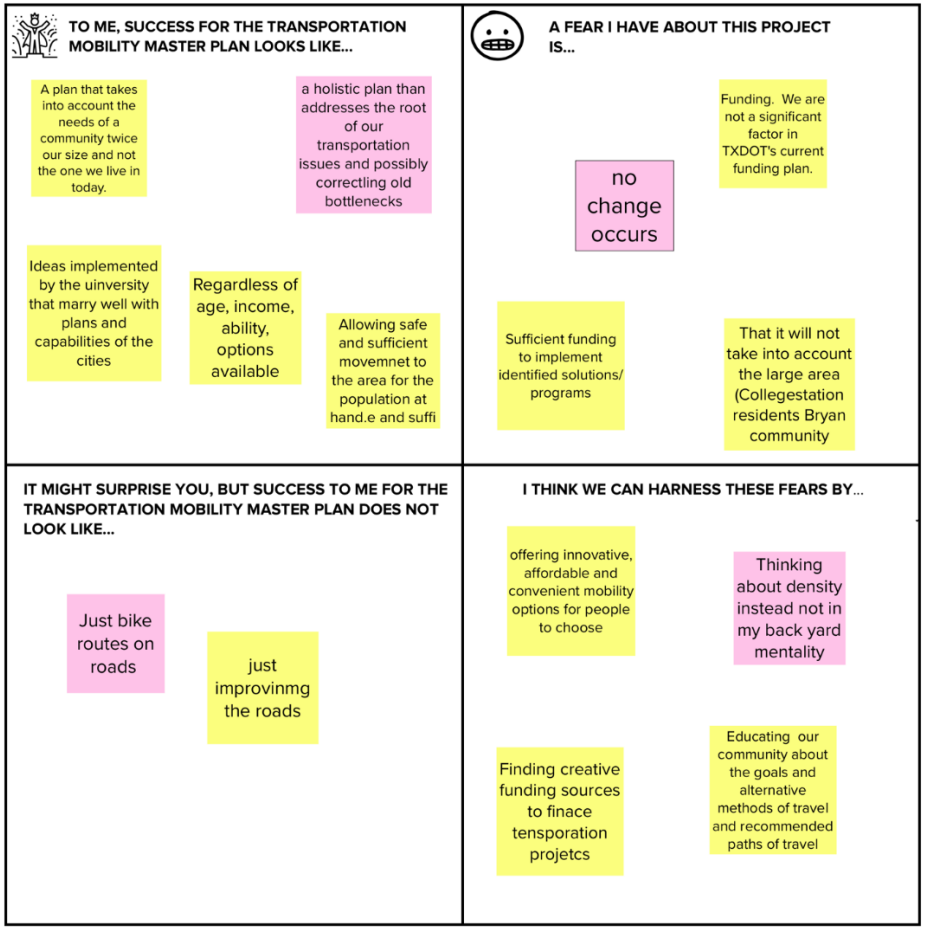


Figure 7: Regional Congestion Group Mural

Figure 8: Student Government Mural

Figure 9: Texas A&M – ITE and WTS Mural

Figure 10: Professional Support Staff Mural

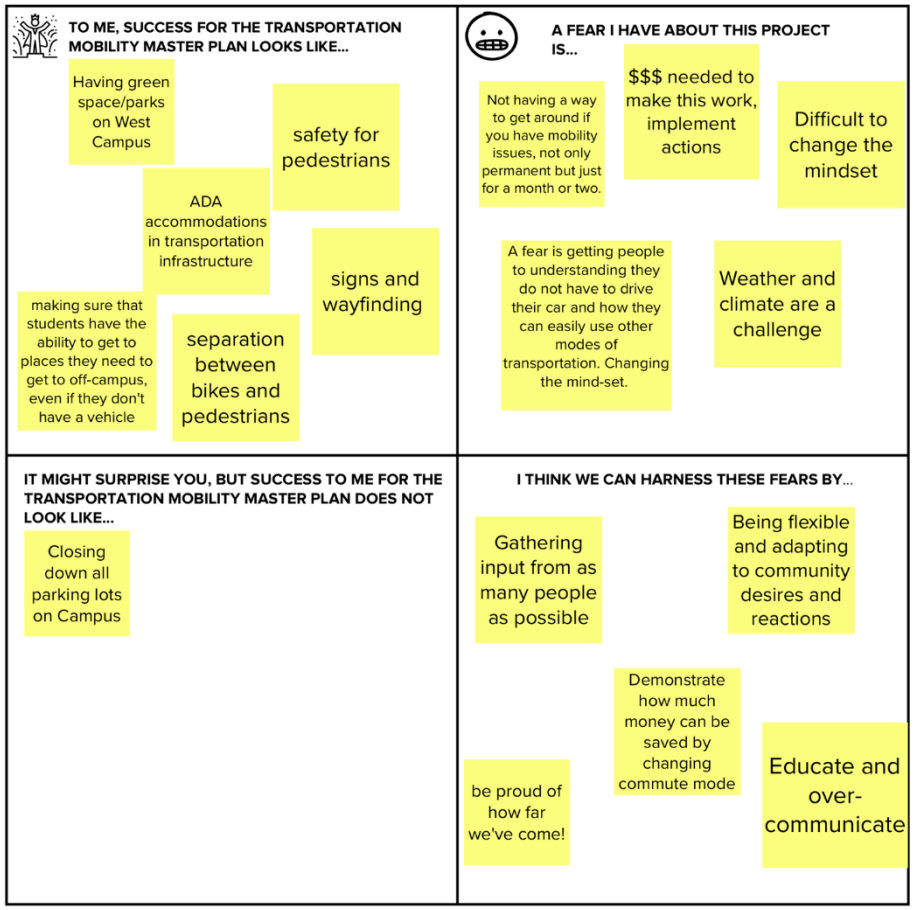


Figure 11: Faculty Executive Committee Mural

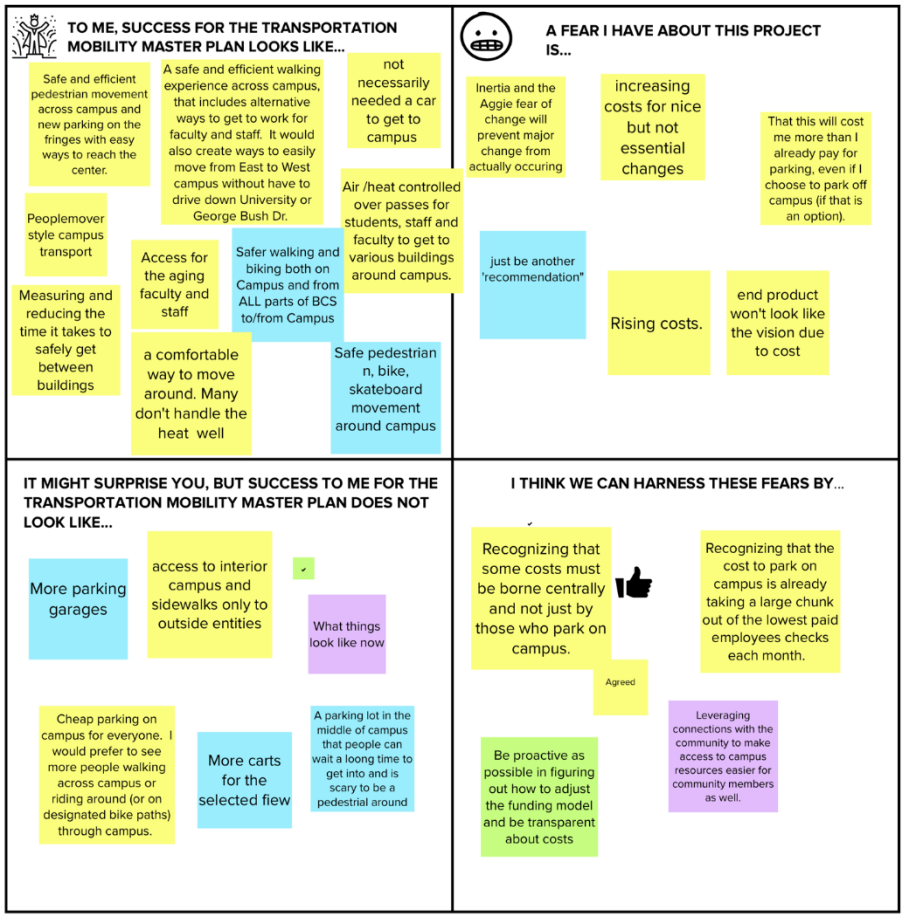


Figure 12: Transportation Services Leadership Team Mural

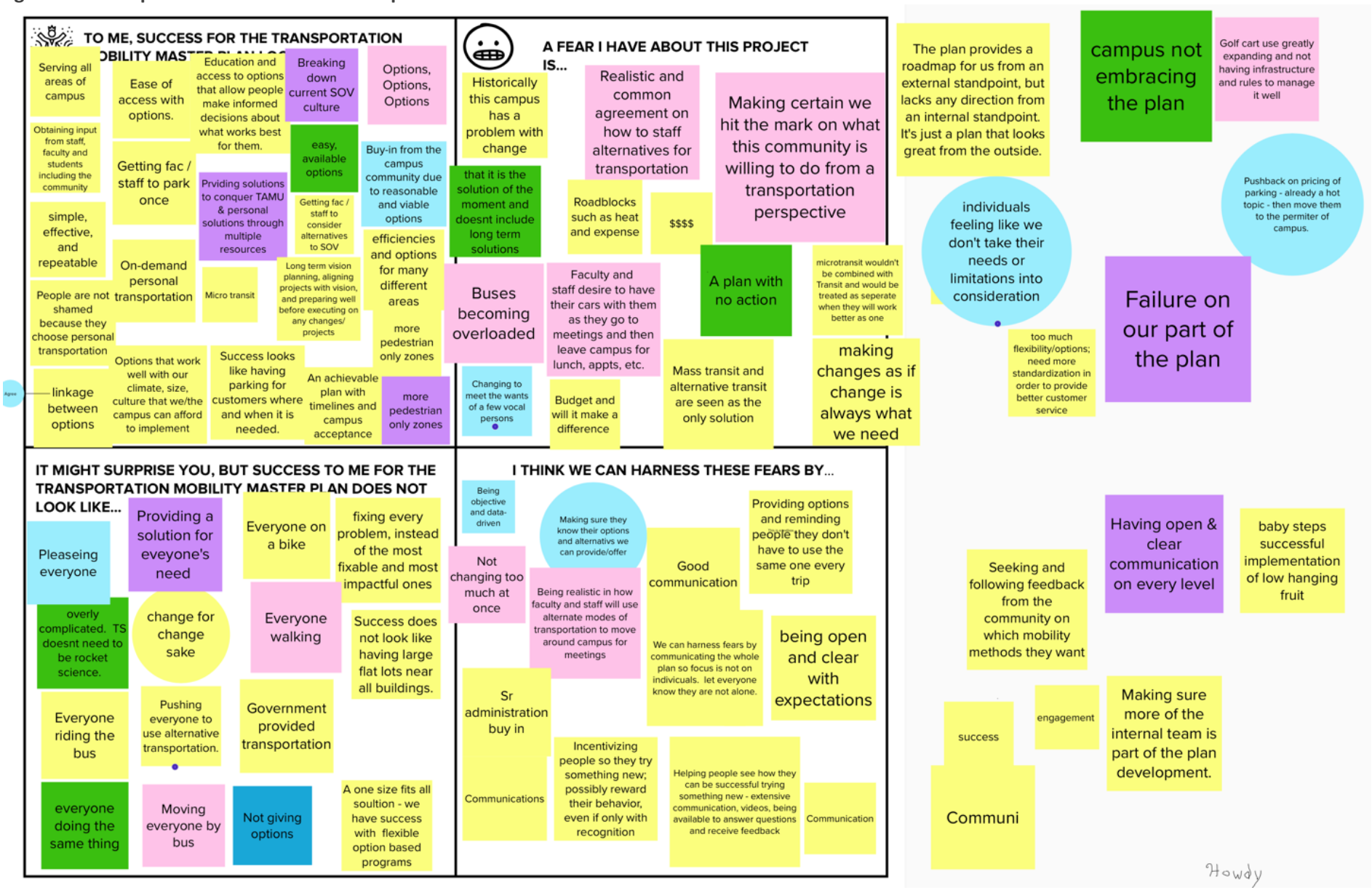
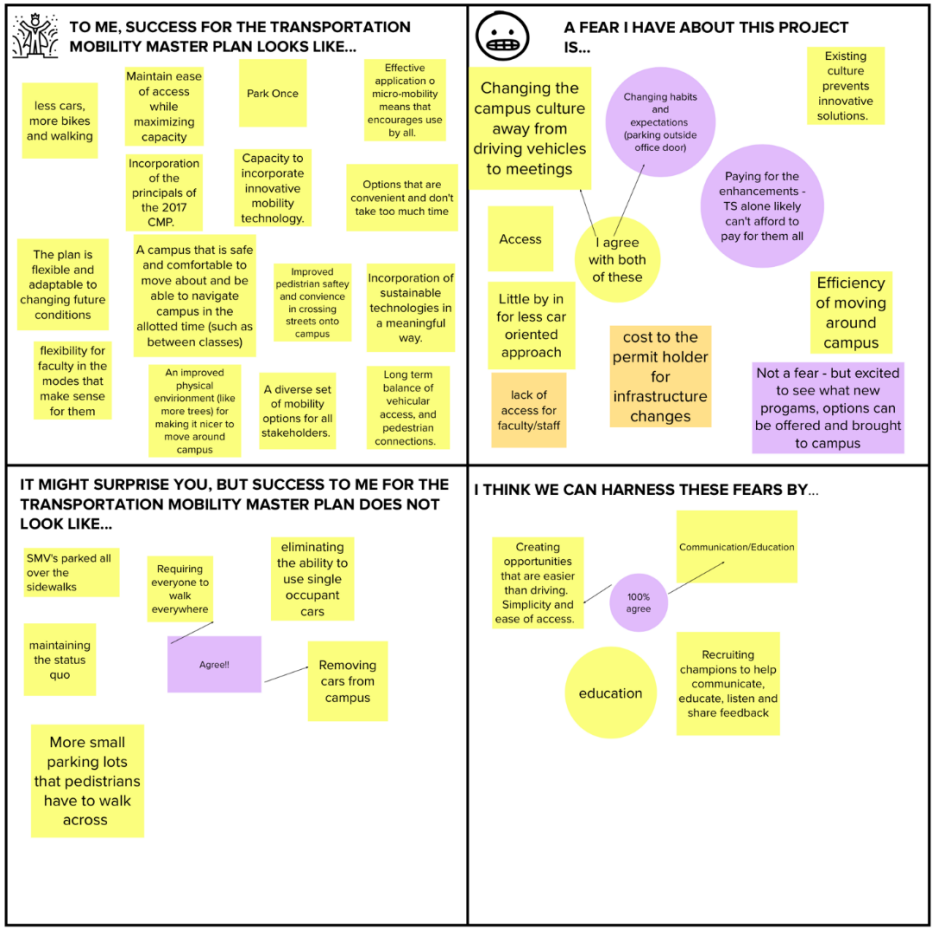


Figure 13: Transportation Services Advisory Committee Mural



CONCLUSIONS

With a project website and stakeholder sessions, Walker gathered input from a diverse range of users of the mobility system at Texas A&M. The most frequently heard feedback includes the following:

- bike lanes are frequently blocked by other vehicles,
- concerns of an unwillingness to embrace changes,
- flexibility and offering options are key, and it is important to not "shame" people who drive and park daily.

Stakeholders are revisited between Phases 2 and 3 to vet potential scenarios as these are developed into recommendation.

TRANSIT

Key Takeaways

- *The current transit operation functions efficiently and effectively, based on observations and staff feedback, as well as comparison with peers.*
- *Transit system growth will likely be needed for both on- and off-campus travel; this growth will require more buses and/or larger vehicles, as well as expanded maintenance and operating facilities.*
- *The fleet is being updated and renewed, including the addition of battery-electric buses.*
- *Upgrades to internal and customer-facing information systems should also be considered.*
- *Capital funding has been a challenge, and FTA formula funds are a potential revenue source to be considered.*
- *The Texas A&M Transportation Services staff has good teamwork and communication within the department, as noted by many staff.*

SECTION SUMMARY

Texas A&M University (Texas A&M) has one of the largest university transit systems in the nation. With almost 100 vehicles in its fleet, approximately 150,000 service hours annually, and pre-COVID annual ridership of more than 7 million, the transit system is also very productive with an estimated 52 passengers per vehicle hour. The system uses more than 240 part-time students as bus operators. While this large part-time staff adds complexity for hiring, training, and scheduling, the reduced number of full-time bus operators contributes to cost savings and a transit system which overall operates very efficiently.

Many strengths of the existing operation were noted by Walker Consultants (Walker) on our site visits and also by Texas A&M Transportation Services (Texas A&M Transportation Services) staff during interviews. These include:

- The Texas A&M mobile app developed in-house, providing real-time bus arrival info and other features
- Comprehensive service to almost all desired locations both on- and off-campus
- On-site testing for Commercial Driver Licenses (CDL)
- Good teamwork and communication within Texas A&M Transportation Services, as noted by many staff
- New bus-wash facility

The staff also provided numerous critiques of the current operation as well as suggestions for improved and expanded service.

While the current system operates well, future growth on and near campus may create the need for more service. In addition, the Texas A&M Transformational Mobility Plan envisions a future campus with significant amounts of parking relocated from the core to the perimeter. These changes will also require more shuttle services among other improvements in order to facilitate travel on campus. This transit system growth in turn will require some strategic decisions so that the Texas A&M Transportation Services transit operation can keep up with projected demand.

Some additional findings regarding the current Texas A&M transit system are shown below. Recommendations have been developed in consultation with the Texas A&M community throughout the study.

Funding

The operating funding from student fees appears to be stable and is likely to continue. Capital funding has been a greater challenge. In 2019, Texas A&M received a BUILD grant from the FTA, which was critical in providing the badly needed bus replacements which have recently begun to arrive. Diversifying the funding sources for capital, including greater use of federal and state funding, should be explored in depth. Some peer university transit systems receive FTA formula funding, although many choose not to for various reasons.

Information Systems

Information systems for passengers are constantly evolving, with new phone apps being created regularly. The in-house Texas A&M app works well, but opportunities to provide more tools geared to campus visitors should be investigated. In particular, Texas A&M already generates data using the General Transit Feed Specification (GTFS) but does not yet make this information public. Apps such as Google Maps can consume this data but will only publish it if the Texas A&M buses are available for anyone to walk up and board without advance payment or notification.

The internal radio system used by Texas A&M transit is currently in an "open" or "all-talk" mode where all users can speak with and hear all other users. As the system gets larger, this mode may create excessive radio chatter, which can be eliminated by switching to a closed mode with only dispatchers having communication access to all users at once.

Fleet

The fleet upgrades occurring in 2020-21 will mean that all Texas A&M buses used for fixed routes are 40 feet in length, the standard full-size transit bus. However, many university and public transit systems with high ridership use at least some 60-foot articulated buses in order to provide more capacity with little impact on operating cost. These longer buses would require retrofitting or expansion of the maintenance bays.

Battery-electric buses (BEB) will be piloted by Texas A&M during 2021. While these BEBs in other applications around the US have so far failed to perform as advertised regarding range, battery life, and charging time, there is continual performance improvement each year. It is likely that BEBs will become the most common transit vehicle purchase within 10 years, either by choice or by government mandate.

Facilities

The current maintenance and storage facilities are sufficient for the existing operation but could not support any significant growth in service. Maintenance bays would also need to be redesigned for 60-foot buses if the larger vehicles become part of the fleet. Meanwhile, the transit office area is too small even for the current operation and plans for expansion should commence.

Continued progress on adding bus shelters will be welcomed by passengers, especially because of the warm Texas climate. There may be opportunities to install off-campus shelters, in collaboration with Brazos Transit and the cities of Bryan and College Station.

Service Planning

Technology advances have enabled an industry trend of replacing lower-ridership fixed route service with on-demand service, also called microtransit. Some Texas A&M routes may be good candidates for converting to on-demand service, during some or all hours of the day. There are also potential locations for additional off-campus service. Service Planning is a topic in the Recommendations section of this report.

TRANSIT OVERVIEW

Texas A&M University (Texas A&M) has one of the largest university transit systems in the nation. With almost 100 vehicles in its fleet, approximately 150,000 service hours annually, and pre-COVID annual ridership of more than 7 million, the transit system is also very productive with an estimated 52 passengers per vehicle hour. The system uses more than 240 part-time students as bus operators. While this large part-time staff adds complexity for hiring, training, and scheduling, the reduced number of full-time bus operators contributes to cost savings and a transit system which overall operates very efficiently.

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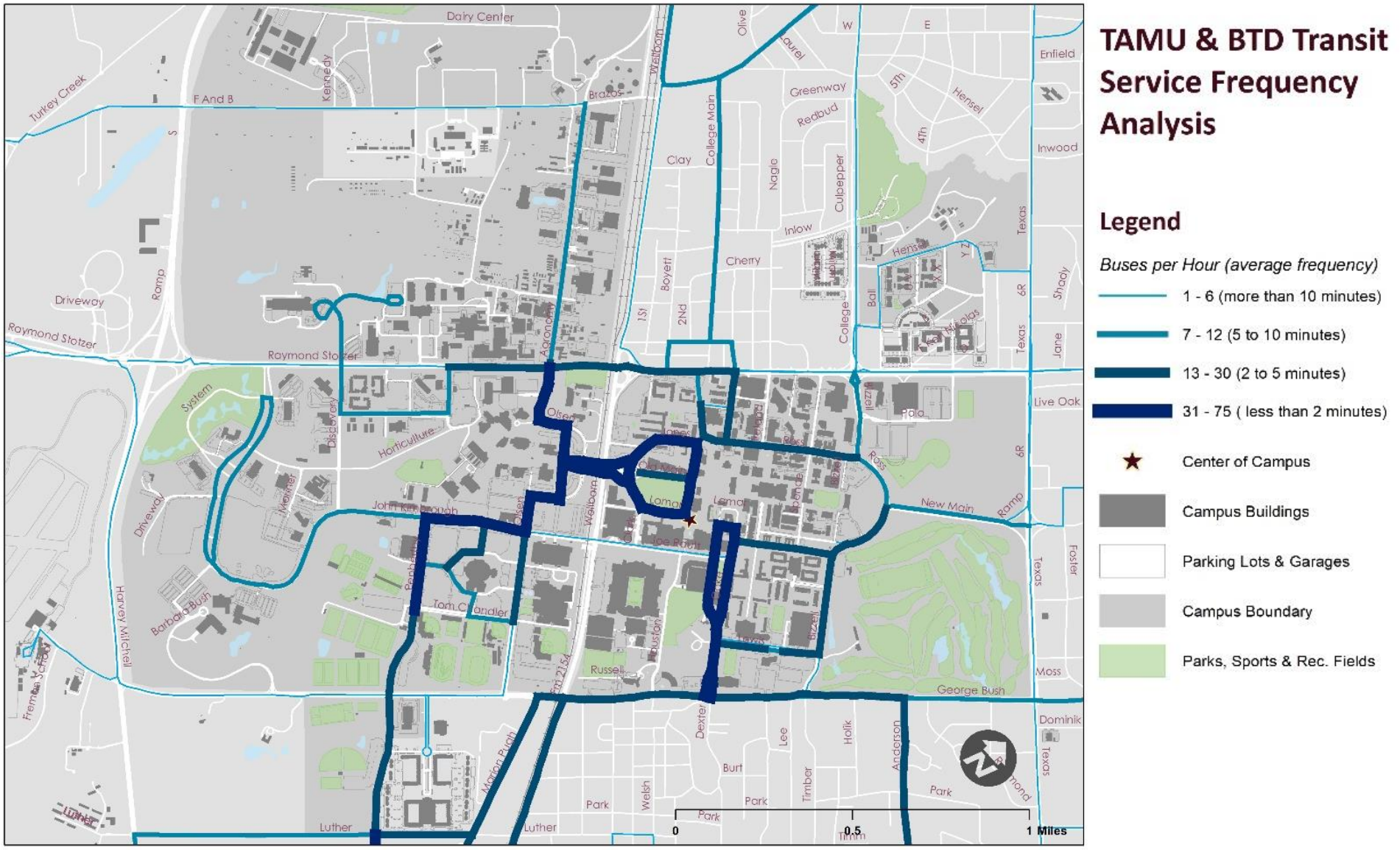
- Comprehensive service to almost all desired locations both on- and off-campus
- On-site testing for Commercial Driver Licenses (CDL)
- Good teamwork and communication within Texas A&M Transportation Services, as noted by many staff
- New bus-wash facility

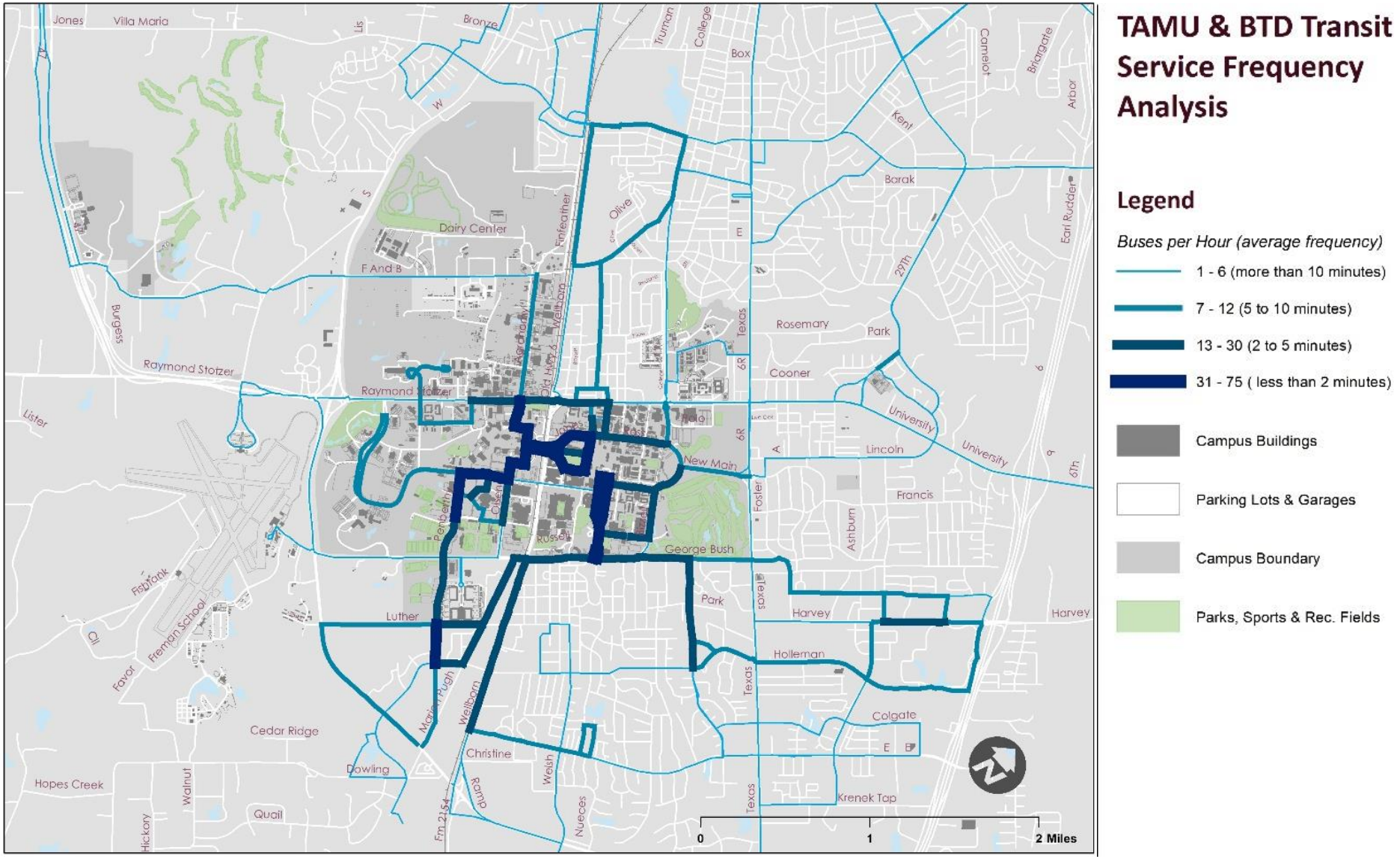
A map of existing Texas A&M and Brazos Transit District (BTD) service showing relative frequency on or near campus is shown below. All service is included for road segments which are served by multiple routes.

Figure 14: Existing Texas A&M and BTD Transit Service Near Campus by Frequency



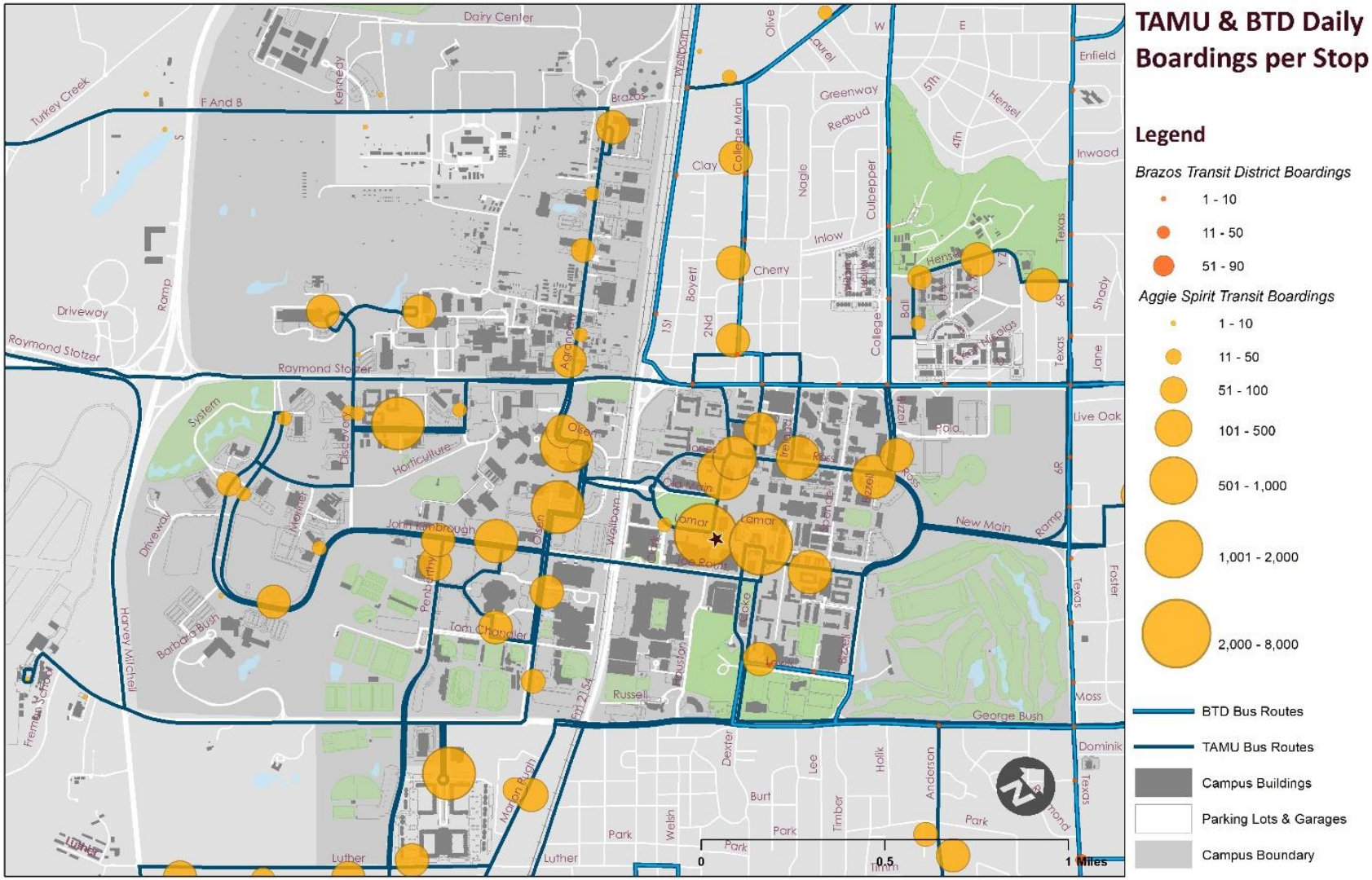
Both Texas A&M and BTD also serve off-campus locations. Shown below is the relative frequency of transit service for this larger area:

Figure 15: Texas A&M and BTD Service by Frequency Including Off-Campus



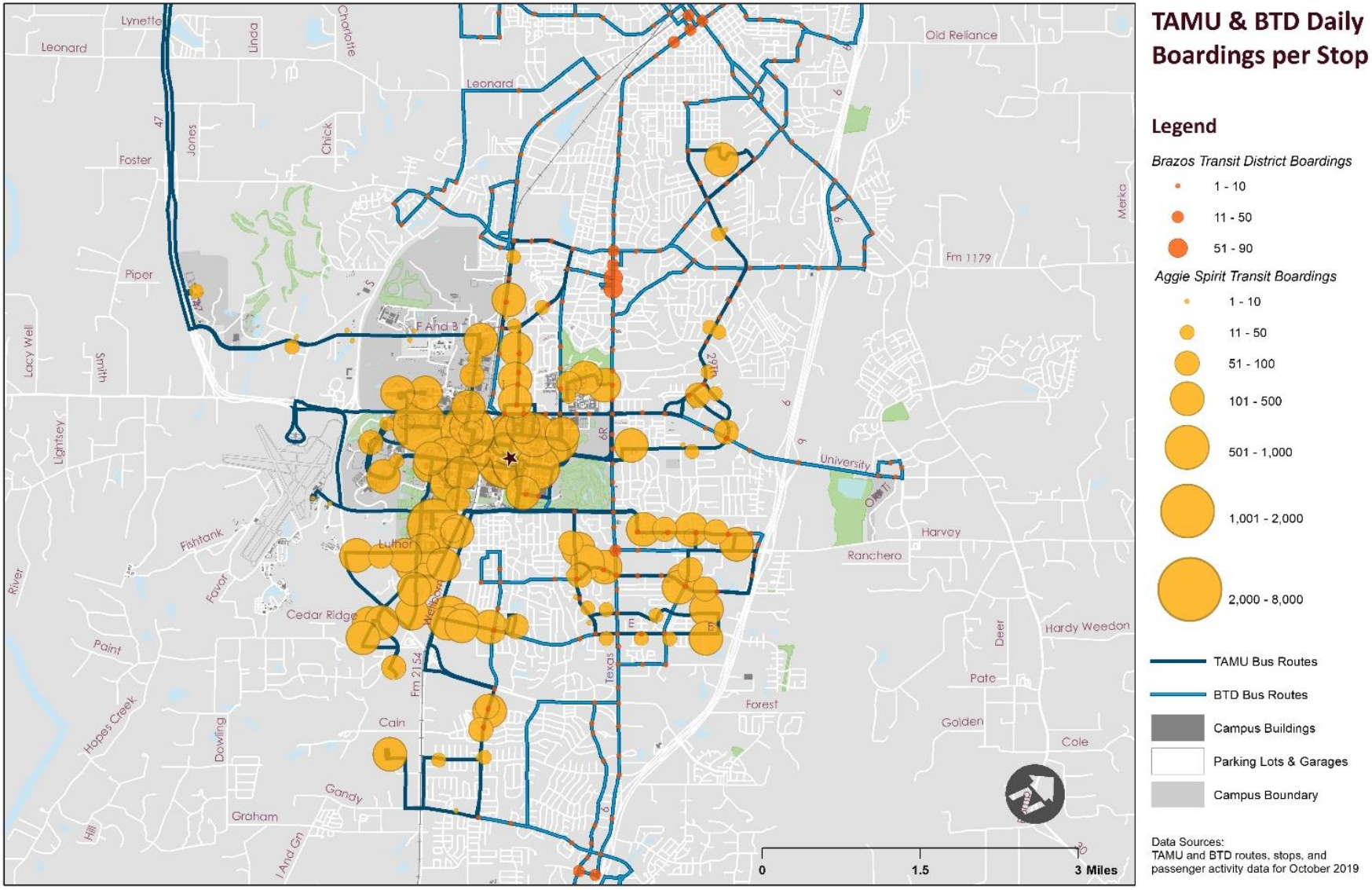
Passenger boardings by stop for the area near campus is shown in the figure below. Once again, boardings from all service are combined for stops which are served by multiple routes.

Figure 16: On-Campus Boarding by Stop



The following map illustrates the boarding by stop for the larger area including off-campus routes.

Figure 17: Boarding by Stop Including Off-Campus



While the current system operates well, future growth on and near campus may create the need for more service. In addition, the Texas A&M Transformational Mobility Plan envisions a future campus with significant amounts of parking relocated from the core to the perimeter. These changes will also require more shuttle services among other improvements in order to facilitate travel on campus. This transit system growth in turn will require some strategic decisions so that the Texas A&M Transportation Services transit operation can keep up with projected demand. The high-floor buses pictured below will soon be replaced with low-floor vehicles providing improved accessibility.

ROUTE PROFILES

This section details information about specific Texas A&M bus routes, including the quantity of service, each route's productivity, and key stops along each route. Statistics were compiled from TripSpark data for the week of October 7-11, 2019, which appears to have been a typical pre-COVID, in-semester week for the Texas A&M transit system. Routes are divided into on-campus and off-campus for comparison. Some notes about specific fields in the chart below:

- Max Vehicles – this is the number of buses needed to serve the route when the highest frequency of service is offered, typically during the morning hours
- Weekday Round Trips – the number of round trips offered throughout a typical weekday; some routes have a greater span of service than others
- Max Frequency – expressed in minutes between scheduled buses on each route, this is the highest frequency (lowest number of minutes between buses) offered during a typical weekday, often during the morning hours; frequency may be reduced at other times. (The lower the number, the higher the frequency)
- Daily Boardings – this is an average of five days, Monday through Friday, from October 7-11, 2019
- Daily Revenue Hours – these figures represent the total amount of time that all buses on the route are in-service, including time spent waiting to start their next trip; does not include time spent traveling to and from the bus yard
- Pax/Rev Hr – (passengers per revenue hour) the number of boardings divided by the revenue hours; this is a commonly-used measure of productivity
- Pax/Round Trip – (passengers per round trip) the number of boardings divided by the number of weekday round trips; indicates the average number of passengers carried on each round trip, although not all passengers are on board at the same time
- Key Destinations – stops on each route with notably higher boardings (passengers getting on the bus) or alightings (passengers getting off the bus); this is not a complete list of important destinations on each route

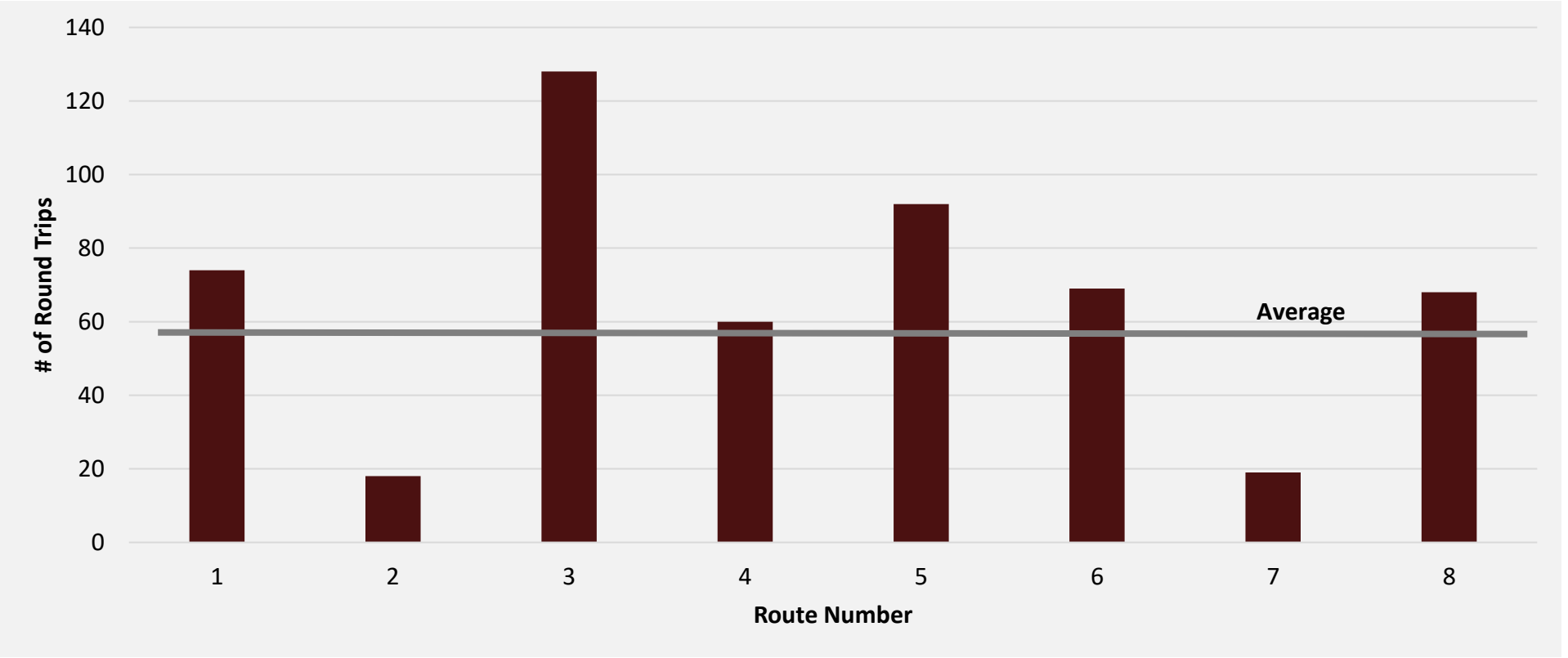
Figure 18: On-Campus Service by Route

Route #	Route Name	Max Vehicles	Weekday Round Trips	Max Frequency (min.)	Daily Boardings	Daily Revenue Hours	Pax / Rev Hr	Pax / Round Trip	Key Destinations
1	Bonfire	5	74	8	3,461	49.4	70.1	46.8	Lot 100G, Reed Arena, Commons, MSC
2	Replant	1	18	40	141	12.0	11.7	7.8	School of Pub Health, Fish Pond
3	Yell Practice	5	128	6	5,564	64.0	86.9	43.5	Wehner, White Creek, Beutel, MSC
4	Gig Em	2	60	13	1,493	26.0	57.4	24.9	Hensel @ Texas, Ross St.
5	Bush School	4	92	7	2,815	42.9	65.6	30.6	Reed Arena, Bush School, MSC
6	12th Man	2	69	11	1,652	25.3	65.3	23.9	Wehner, Vet School, Beutel, MSC
7	Airport	1	19	40	26	12.7	2.1	1.4	Wisenbaker, Airport
8	Howdy	2	68	11	2,145	24.9	86.0	31.5	Park West, Kleberg, MSC
Night	Various	4	30	30	374	24.5	15.3	12.5	Incl. off campus

Note: Highlighted values are best performers and discussed below.

The following chart illustrates the amount of service provided by each route on weekdays:

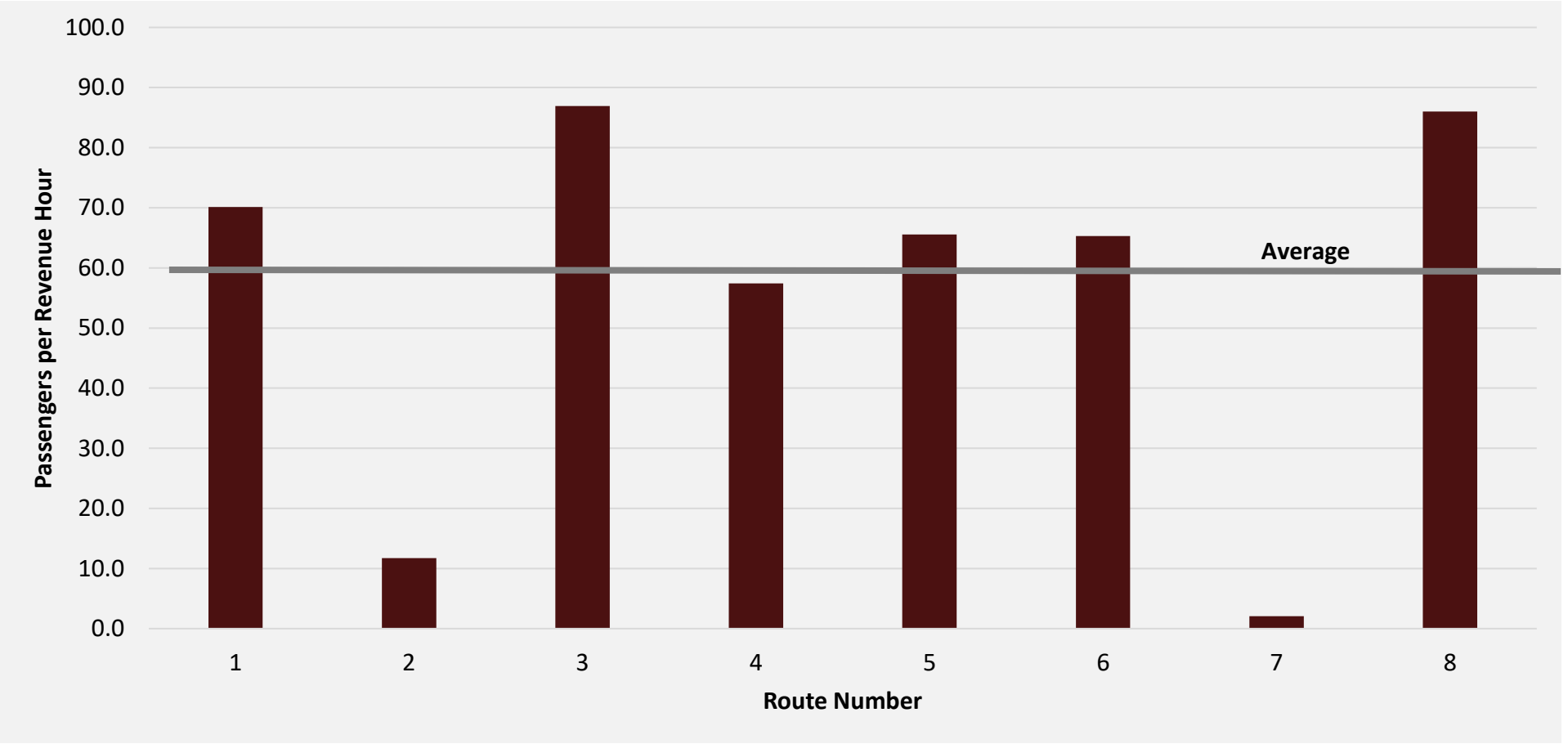
Figure 19: Amount of Weekday Service by Route - On Campus



Route 3 Yell Practice operates the most frequently of the on-campus routes and is the only route with more than 100 round trips per day.

The following chart depicts the productivity of each route as measured by ridership per vehicle revenue hour.

Figure 20: Productivity by Route - On Campus



Route 3 Yell Practice and Route 8 Howdy have the highest productivity, and both would be potential candidates for increased service when resources allow. Route 2 Replant and Route 7 Airport have the lowest productivity, although both of these routes already operate relatively less service than other on-campus routes, which appears appropriate based upon the ridership data.

Similar data has been compiled for the off-campus routes, also using the week of October 7-11, 2019. The following table provides information by route:

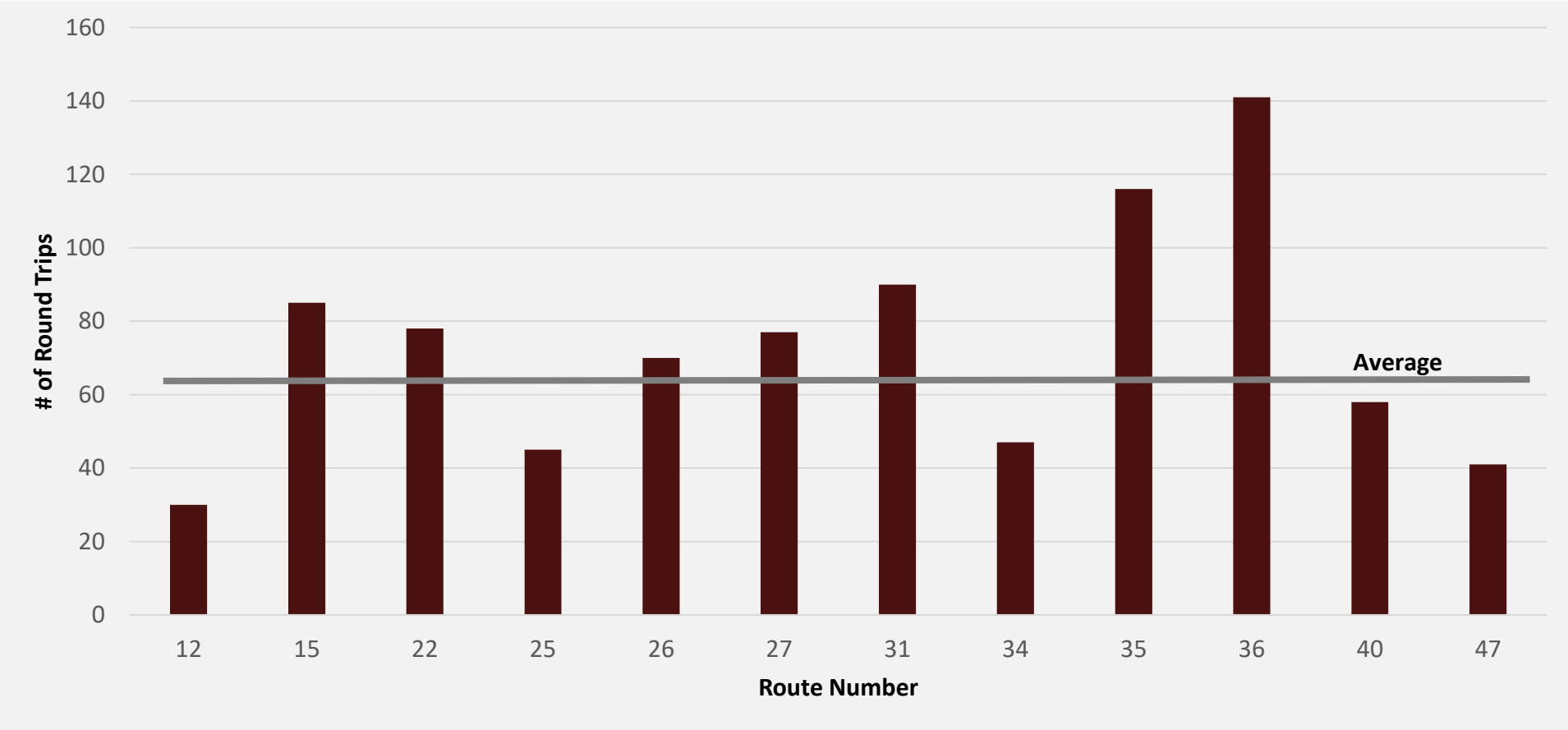
Figure 21: Off Campus Service by Route

Route #	Route Name	Max Vehicles	Weekday Round Trips	Max Frequency (min.)	Daily Boardings	Daily Revenue Hours	Pax / Rev Hr	Pax / Round Trip	Key Destinations
12	Reveille	2	30	23	697	23.0	30.3	23.2	Blinn College, Trigon
15	Old Army	4	85	8	2,696	45.3	59.5	31.7	Reveille Ranch, Aggie Station, Fish Pond, MSC
22	Excel	3	78	10	1,859	39.0	47.7	23.8	Cripple Creek, The Cambridge, The Marc, Trigon
25	Centerpole	2	45	15	784	22.5	34.8	17.4	University Square, Trigon
26	Rudder	3	70	12	1,508	42.0	35.9	21.5	Trails @ Wolf Pen Creek, Trigon
27	Ring Dance	4	77	8	2,490	46.2	53.9	32.3	Wolf Pen Creek, HEB, Scandia, Trigon
31	E-Walk	4	90	7	2,421	42.0	57.7	26.9	Woodlands, Willowick, Madison Point, Trigon
34	Fish Camp	3	47	17	1,164	40.0	29.1	24.8	Welsh @ First Baptist, Deacon-West, Trigon
35	Hullabaloo	5	116	6	3,721	58.0	64.2	32.1	The Retreat, Univ. Trails, Kleberg, MSC
36	Cotton Bowl	5	141	5	3,921	58.8	66.7	27.8	Park West, Woodsman, Trigon
40	Century Tree	3	58	14	1,848	40.6	45.5	31.9	Holleman South, Kleberg, MSC
47	RELLIS	3	41	20	784	41.0	19.1	19.1	Wisenbaker, MSC

Note: Highlighted values are best performers and discussed below.

The amount of service provided on each route is shown in the following chart:

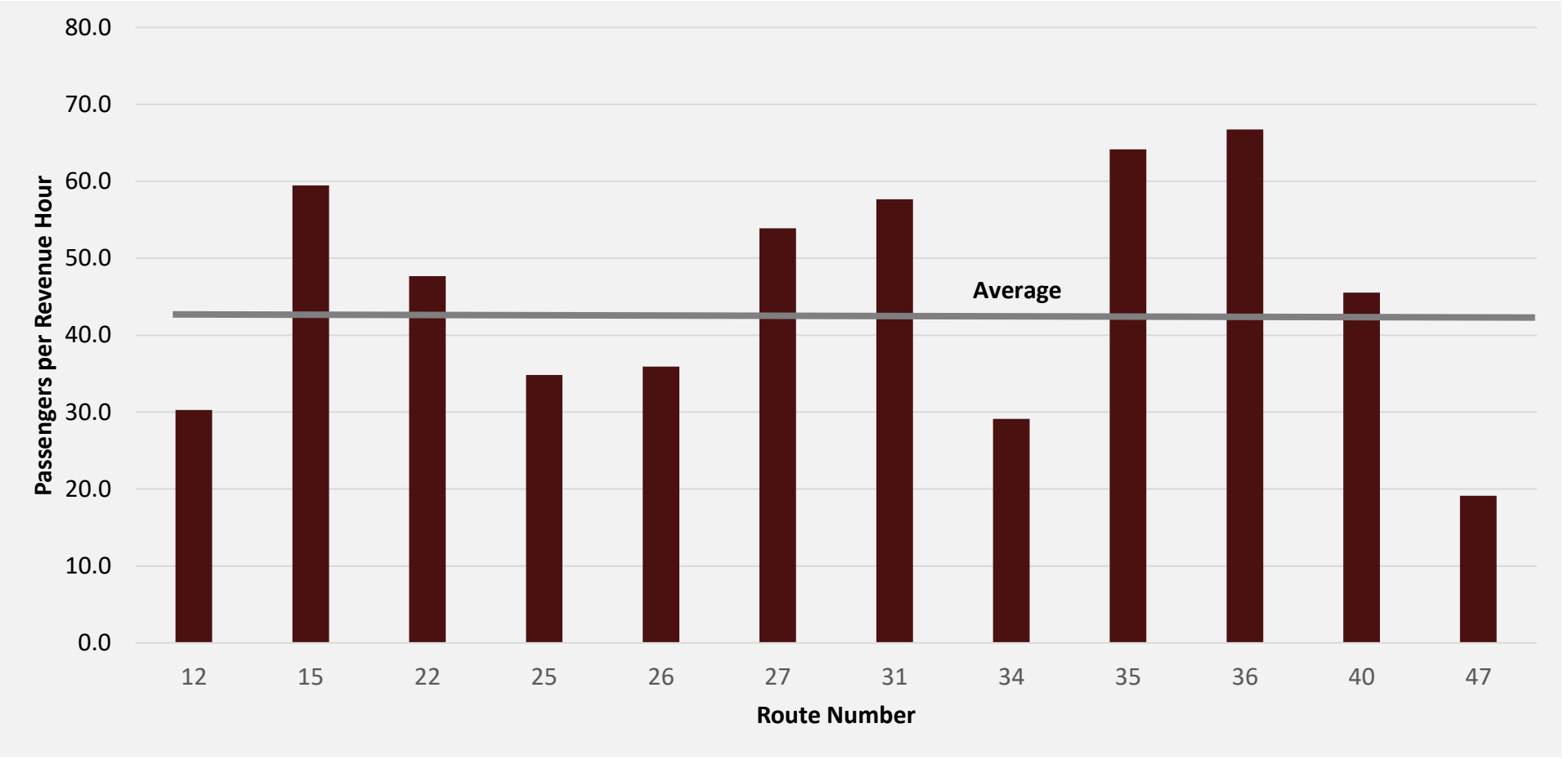
Figure 22: Amount of Weekday Service by Route - Off Campus



Route 35 Hullabaloo and Route 36 Cotton Bowl provide the greatest number of trips throughout the day, and these are the only two routes offering more than 100 round trips per day.

The productivity of each route is illustrated in the chart below.

Figure 23: Productivity by Route - Off Campus



The ridership per hour for off-campus routes tracks closely with the amount of service provided, indicating that service is allocated efficiently. If resources allow in the future, Routes 35 Hullabaloo and 36 Cotton Bowl would be potential candidates for increased service. All off-campus routes are reasonably productive.

FLEET SUMMARY

As of February 2021, Texas A&M had 92 full-size transit buses of at least 35 feet in length, in addition to some vans used for paratransit service and a few smaller buses for specialized service. The 92 full-size buses had an average age of 9.8 years and the expected life of such vehicles is 12 years. All of these buses use diesel fuel for propulsion. The following chart describes the existing fleet.

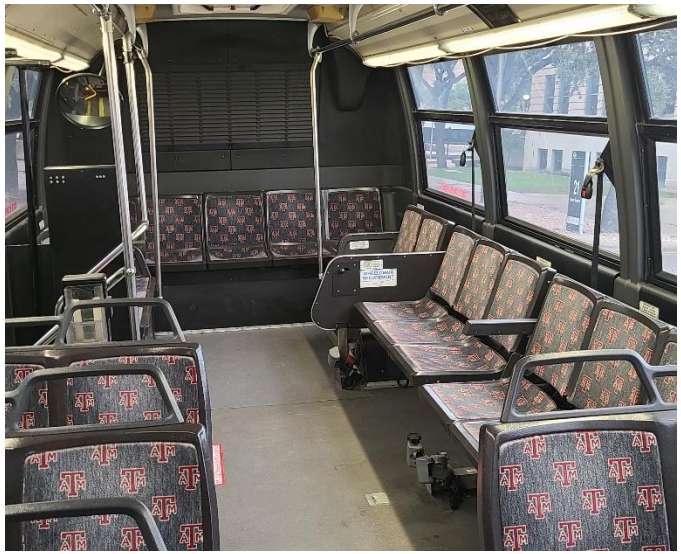
Figure 24: Texas A&M Full-size Fleet as of February 2021

Year	Make	Model	Length (ft)	Seats	Wheelchair	Age (yrs)	Qty
2000	GILLIG	G18D102N4	40	42	Ramp	21	6
2001	NOVA	RTS	40	40	Lift	20	2*
2001	GILLIG	LOW FLOOR	40	42	Ramp	20	3
2002	NOVA	RTS	35	35	Lift	19	6*
2002	GILLIG	LOW FLOOR	40	42	Ramp	19	5
2006	Millennium	RTS	40	42	Lift	15	25
2015	GILLIG	LOW FLOOR	40	42	Ramp	6	10
2020	GILLIG	LOW FLOOR	40	42	Ramp	1	35
*Total							92

These vehicles are scheduled to be replaced by the end of 2021.

Source: Texas A&M

*This fleet inventory does not include vans and other smaller buses used for paratransit and specialized services.



Fortunately, 35 new Gillig buses have been recently put into service by Texas A&M and the average age of the fleet has decreased from more than 15 years to 9.8 years. In addition, all of the new buses being procured in 2020-21 are 40' in length and are replacing the remaining 35' buses, which will increase capacity. The new buses are low-floor with a wheelchair ramp, improving accessibility as compared with the lift-equipped vehicles being replaced. An additional 9 new Gillig buses will replace the Nova buses later in 2021. Finally, Texas A&M also has three (3) battery-electric buses (BEB) on order from Proterra which are slated to be delivered in May 2021. The charging infrastructure for the BEBs has already been installed. The BEB vehicles will be tested in service in order to prepare for a larger changeover to BEBs in the future, as the industry norm is expected to be BEBs within approximately 10 years.

However, another 39 buses in the Texas A&M fleet which are not being replaced are more than 12 years old and beyond their expected useful life. Although some of these are Gillig vehicles which have been overhauled, staff report that these older vehicles require a disproportionate amount of resources for maintenance and repair and offer a lower-quality ride. Also, even after additional replacements arrive in 2021, Texas A&M will continue using the 25 Millennium buses which have wheelchair lifts instead of the more reliable wheelchair ramps. Funding has not yet been identified for replacement of these vehicles.

FACILITIES

This section summarizes Texas A&M facilities used in the transit operation.

Memorial Student Center (MSC) Hub

This passenger hub has outdoor berths for 12 Texas A&M bus routes and is in excellent condition overall. The roadways on Lamar and Houston streets have been recently reconstructed, and new bus shelters installed at each berth. The adjacent MSC building offers bathrooms and a place to clock in and out for bus operators.

Trigon Hub

This passenger hub has berths for 8 Texas A&M bus routes and is also a short walk from the MSC building where bus operators can use bathrooms and clock in and out for their shift. Many of the berths have benches for waiting passengers but no shelters. In addition, some of the roadways, including Throckmorton Street, are in poor condition, which can increase maintenance/repair costs for buses and shorten the vehicle lifespans. Funding has not yet been identified for road repairs and shelters.

Main Transit Facility

The main Texas A&M transit facility is located at 444 Agronomy Road (Lot 82) in a section of campus where other support services are located. The facility includes the administrative offices, maintenance shop, and fleet storage area.

The maintenance facility includes seven full vehicle lifts, one pit area, and one scissor vehicle lift, all of which are used for bus maintenance and repair. It is generally recommended that each maintenance bay serve no more than 12-15 transit buses, so these nine bays are sufficient for the Texas A&M transit fleet. However, it should be noted that this fleet maintenance operation is administratively separate from the transit department, and the maintenance area also services many other campus vehicles. Fleet maintenance employs some Texas A&M students in addition to full-time staff. The new buses arriving in 2020 and 2021 will reduce demand on the maintenance department due to the improved age and condition of the fleet. Overall, the space is adequate for the current operation but could not support much growth in the bus fleet without expansion.

The maintenance shop and nearby areas also include storage for tires, fluids and parts; fuel tanks for diesel and gasoline; a brand-new bus wash facility; fueling stations; and, four new electric charging stations for the BEB fleet which is scheduled to arrive in Spring 2021. There is also a training/conference room inside the maintenance area. The parts warehouse appears to be well-managed, and there are plans to upgrade and automate inventory management. Similar to the maintenance bay capacity, the parts storage area is sufficient for the current operation and will benefit from the newer, more standardized fleet arriving in 2020 and 2021, but would need to be expanded in order to support a larger bus fleet.

Most maintenance and repair takes place on site although some functions are outsourced, including major engine and transmission replacements performed at Industrial Transmission in Waco. Painting and some body work is performed at Corn's Collision Center in Hearne.

The fleet storage area is adequate for current operations but also does not leave much room for future growth. Buses are currently parked in columns up to four deep, and staff manage pullouts so as to minimize jockeying of vehicles.

The office area houses managers and supervisors as well as dispatchers. Standby bus operators also need to wait in the office space, and there are some visitors either looking for employment or assistance. The office area is currently the most physically constrained section of the main transit facility. The office footprint is not large enough to support the existing operation, with some people regularly sitting on the floor due to lack of space. Interviews with staff revealed concerns about a lack of privacy for confidential conversations, unacceptable noise levels for dispatchers and others, and uncomfortable accommodations for standby operators.

Park and Rides

The University does not own any property at off-campus transit locations. All Texas A&M bus shelters are currently located on campus. Texas A&M does have informal agreements for some off-campus sites which allow people to park their cars and ride Texas A&M buses. These are located at:

- Post Oak Mall
- First Baptist Church
- Downtown Bryan (for game days only)

FINANCIAL SUMMARY

Operating Budget

Texas A&M's fiscal year runs from September 1 through August 31. The great majority of operating funding for Texas A&M Transit comes from the University Advancement Fee (UAF) which is charged to all students to fund overhead support services including transportation and libraries. There is also funding from a separate Transportation Fee charged to students. Charter services are kept separate for accounting purposes but are consolidated in this document section. The following are the actual revenues for the 12 months ending August 2019 (FY 19) – that year's figures are shown instead of FY 20 since FY 19 reflects pre-COVID conditions.

Figure 25: Texas A&M Transit FY 19 Actual Operating Revenues

Revenue Category	Amount (rounded)
Transportation Fee	$ 180,000
University Advancement Fee (UAF)	9,530,000
Charters	1,100,000
Advertising/Interest/Misc.	170,000
TOTAL:	$10,980,000

Expenses include wages and benefits for transit staff, costs of bus maintenance and repair, fuel, and other smaller categories. The chart below is a summary of expenses:

Figure 26: Texas A&M Transit FY19 Actual Operating Expenses

Expense Category	Amount (rounded)
Wages and Benefits	$ 5,310,000
Bus Maintenance and Repair	2,300,000
Fuel	1,300,000
Other	790,000
TOTAL:	$9,700,000

The excess operating revenue of approximately $1.3M can offset some capital expense, although average capital outlays for a transit system of this size would be expected to average at least $5M annually.

Capital Budget

Capital expenses for transit include replacement and upgrades to the fleet and facilities, as well as some roadway repairs and bus stop improvements. Some technology projects are also included. Funding for capital expenses typically comes from the same student fees used for operating expenses, as well as general University funds. This funding was recently supplemented with a BUILD grant in 2019 from the US Department of Transportation. The grant was obtained in collaboration with Brazos Transit District, the area's public transportation provider. Texas A&M received the grant funding for some of the cost of the 35 Gillig buses which arrived in late 2020, as well as the costs of the three battery-electric buses from Proterra and associated charging infrastructure.

Funding capital expenses for transit can be a challenge for any institution since capital costs are more volatile than operating costs. The excessive age of the Texas A&M transit fleet before the recent bus replacements is likely due in part to the difficulty of consistently providing adequate capital funds. The recent infusion of Federal funding was welcome, and future opportunities for Federal grant funding will be explored, including possibly Federal formula funds in addition to competitive grants.

STAFF INPUT

Walker Consultants met in person with Texas A&M Transportation Services staff to obtain input on the existing operation as well as ideas for the future. The meetings were held in small group sessions at the main Texas A&M transit facility in late October 2020. Participants were promised anonymity, as Texas A&M management did not attend the sessions, and feedback described in this section is not attributed to any particular individual. Participants did appear to speak freely whether their comments were favorable or unfavorable.

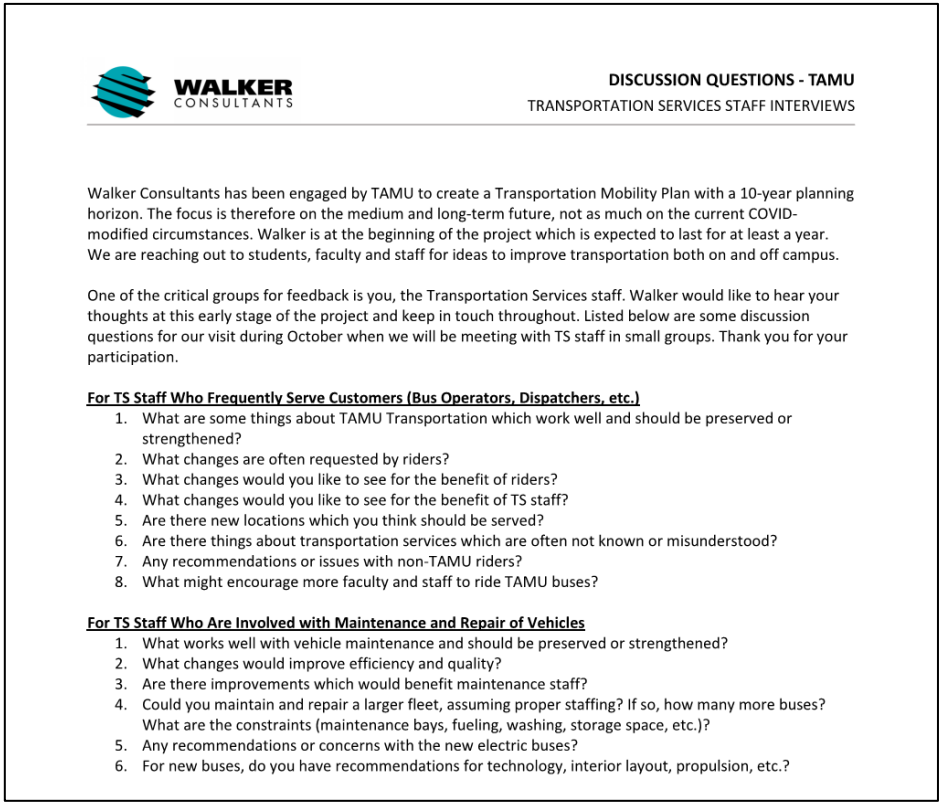
The individual comments are paraphrased and do not necessarily represent trends. They may inform Walker's recommendations but are not recommendations as presented in this section.

The following categories of employees participated in the small group meetings:

- Drivers
- Instructors
- Dispatchers
- Supervisors
- Maintenance technicians
- Trainers

Both student staff and full-time employees were included. All participants volunteered for the consultations. A total of about 40-50 staff participated. The following information was given in advance to participants, and the questions listed were used to facilitate discussion during the in-person meetings:

Figure 27: Advance Information for Discussion Group Participants



WALKER CONSULTANTS

DISCUSSION QUESTIONS - TAMU
TRANSPORTATION SERVICES STAFF INTERVIEWS

Walker Consultants has been engaged by TAMU to create a Transportation Mobility Plan with a 10-year planning horizon. The focus is therefore on the medium and long-term future, not as much on the current COVID-modified circumstances. Walker is at the beginning of the project which is expected to last for at least a year. We are reaching out to students, faculty and staff for ideas to improve transportation both on and off campus.

One of the critical groups for feedback is you, the Transportation Services staff. Walker would like to hear your thoughts at this early stage of the project and keep in touch throughout. Listed below are some discussion questions for our visit during October when we will be meeting with TS staff in small groups. Thank you for your participation.

For TS Staff Who Frequently Serve Customers (Bus Operators, Dispatchers, etc.)

1. What are some things about TAMU Transportation which work well and should be preserved or strengthened?
2. What changes are often requested by riders?
3. What changes would you like to see for the benefit of riders?
4. What changes would you like to see for the benefit of TS staff?
5. Are there new locations which you think should be served?
6. Are there things about transportation services which are often not known or misunderstood?
7. Any recommendations or issues with non-TAMU riders?
8. What might encourage more faculty and staff to ride TAMU buses?

For TS Staff Who Are Involved with Maintenance and Repair of Vehicles

1. What works well with vehicle maintenance and should be preserved or strengthened?
2. What changes would improve efficiency and quality?
3. Are there improvements which would benefit maintenance staff?
4. Could you maintain and repair a larger fleet, assuming proper staffing? If so, how many more buses? What are the constraints (maintenance bays, fueling, washing, storage space, etc.)?
5. Any recommendations or concerns with the new electric buses?
6. For new buses, do you have recommendations for technology, interior layout, propulsion, etc.?

The following is a summary of staff input. Many themes were repeated by multiple employees.

Strengths

Many staff noted strengths of the existing transit operation, both for riders and Texas A&M Transportation Services employees. These included:

- Game Day service is well-used and efficiently operated
- The mobile app is useful and functions well
- Training overall is conducted well
- Teamwork/communication among TS staff is an asset
- Management's open-door policy is appreciated
- Flexibility is provided for TS staff in general, and particular satisfaction was noted regarding the immediate COVID response in Spring 2020
- Service planning is handled properly, with changes made as needed
- The large number of student jobs in transit provides good experience
- Transit hubs are in good locations
- The system serves on-campus destinations well
- Policy of incentives for student staff who work more makes sense
- Recently increased student wages make TS jobs more competitive
- High ridership and frequent service indicate the system's utility
- New bus wash facility is a welcome upgrade
- New ability to do CDL tests on-site improves efficiency
- Policy of no penalty for bus lateness incentivizes safe driving

Critiques of Current Operation

Many staff also had constructive criticism regarding the existing operation. This feedback included:

- Issues related to lack of space
    - Standby drivers sitting on floor or outside
    - Noise in office, especially for dispatch
    - No private space for confidential discussions
    - Need to walk through maintenance areas to access some offices and conference room
    - Training is constrained to some degree
- Issues related to fleet age and condition
    - Lesser maintenance issues are never fixed
    - Wheelchair lifts and ramps often don't work
    - The quality of ride for passengers is often less than desired
    - Perception of the system (and TS staff) by other students is harmed
    - A/C not always working
- The service is often overcrowded, leaves many behind
- The service is sometimes unreliable
- Road conditions on campus reduce ride quality and can damage buses
- Perceived lack of receptiveness to new ideas, especially from students
- Dispatchers can be snarky on the radio which harms communication
- Public timetables should be simplified
- Schedules should be adjusted for traffic conditions to be more accurate by time of day
- Better training is needed regarding wheelchair passengers
- More tools should be provided for covering unfamiliar routes (e.g., add navigation to mobile data terminal)
- Traffic hotspots should be addressed (unanimous consensus that worst is intersection of George Bush/Wellborn/Marian Pugh/Union Pacific RR)
- Pedestrian/bus conflicts at class change times reduce reliability
- The operation is often shorthanded, possibly add more full-time drivers
- There should be more diversity, especially more women in leadership roles
- Some supervisors are very good, but others are not as respectful/approachable
- More notice of policy changes should be given to TS staff

- Dispatchers need better training for emergencies
- Interior bus cleanliness should be improved
- There may be too many hold points, and these should be clarified on timetables
- Turns are difficult at Church and College Main on Route 15

Potential New Service

The following were offered as the most promising ideas for additional service or bus stops:

- South College Station
- Apartment complexes northeast of Route 6, especially near University Drive
- More weekend service to grocery stores and Walmart
- Improved frequency/capacity to relieve overcrowding
- Serve the Blinn College administration building
- Downtown Bryan was generally seen as a "maybe"

Customer Requests

When asked about common requests from passengers, there were only three themes mentioned:

- Better reliability
- Less crowding/pass-ups
- Directions from bus stops to campus buildings

Other Suggested Improvements

The following were other suggestions from staff:

- Eliminate one-way loops/lack of companion stops
- Reduce long traffic signal cycle times and/or implement signal priority for buses
- Add bus shelters
- Log pass-ups and systematically use that data to adjust service
- Improve lighting at bus stops
- Stagger class times?
- Enhance physical and informational links with Brazos Transit
- Add more written and video training materials
    - Would also help to standardize procedures
    - Strengthen at-home training compliance with tracking, quizzes, etc.
    - Add training on bus troubleshooting for drivers (requested by drivers)
- Market transit and educate about the service at football games, orientation, etc.
- Coordinate airport service with flight schedules
- Improve communication with University Police
- Focus on headway management for frequent routes
- Improve training for charters
- Clarify for customers interlined routes, or other buses which are not returning on route just finished
- Add an off-campus hub, force transfers with frequent service
- Add WiFi on buses, at least on longer routes

FINDINGS

The Texas A&M transit system appears to be operating efficiently and effectively. This section details Walker's findings regarding the existing system, based on evaluation, discussions and interviews with staff, and comparison with peers.

Peer Review

Texas A&M's peers for transportation are large universities in towns where the college is the primary trip generator—that is, college towns which are not part of a larger metro area. Many of these peers receive Federal Transit Administration (FTA) formula funding and therefore report annually to the National Transit Database (NTD), allowing for easier comparison. FTA funding excludes charter service, and the data collected for peers is for fixed-route bus service only, not including paratransit service. Similarly, Texas A&M's data has been estimated based on available information, so as to represent non-charter, fixed-route service only, including game-day service. The data for peers comes from reporting for Fiscal Year 2019 in the NTD. The peer systems may not be the only transit provider in the area but do represent a large provider having most passengers affiliated with a university. Where possible, the university's own transit system is shown, but public agencies which match the profile are also included as appropriate.

Some additional information about the fields in the chart below:

- Vehicles in Max Service – this is the total number of buses actually used to provide peak service on a typical day; for Texas A&M it was estimated that 63 buses are needed for daytime routes with 2 additional buses on standby, for a total of 65 vehicles
- Annual Passenger Trips – the total number of passenger boardings; these are "unlinked" trips, meaning that a passenger who transfers to a second vehicle during their journey is counted twice
- Annual Operating Budget – cost of providing non-charter, fixed-route service
- Annual Vehicle Revenue Hours – the total time when vehicles are in-service, either carrying passengers or waiting to start their next trip; the time traveling to and from the bus storage facility is excluded
- Cost per Revenue Hour – the annual budget divided by the vehicle revenue hours; this is a common measure of efficiency
- Cost per Passenger Trip – the annual budget divided by passenger trips; this measures how well the service supplied meets the demand
- Passenger Trips per Revenue Hour – the number of passenger trips divided by revenue hours; this is a common measure of productivity

Figure 28: Service Information for Peer Systems

Transit System	Vehicles in Max Service	Annual Passenger Trips	Annual Operating Budget	Annual Vehicle Revenue Hours	$ / Revenue Hour	$ / Passenger Trip	Passenger Trips / Revenue Hour
					KEY PERFORMANCE INDICATORS		
University of Michigan	46	7,355,679	$ 9,810,917	120,461	$ 81.44	$ 1.33	61.1
University of Iowa	25	3,465,918	$ 3,326,227	71,948	$ 46.23	$ 0.96	48.2
UC Davis	35	3,741,782	$ 5,646,161	75,578	$ 74.71	$ 1.51	49.5
University of Georgia	55	5,981,726	$ 6,984,407	97,247	$ 71.82	$ 1.17	61.5
Chapel Hill, NC	87	6,573,353	$ 16,885,815	162,690	$ 103.79	$ 2.57	40.4
Lafayette, IN	56	5,068,309	$ 11,073,821	145,673	$ 76.02	$ 2.18	34.8
Ames Transit (CyRide)	69	6,112,643	$ 10,940,976	127,538	$ 85.79	$ 1.79	47.9
Tompkins Consolidated (Ithaca)	42	4,236,232	$ 15,139,852	135,934	$ 111.38	$ 3.57	31.2
Centre Area (State College, PA)	61	6,413,232	$ 17,050,745	152,349	$ 111.92	$ 2.66	42.1
Bloomington, IN	30	3,159,071	$ 7,056,602	95,287	$ 74.06	$ 2.23	33.2
Blacksburg, VA	40	4,630,600	$ 8,009,532	98,841	$ 81.03	$ 1.73	46.8
Columbia, MO	27	1,055,726	$ 5,648,463	60,663	$ 93.11	$ 5.35	17.4
Champaign-Urbana, IL	99	11,489,825	$ 35,285,762	277,640	$ 127.09	$ 3.07	41.4
Gainesville, FL	116	9,149,481	$ 26,034,509	312,890	$ 83.21	$ 2.85	29.2
Average of Peers	56	5,602,398	$ 12,778,128	138,196	$ 92.46	$ 2.28	40.5
Texas A&M (est.)	**65**	**7,000,000**	**$ 8,800,000**	**135,000**	**$ 65.19**	**$ 1.26**	**51.9**

Texas A&M compares well when evaluated against these peer systems. The cost per hour for Texas A&M is 30% less than the average of peers, with only one other system having a lower cost than Texas A&M. This efficiency is due in part to Texas A&M's extensive use of students for staffing but also reflects a commitment to using resources wisely. Texas A&M has 28% more passengers per hour than the peer average (and higher than all but two of the peer systems), which indicates that good service planning decisions have led to a well-designed system. The combination of higher ridership and lower costs per hour enable Texas A&M to have a cost per passenger trip that is 45% lower than the peer average.

Other Findings

The Texas A&M transit system is clearly meeting the student community's needs efficiently and effectively. Many staff had very favorable comments about morale and teamwork, and the system has continued its success despite the challenges of campus growth and more recently the COVID-19 pandemic. The most urgent issue of replacing the oldest vehicles is being addressed, and generally the operation is well-positioned to support the campus for the immediate post-COVID future. As Texas A&M plans for the longer term, there are challenges and opportunities which will require strategic choices. Some of these are described below, and recommendations have been created in consultation with the Texas A&M community throughout this study.

Funding

The operating funding from student fees appears to be stable and likely to continue. Capital funding has been a greater challenge. In 2019, Texas A&M received a BUILD grant from the FTA, which was critical in providing the badly needed bus replacements which have begun to arrive. Diversifying the funding sources for capital, including greater use of federal and state funding, should be explored in depth. Some peer university transit systems receive FTA formula funding, although many choose not to for various reasons. The pros and cons of this funding method are explored in the recommendations section.

Information Systems

Information systems for passengers are constantly evolving, with new phone apps being created regularly. The in-house Texas A&M app works well, but opportunities to provide more tools geared to campus visitors should be investigated. In particular, Texas A&M already generates data using the General Transit Feed Specification (GTFS) but does not yet make this information public. Apps such as Google Maps can consume this data but will only publish it if the Texas A&M buses are available for anyone to walk up and board without advance payment or notification.

The internal radio system used by Texas A&M transit is currently in an "open" or "all-talk" mode where all users can speak with and hear all other users. As the system gets larger, this mode may create excessive radio chatter, which can be eliminated by switching to a closed mode with only dispatchers having communication access to all users at once.

Fleet

The fleet upgrades occurring in 2020-21 will mean that all Texas A&M buses used for fixed routes are 40 feet in length, the standard full-size transit bus. However, many university and public transit systems with high ridership use at least some 60-foot articulated buses in order to provide more capacity with little impact on operating cost. These longer buses would require retrofitting or expansion of the maintenance bays.

Battery-electric buses (BEB) will be piloted by Texas A&M during 2021. While these BEBs in other applications around the US have so far failed to perform as advertised regarding range, battery life, and charging time, there is continual performance improvement each year. It is likely that BEBs will become the most common transit vehicle purchase within 10 years, either by choice or by government mandate.

Facilities

The current maintenance and storage facilities are sufficient for the existing operation but could not support any significant growth in service. Meanwhile, the transit office area is too small even for the current operation and plans for expansion should commence.

Continued progress on adding bus shelters will be welcomed by passengers, especially because of the warm Texas climate. There may be opportunities to install off-campus shelters, in collaboration with Brazos Transit and the cities of Bryan and College Station.

Service Planning

Technology advances have enabled an industry trend of replacing lower-ridership fixed route service with on-demand service, also called microtransit. Some Texas A&M routes may be good candidates for converting to on-demand service, during some or all hours of the day. There are also potential locations for additional off-campus service. Service Planning is a topic in the Recommendations section of this report.

CONCLUSIONS

The current transit operation functions well and is currently being upgraded to include battery-electric buses. However, as the campus community continues to grow, the system will require more buses and/or larger vehicles, as well as expanded maintenance and operating facilities. The steps taken to continue the expansion of the transit system should consider capital funding heavily, as it has been a challenge.

MOBILITY AND URBAN DESIGN

Introduction

In this chapter, we provide a "literature review" of multiple previous plans and integrate with observations collected during a site visit (in September 2021), that put the campus, its current state, and the current state of its planning into context for the balance of our work. Many opinions expressed in this chapter have been explicitly quoted from previous studies and are not necessarily ours. We are using them to build an assessment of existing conditions and identify potential solutions to key mobility and urban design issues in and around campus.

Key Takeaways

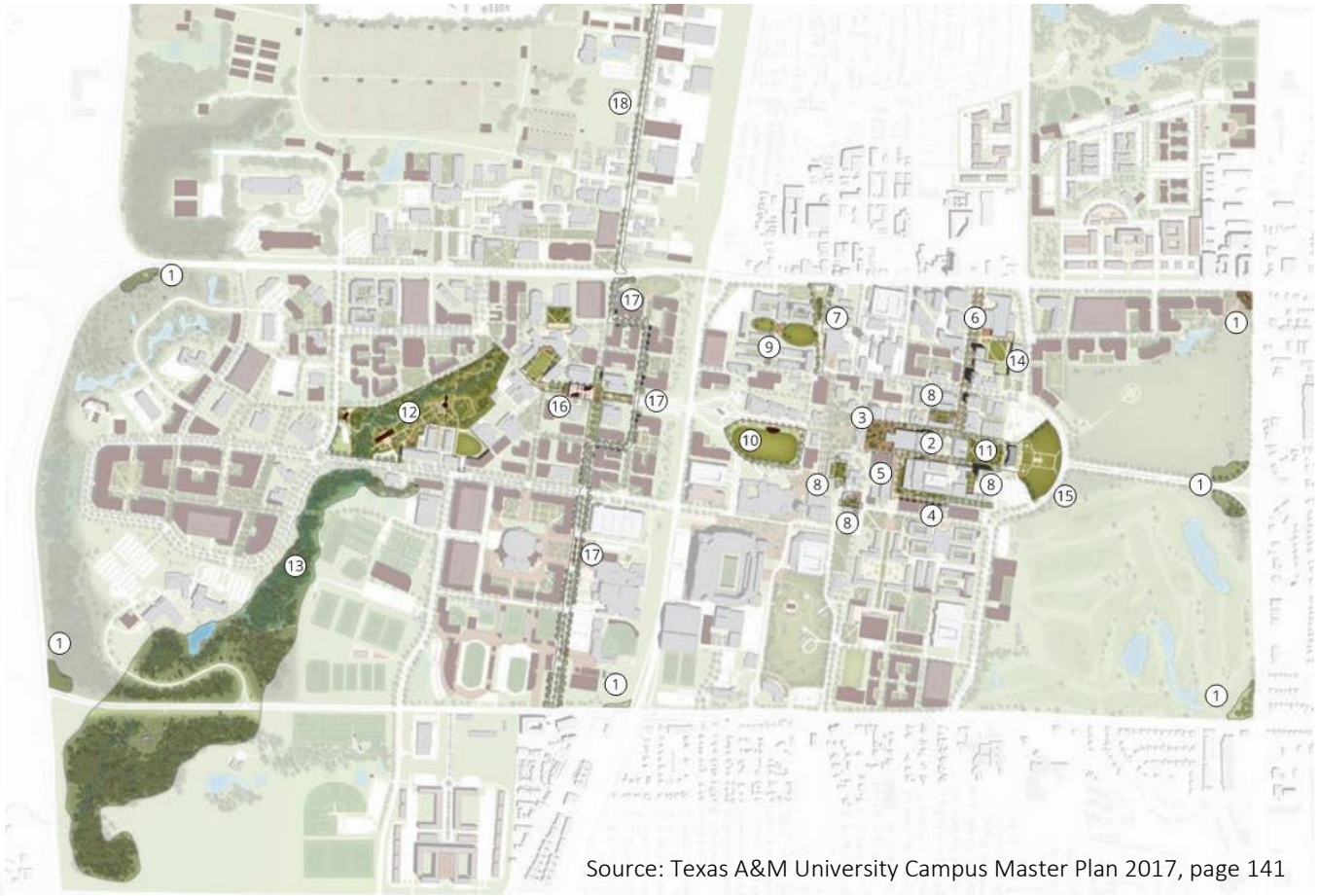
- *The Mobility Master Plan is guided by the Campus Master Plan (CMP).*
- *The core campus can be thought of as "15-minute city" for pedestrians and cyclists.*
- *The sun and heat make shade an omni-present issue, particularly in the newer parts of campus.*
- *The quads proposed in the CMP (West Campus, Reed Arena, and Research Park) offer the opportunity to create transit-oriented development.*
- *University Drive near College Main is a prime location to (re)connect the campus to the city.*
- *Crash maps suggest the campus is generally safe, but the perimeter roads are not.*

Assumptions & Principles

Figure 29: First Phase, Immediate High Priority (0-5 years)

Phase I Projects: 0-5 years

1. Campus Gateway Improvements
2. Renovate Evans Library Malls
3. Renovate Cushing Quadrangle
4. Lamar Street Pedestrian Mall
5. Nagle Street Pedestrian Mall
6. Spence Street Pedestrian Mall
7. Houston Street Pedestrian Mall
8. Remove Surface Parking and Replace with Green Space
9. Create Northside Housing Quadrangle
10. Renovate Simpson Drill Field
11. Renovate East Quadrangle
12. Gardens and Greenway Project (in progress)
13. White Creek Detention Ponds (in progress)
14. Create Engineering Quadrangle (in progress)
15. Restore J.K. Williams East Lawn
16. West Campus Quadrangle
17. Olsen Boulevard Roadway Alteration
18. Agronomy Road Streetscape Improvements

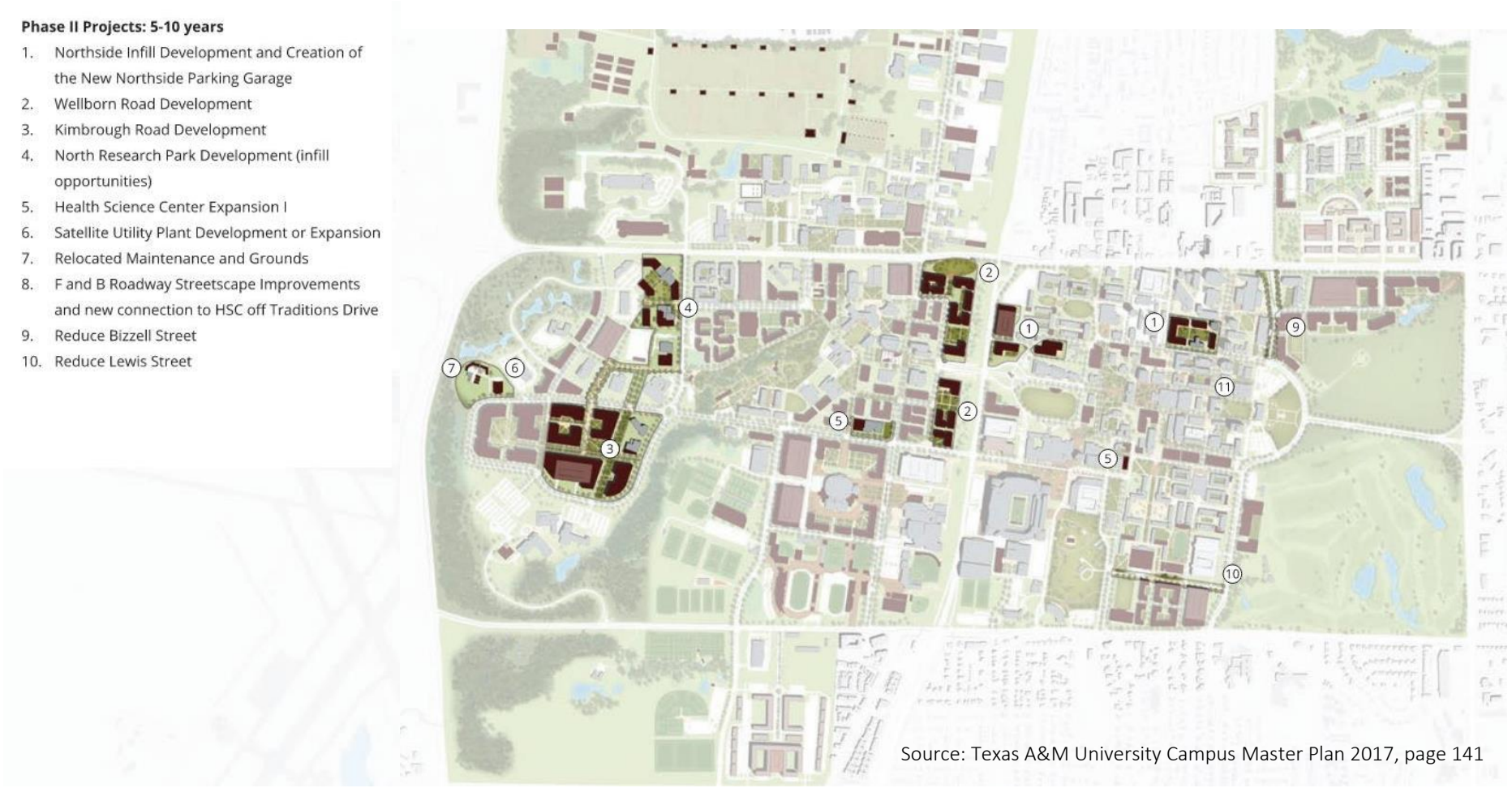


Source: Texas A&M University Campus Master Plan 2017, page 141

The Mobility Master Plan will be guided by the projects and goals contained in the Campus Master Plan (CMP) 10-year plan (Phases I and II, Immediate High Priority and Medium Priority, respectively).

The First Phase, Immediate High Priority (0-5 years) largely contains landscape and streetscape efforts—pedestrian malls, quads, greenways, and roadways—which will benefit multi-modal mobility.

Figure 30: Second Phase, Medium Priority (5-10 years)



Source: Texas A&M University Campus Master Plan 2017, page 141

The Second Phase, Medium Priority (5-10 Years) foresees infill development, relocation of parking to perimeter parking garages, walkable activity nodes, and road diets. New infill development is focused on densification of West Campus, development of the research park, and replacement of old buildings and parking lots in the historic core. To the extent that parking demand can be managed, the sizes, locations, numbers, and timing of additional parking garages may be impacted.

The CMP offers three guiding principles (CMP 2017, p. 21) which directly bear on the Mobility Master Plan:

- #1. Use Open Space Network as a Basis for New Development
- #6. Conserve Heritage Buildings and Spaces
- #8. Focus Mobility Planning on the Pedestrian

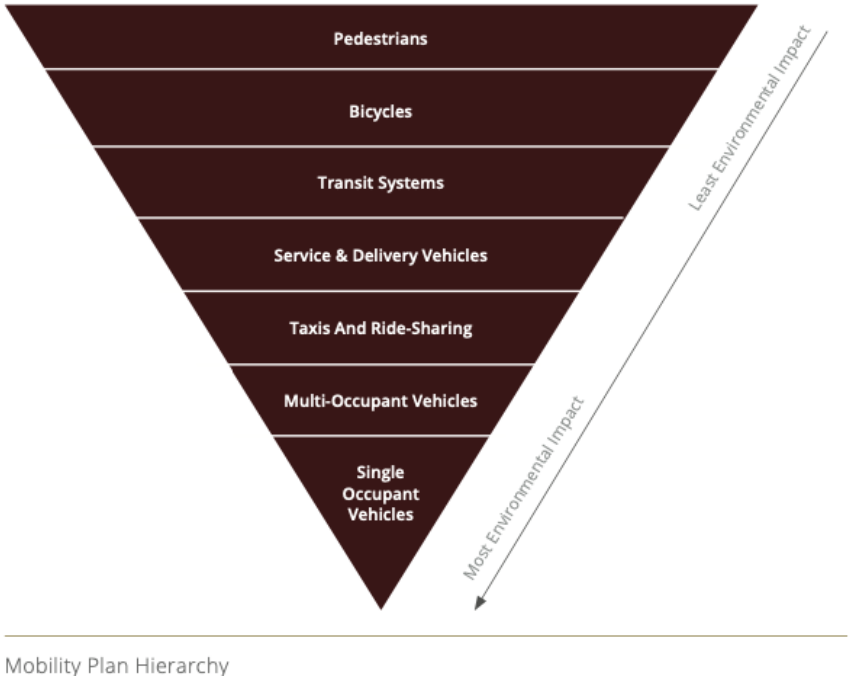
In particular, #8 stipulates that:

"The safety of campus users is the priority in decision making for mobility planning. The pedestrian-priority zone is a planning tool for future development to prioritize the pedestrian connections over the vehicular access."

The mobility principles in the CMP and the modal plan hierarchy (CMP 2017, p. 151) stand out:

- "Placing pedestrians at the top of Texas A&M's mobility hierarchy decreases the environmental and economic impact mobility has on campus greenhouse gas emissions."
- "The vision to create a pedestrian-focused campus entails a mobility system that relocates vehicles away from the center and uses the recovered areas for the highest and best use of University land."
- "The plan also encourages separation or restriction of mixed travel modes in order to emphasize both pedestrian and cycling safety. Examples include bicycle dismount zones in congested malls between buildings clusters where there are high concentrations of pedestrians, particularly during class change times, and the construction of bicycle facilities separate from vehicle traffic."
- "The plan also promotes pedestrian and cyclist safety by proposing additional grade separations at major roadway junctions."
- "Strategies identified [in the mobility chapter] support a high-performance transit network to access campus amenities."

Figure 31: Transportation Mode Hierarchy



Source: Texas A&M University Campus Master Plan 2017, page 151

Pedestrian Priority Zone

The CMP states that:

"The physical outcome of the Mobility Hierarchy is the Pedestrian-Priority Zone, which is an area of campus that gives priority to pedestrians and limits most vehicle traffic…The zone ties the campus core together in an attractive, seamless, and intuitive way by closing select interior roadways and relocating parking to the campus perimeter and creating an internal network of improved multi-use pathways." (CMP 2017, p. 152).

Campus Impressions

Campus Districts

The figure below provides a snapshot interpretation of the main campus. The historic, original campus area stands out for its shade and walkability. It is adjacent to the College Main Street commercial district but separated from it by University Drive to the north. University Drive becomes Raymond Stotzer Parkway when it crosses Wellborn Road going west.

The area across Wellborn Road, to the west, can be described as suburban. The Campus Master Plan proposes to urbanize this area by converting parking lots into quads around Reed Arena and Research Park, and to consolidate the West Campus quad. Further west, the area towards the Bush Presidential Library is characterized by open space and isolated buildings. The area at the "front" of campus is mostly open space. Wellborn Road and University Drive are barriers. Two rather spacious pedestrian/bicycle underpasses connect campus across Welborn Road, and a lesser-known pedestrian only underpass connects across Raymond Stotzer Parkway.

Figure 32: Interpretation of Campus Area

The CMP's historical analysis and evaluation of the campus is prescient and instructive.

- "Many of the campus planning decisions made in the 1960-1970's did not align with the civic structure that had been establishing over the past 100 years. The building growth on the west of campus during this period contributed to the decentralization of the campus. These buildings were typically program driven resulting in large, odd-shaped footprints and did not create corresponding green or open spaces on and around their site" (CMP 2017, p. 32).
- "Research Park was designed as a traditional 1990's suburban corporate park, with isolated buildings and surface parking scattered along a large curvilinear boulevard" (CMP 2017, p. 34).
- "West Campus Quad: This is a large, vast, open space between several scattered buildings. The curvilinear pathways do not provide clear direction, space definition, hierarchy of pathways, or define smaller spaces desired for gathering" (CMP 2017, p. 39).
- "Lamar Street and Nagle Street: These limited access streets located near the center of the Historic Core offer intuitive pedestrian connections into the academic core of campus but are currently used for parking" (CMP 2017, p. 39).

The CMP recognizes that distance and perception are factors in mobility (CMP 2017, p. 50.)

- "One of the greatest challenges to the efficient functioning of Texas A&M is moving around its large campus. What may be considered the primary academic campus, stretching from Bizzell Street west to Penberthy Road, covers over one square mile, and many university facilities lie well outside that zone."

- "Key linkages, such as the pedestrian underpasses at Wellborn Road and Raymond Stotzer Parkway and pedestrian malls located in the east areas of campus, help to provide connections between zones on campus."
- "The pedestrian experience of campus, however, is burdened by lack of shade and shelter in many areas, poorly aligned pathways and planters, long travel distances—both physically and perceptually—and conflicts with bicycles and motorized vehicles in many locations."
- "The East Texas climate is hot and humid most of the year. Shaded walkways are important to maintain pedestrian comfort. The size of the core campus alone pushes the limits of what can be covered on foot during class change time."
- "The density of foot, bicycle, and vehicular traffic creates congestion and conflict in many campus areas. The most significant of these are along Bizzell Street between Ross Street and University Drive, the intersection of Spence Street and Lamar Street, and the numerous pedestrian gateways to campus along University Drive and Bush Drive."
- "The core campus specifically experiences tension among pedestrians, bicyclists, and skateboarders." These tensions are discussed in the bicycle section below.

The CMP states that the "…alterations made to Ross Street have been one of the most successful projects implemented since the 2004 Campus Master Plan. Ross Street is a limited access road closed to private vehicles during busy class hours, successfully giving priority in this area to pedestrians and cyclists" (CMP 2017, p. 86).

Building on that the CMP proposes the following roadway changes:

- 0-5 years (CMP 2017, p. 141)
  - Lamar Street pedestrian mall
  - Nagle Street pedestrian mall
  - Spence Street pedestrian mall
  - Houston Street pedestrian mall
  - Olsen Boulevard roadway alteration
  - Agronomy Road streetscape improvements
- 5-10 years (CMP 2017, p. 143)
  - Wellborn Road development
  - Kimbrough Road development
  - F and B Road streetscape improvements and new connection to Health Sciences Center from South Traditions Drive
  - Reduce Bizzell Street
  - Reduce Lewis Street

Character Zones and Districts

The 2017 Campus Master Plan defined thirteen (13) character zones, as shown in Figure 33 below. These character zones recognize the distinct functions and aesthetics that have emerged over time in specific areas of campus, and are useful to identify the necessary elements, such as building materiality, landscape amenities, and signage that will allow campus to develop and maintain a cohesive appearance across its extents.

The character zones are also used in the CMP to develop design guidelines and infill strategies to preserve the campus heritage; develop appropriate densities and building heights, and other urban design features that support connections across zones; and, integration of existing buildings with context and network of open spaces that include plazas, malls, pathways, and landmarks.

Figure 33: Campus Character Zones

Source: Texas A&M University Campus Master Plan 2017, page 75

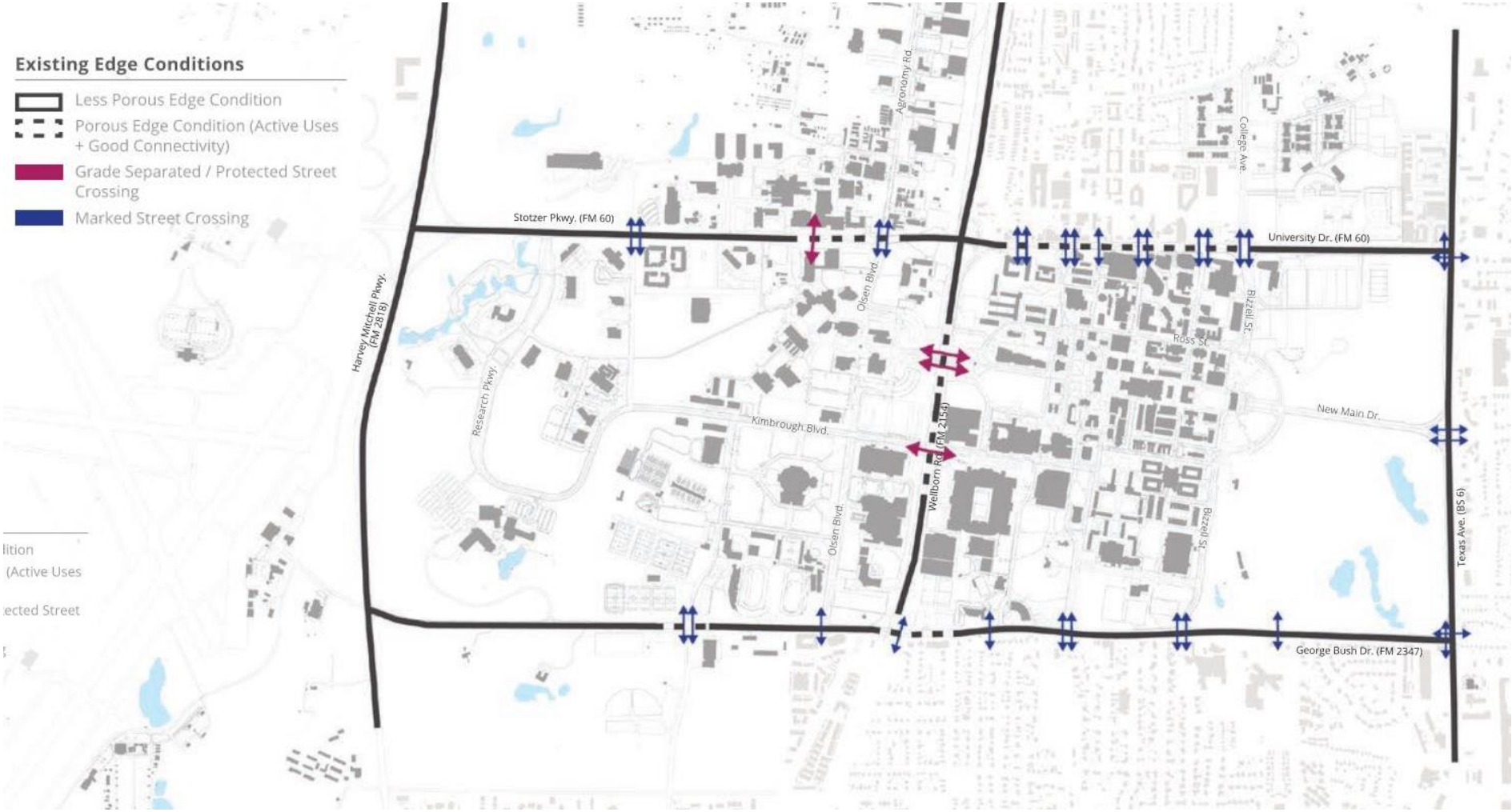
The thirteen (13) character zones, in a somewhat clockwise sequence, include:

- Hensel Park
- Campus Front
- Campus Entry & Golf Course
- Southside
- Historic Core
- Northside
- West Campus
- Athletic & Recreation
- Bush Library
- Research Park
- University Drive & Agronomy Road
- F & B Road
- Health Sciences Center

Edges, Paths, Nodes and Landmarks

Campus Edges

Figure 34: Existing Edge Conditions

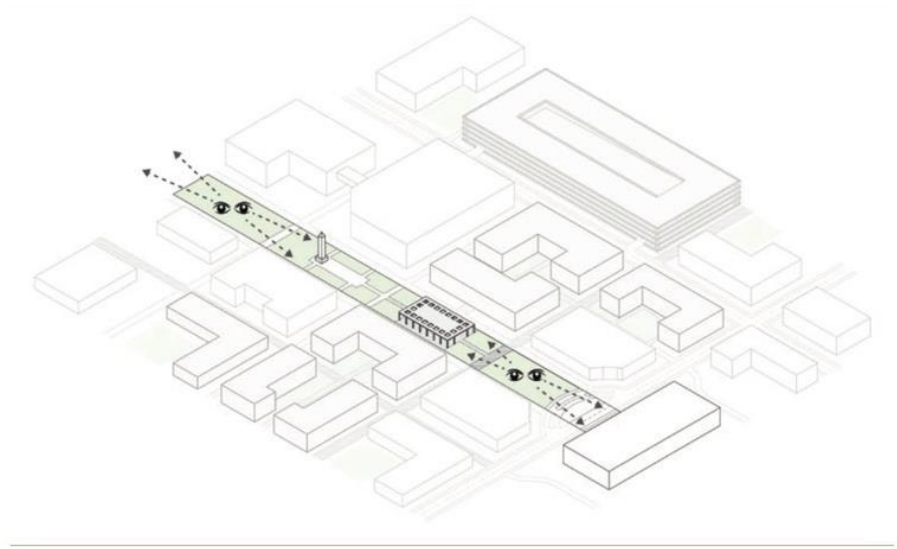


Source: Texas A&M University Campus Master Plan 2017, page 41

The existing edge conditions illustration above (CMP 2017, p. 41), shows that perimeter roads define edges between major campus areas – East Campus, West Campus and College of Veterinary Medicine & Biomedical Sciences Campus, and surrounding neighborhoods. These roads lack porosity and are mostly barriers, except for a strip along University Drive near College Main Street. Wellborn road and the rail tracks are a major barrier to connect the east and west sides of campus. Texas Avenue and the campus front and golf course provide a physical separation from the College Station.

Pedestrian Connections and View Corridors

Figure 35: View Corridors



Source: Texas A&M University Campus Master Plan 2017, page 247

View corridors (CMP 2017, p. 247) are important for "legibility" and visual connectivity between zones and buildings – landmarks, public art and other design features provide the ability to navigate through open spaces, add rhythm and wayfinding. If you can see your destination, you do not need a map. Visual connections and cues make the distance between destinations seem shorter, they engage pedestrians and stimulate them to continue walking, similar to activated street fronts.

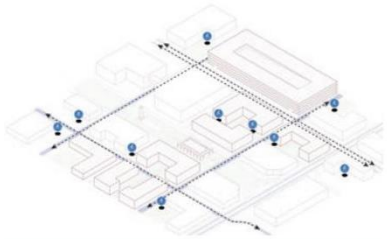
- "Pedestrian connections such as malls, connectors, multi-use paths, and the urban edge should align with landscape guidelines" (CMP 2017, p. 246).

Figure 36: Mobility Integration

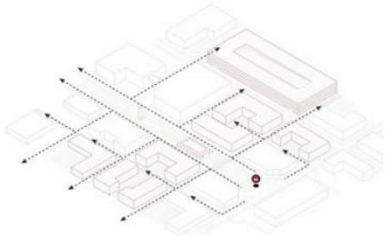
1.8 - MOBILITY INTEGRATION:

The proposed project and user mobility needs are accommodated utilizing the hierarchy of priority identified in the Campus Master Plan – placing primary emphasis on the pedestrian-oriented intent of the campus experience. Secondary support to be provided through the creating or improving bicycle routes and bicycle parking. Project siting should allow campus users to walk to the proposed project within 1/4 mile from a parking structure (or existing surface lot) and/or transit stop. No new roadways should be created as part of a project, unless supported by the Campus Development Plan.

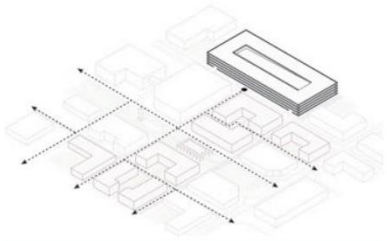
Existing and Proposed Parking Structures - See Chapter 04



Bike Parking and Proximity



Transit Proximity



Parking Proximity

Proposed Screening at Bike Parking

Shaded Transit Stop

Bicycle Lanes and Safety Striping

Source: Texas A&M University Campus Master Plan 2017, page 248

Mobility integration (CMP 2017, p. 248) presents a compelling analysis of the inter-relation between circulation patterns and buildings. The Transportation Mobility Master Plan project will continue the focus on view corridors, walking distances, and shade.

- "Project siting should allow campus users to walk to the proposed project within one-quarter of a mile [or five minutes] from a parking structure (or existing surface lot) and/or transit stop. No new roadways should be created as part of a project, unless supported by the Campus Development Plan."

Figure 37: Alignment of Buildings and Setbacks

Source: Texas A&M University Campus Master Plan 2017, page 254

The alignment of buildings and setbacks figure (CMP 2017, p. 254) illustrates the concept that people prefer to walk along buildings sidewalks, and that consistent setback lines along campus edges and districts edges will help define the street space and reinforce the edge condition and legibility of campus districts.

Under its Architecture Guidelines, the CMP calls for campus buildings to be urban:

- "Campus buildings to be urban expressions reflecting the pedestrian nature of campus and the civic import of the University" (CMP 2017, p. 260).

Landscape, Tree Canopy, Shade, and Climate

Figure 38: Campus Trees, Location and Coverage

Campus Trees Location and Coverage

Legend

Tree Canopy Coverage

Spread Radius (at scale in feet)

- Feet
- Center of Campus
- Campus Buildings
- Sidewalks
- Parking Lots & Garages
- Water Features & Bodies
- Parks, Sports & Rec. Fields

Source: ESRI base maps and Texas A&M University GIS data

There are more trees, and bigger and older trees, in the historic core part of campus. Texas A&M University has made a conscious effort to plant trees in West Campus and the Athletic and Recreations areas, however those are still small and provide limited shade and climate protection.

The Image below shows people sitting on the steps of the YMCA Building in the historic part of campus. Note that they are all sitting or standing in the shaded portion of the stairs.

Tree Canopy Outside the YMCA Building

Source: Michael King

The view of John Kimbrough Boulevard below shows younger and smaller trees along a suburban-style street. While the design is technically a "complete" street, with bike lanes and crosswalk between parking lots, it is not an attractive or welcoming place for people afoot. Due to the width and lack of other visual elements, this long straight road may encourage higher speeds. Additionally, the multiplicity of signs suggests poor yielding behavior by drivers.

Horticulture Drive was recently converted to a bike/walkway. The CMP proposes a greenway along the adjacent White Creek, which will make this route all the more desirable.

View of John Kimbrough Boulevard

Source: Google Maps, Street View

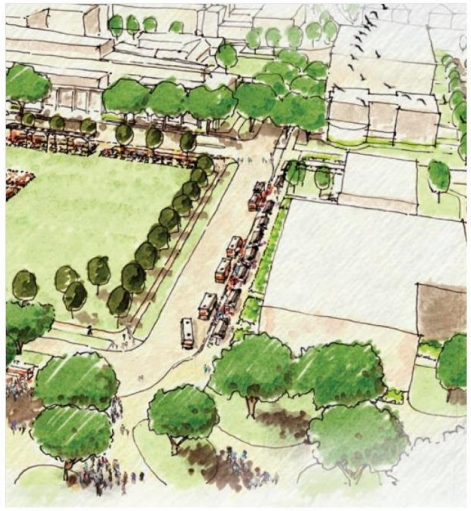
Horticulture Drive Off Discovery Drive

Source: Michael King

White Creek Restoration Rendering

Source: Texas A&M University Campus Master Plan 2017, page 81

Figure 39: Structured Shade Examples



Houston Street Transit Hub

- Since Live Oaks have been removed, addition of bus shelters along Houston Street from Lamar Street to Old Main Drive
- Shelters should not impede on pedestrian circulation or queuing areas.
- Improved landscaping, including site walls and benches for additional seating, resilient plantings for stormwater management, exterior lighting, and paving.

Source: Texas A&M University Campus Master Plan 2017, page 303

"In addition to planting new shade trees, which can take years of growth before they provide adequate shade, the campus can install built-in shading structures to provide immediate shade in both large and small gathering areas" (CMP 2017, p. 302).

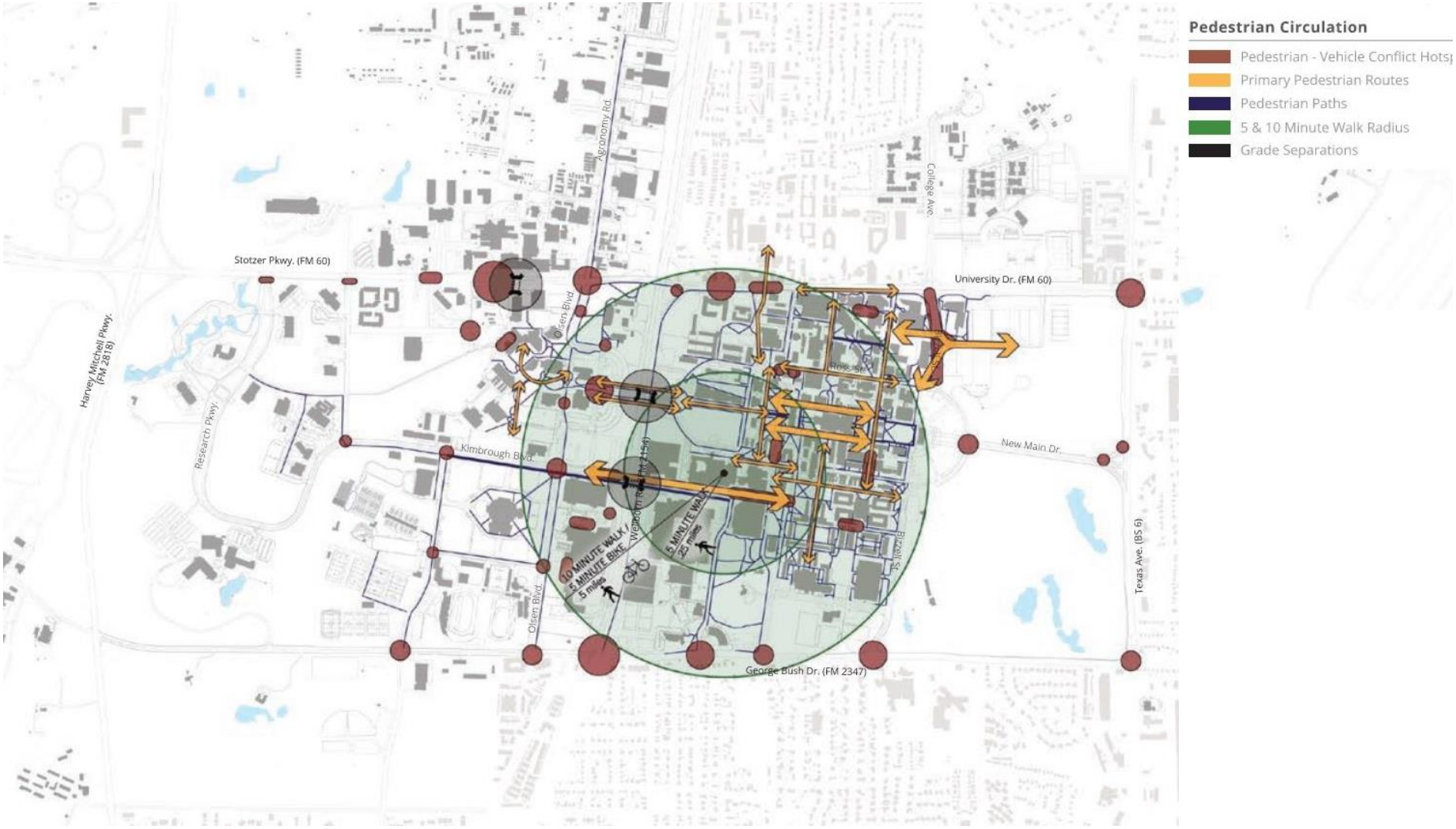
There are three examples of shade structures that are currently deployed on campus:

- Architectural
- Bus shelters
- Tensile canvas

Transit stops with high passenger activity and key access points on campus such as Memorial Student Center and West Campus quad are good locations to provide extended shade through canopies, awnings, and other structures.

Walking

Figure 40: Pedestrian Circulation and Pedestrian-Vehicle Conflict Hotspots



Source: Texas A&M University Campus Master Plan 2017, page 51

The analysis of existing pedestrian circulation (CMP 2017, p. 51) identifies primary walking routes and pedestrian-vehicle conflict points, upon which this study can build. However, more information is needed on how the key conflict points were identified or rated.

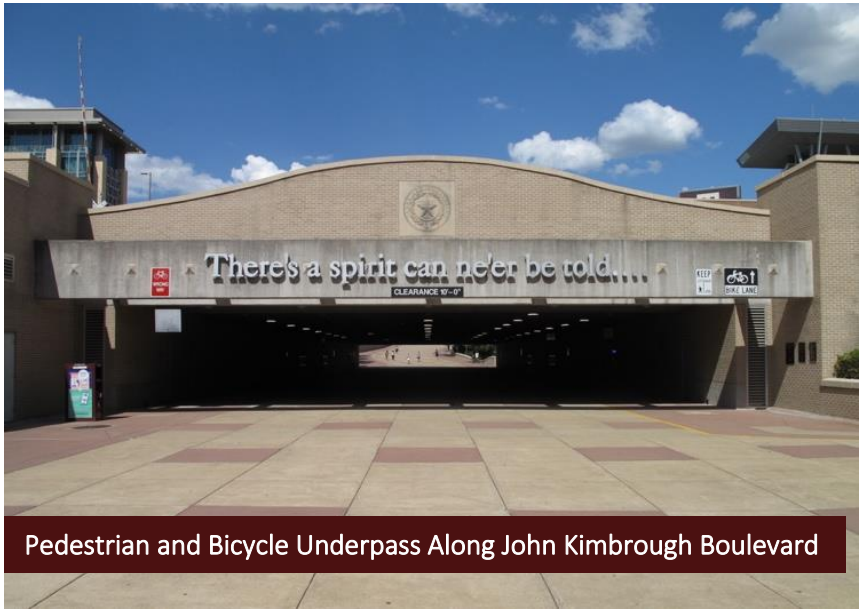
The CMP calls for more concepts that will increase pedestrian safety, access, and comfort.

- "In addition to Limited Access Roadways and the Bicycle Dismount Zone, two general strategies for managing pedestrian safety are proposed: [1] increasing the physical separation of pedestrians from vehicles along travel routes and [2] implementing an array of traffic calming techniques at crossings" (CMP 2017, p. 154).
- "Shaded walkways are important for pedestrian comfort in the hot, humid Texas climate. Particularly on such a large campus where pedestrian trips are lengthy" (CMP 2017, p. P154).
- Site and landscape guidelines principles include: "create connective spaces that facilitate movement in a seamless and intuitive experience" (CMP 2017, p. 280).

Images to the right show walking/cycling/skating underpasses under Wellborn Road. These are great connections between character zones. They have good sight lines (for security), some shade, and ameliorate the ground-place disconnect so often found in underpasses.

Pedestrian and Bicycle Underpass Along Old Main Drive

Source: Michael King



Pedestrian and Bicycle Underpass Along John Kimbrough Boulevard

Source: Michael King

Source: Michael King

The image to the left shows and example of “desire line” where people want to walk to shorten their routes. These situations are instructive as to how people use the space and, to its credit, the University has recognized them and placed paving stones along the route.

Source: Michael King

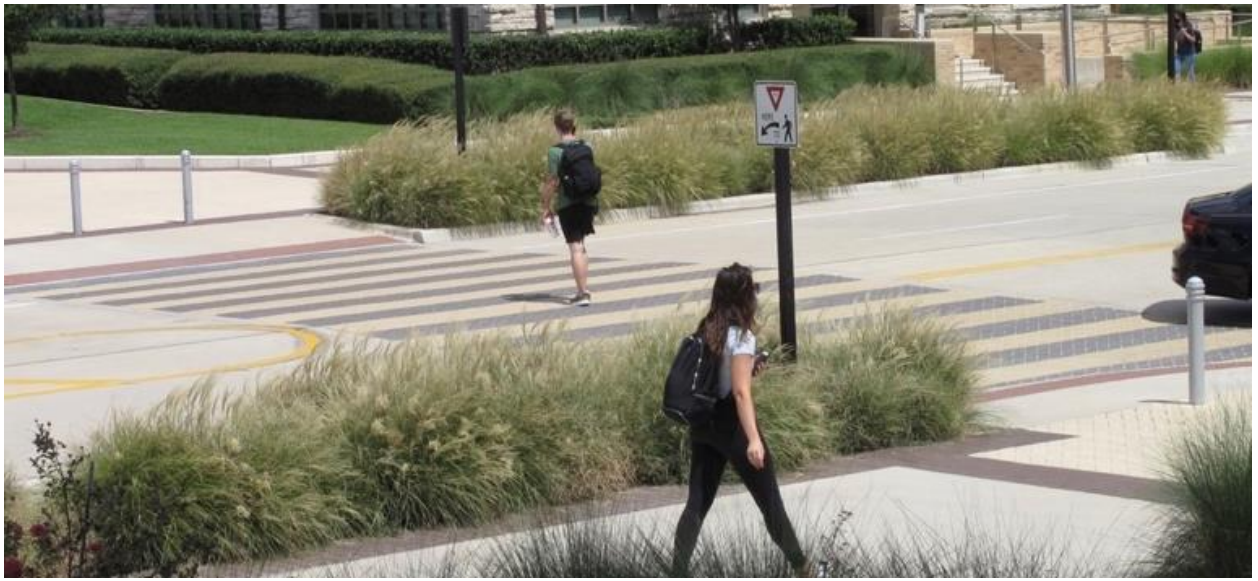
The image to the left shows a good design practice with excellent crosswalk, ramp, median, and median tip alignment, and design at the intersection of Olsen Boulevard and Old Main Drive – a model going forward.

Source: Michael King

The top image to the left shows excellent crosswalk and path coordination on Coke Street. People walking on campus will walk where they will. A good plan predicts, accommodates, and iterates on pedestrian paths and desire lines.

Source: Michael King

The below image to the left shows a wonderful path and crosswalk alignment on Bizzell Street near Ross Street. The path directly connects to a parking lot that will be replaced with new buildings in the future. Some jurisdictions would have rejected this crossing because it is roughly 100 feet from the intersection, and routed people to the junction. Texas A&M University has plans to eliminate this direct connection because a new crosswalk was added to the junction. However, this would go against the guidance of the CMP's transportation mode hierarchy, which gives pedestrians mobility the highest priority, and the fact that proposed new buildings to the east of Bizzell Street will generate greater pedestrian traffic and need for a direct route and connection.



Source: Michael King

The image to the left, shows a crosswalk with a painted median along Gene Stallings Boulevard. A raised median, on the left, would increase comfort and safety –also a good practice and model moving forward.

Source: Michael King

The image to the left, shows an example of a sidewalk ending at a driveway. This is a conflict zone and not a best practice. The sidewalk should remain level, so it acts as a raised crosswalk and slows drivers.

The above image shows a typical Aggie Spirit bus shelter found around the Texas A&M University campus. It is a utilitarian design with seating around main columns and a simple roof that provides shade in the midday. It's circular seating does not allow friends to sit facing each other, and the roof does not provide shade during morning or late afternoon.

The CMP recognizes that the main campus transit hubs could have better facilities for those waiting for a bus.

- "The transit hubs in front of the Memorial Student Center and the Trigon often have large numbers of students queuing to board the bus. These transit hubs lack adequate shelter facilities to provide shade and seating for waiting riders" (CMP 2017, p. P54).
- Texas A&M completed a renovation of Lamar Street in front of MSC that improved this location by widening sidewalks and installing the typical bus shelters. However, the importance of MSC, Trigon, and Wehner—in West Campus, as transit hubs congregating large numbers of people, calls for a larger celebration of transit and treating these access points as signature transit stations with additional shade, climate protection, and placemaking amenities.

Cycling

The 2015 Bicycle Master Plan (BMP) lists three important points germane to this work.

- Bicycle ridership dropped 38% drop in four years (from 12% mode share in 2011 to 7% in 2015). This is significant and the cause should be researched (bike parking, car parking, bike restrictions), (BMP 2015, p. 7).
- Similar to findings in the CMP, crashes are located on perimeter roads and not on campus (BMP 2015, p. 9).
- University police enforce traffic laws on campus roads, but not paths. Currently no rules govern pedestrian and cyclist behavior on paths (BMP 2015, p. 21-22), with the exception of bicycle dismount zones.

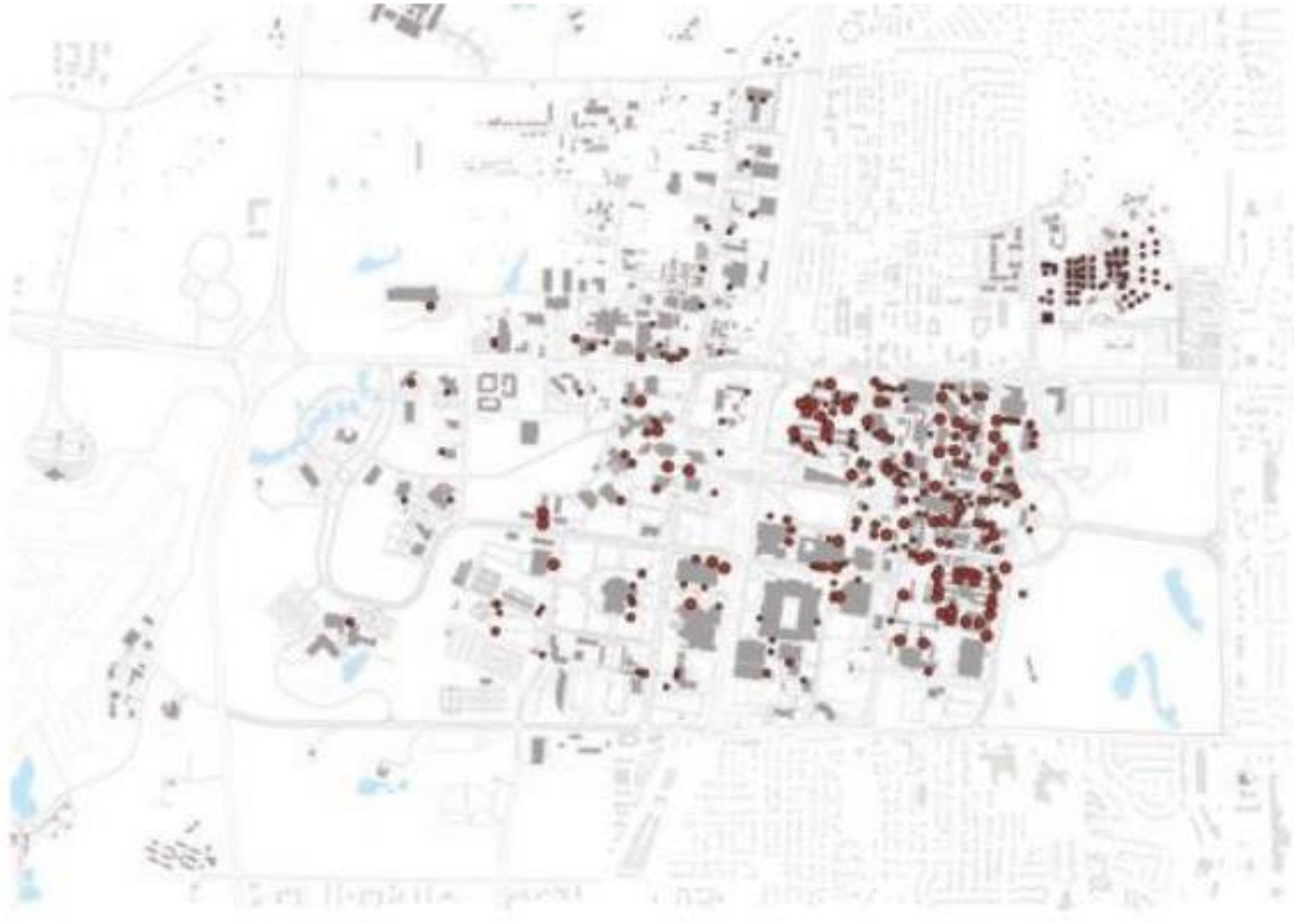
The CMP offers an evaluation of bicycle use on campus and recommends a number of improvements.

- "The student body at Texas A&M University is an active, bike-using community. The bike users interact not only with cars and buses, but with pedestrians as well. Pedestrian paths tend to overflow with bike-users as they cut between buildings, leading to conflicts and safety concerns. There is a need to separate pedestrians and bike-users in order to minimize their interactions, and increase safety of both modes" (CMP 2017, p. 52).

- "Bicycle parking is well distributed due to demand. The academic core is filled with many parking locations. However, at some buildings there are more bikes parked than there are spaces. Existing conditions indicate that abandoned bicycles are a real challenge for maintenance staff, and it is unclear how much of the bicycle parking overflow could be addressed simply by better bicycle culture" (CMP 2017, p. 52).
- "Covered storage is preferable for long-term bicycle parking, such as at residence halls, while uncovered bicycle parking is acceptable at academic buildings. In lieu of providing one large bicycle storage area at each building, consider multiple smaller capacity storage areas which tend to result in fewer bicycle tangles" (CMP 2017, p. 162).
- "As bike-users leave the campus, the network pathways at intersections with peripheral roadways or city paths do not provide sufficient capacity or safety for riders. Poor connectivity between campus and city bicycle path networks force cyclists to cross busy intersections and roads, resulting in a number of bicycle-vehicle collisions each year" (CMP 2017, p. 52).
- "When clearly designated cycling areas are not present or well-marked, cyclists are uncertain on which part of the road they belong. Examples of this issue are cyclists create unsafe conditions for pedestrians by riding on undersized or heavily used sidewalks, such as the walkways adjacent to Evans Library" (CMP 2017, p. 158).
- "Some motorists also disregard bicycle lane markings and drive or park in bicycle lanes. More visible and clearly worded signage could reduce this problem and aid enforcement. Separating bicycle paths and routes from roadways is a priority of the proposed bicycle network and implementation depends on whether the right-of-way is wide enough to accommodate separation" (CMP 2017, p. 158).
- "The bicycle network is also intended to close the gap between on campus parking garages or surface lots and buildings. To encourage biking as a last-mile connectivity solution, there need to be bicycle parking facilities adjacent to vehicle parking locations" (CMP 2017, p. 158).

Military Walk (pictured above) is a large, shaded walkway in the core of campus. Giving pedestrians this direct route is aligned with the CMP's prescription to prioritize their access. The path to the right is the "wheels route," but it is unshaded and discontinuous.

Figure 41: Bicycle Parking Locations



Source: Texas A&M University Campus Master Plan 2017, page 52

Error! Reference source not found. Below is reproduced from page 52 of the CMP (2017). It shows existing bike network and crash locations, the size of the star indicates frequency of incidents at each location. Crash locations appear to occur mostly on the wide, high-speed and -volume perimeter roads. There seem to be no crashes inside campus. This suggests the campus is safe, there are few cyclists, or crashes are not reported. The crash map on page 9 of the BMP (2015) tells the same story.

Figure 42: Bicycle Crash Locations

Existing Bike Network and Crash Locations, Size of star indicates frequency of incidents at each location

Conflict Areas at Bizzell Street and Olsen Boulevard

Community engagement conducted by the BMP, offered the following perspectives, which this project will use to inform solutions (BMP 2015, p. 10-11):

Roads & Streets

- Intersections that feel unsafe or hostile for bicyclists include:
  - Olsen Boulevard and John Kimbrough Boulevard
  - University Drive and Wellborn Road
  - University Drive and College Main
  - Agronomy Road and South College (*sic*) – most likely Fand B Road, which continues Old College Road west of Wellborn Road.
  - New Main and Texas
  - George Bush Drive and Coke Street/Throckmorton Street
  - George Bush Drive and Houston Street
  - George Bush Drive and Wellborn Road
  - George Bush Drive West and Marion Pugh Drive
- Vehicle speeds on Wellborn Road are too high
- Signal loop detectors don't always function

Bike Parking

- Bike racks are often full of bikes that are never used, so that daily users cannot find space [this has been largely addressed by bicycle registration and the work of Texas A&M bike team]
- Implement mandatory bike registration [this was implemented].
- Covered parking is needed for staff and faculty who are daily bicycle commuters
- If covered parking cannot be provided, staff and faculty should be allowed to take bikes inside

Education

- Cyclists ignore stop signs and signals
- Motorists need to know that bikes have a right to use roads on and off campus
- Some bus drivers do not know how to drive around cyclists [this is a comment that was provided during the BMP community engagement sessions]
- Many students have never biked in traffic [this is the other side of the comment above, which suggests that there are conflicts between bus and cyclists and that those need to be addressed not only through education but also through better design of facilities and intersections]

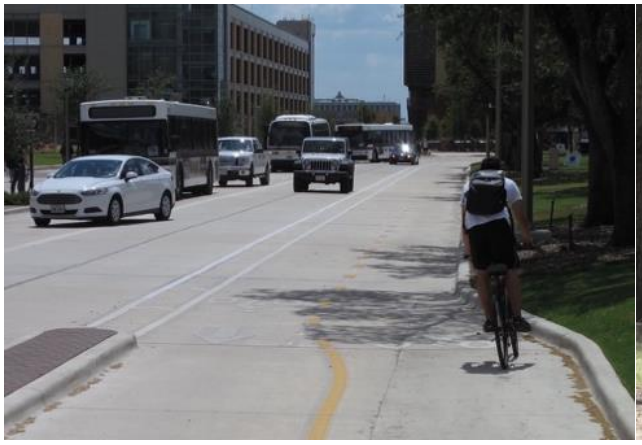
Promotion

- Sweat is a big problem; add showers or clean-up stations
- Use new student orientation to educate about bicycling on campus rules, programs, amenities, and services

The BMP identifies a few challenges in the design of campus bike facilities (BMP 2017, p. 13):

- Key cycling locations were designed to prioritize driving
  - West Campus garage
  - Intersection of John Kimbrough & Olsen
- "The excessively long dismount zone proposed in West Campus Connectivity Study would greatly impede mobility, increase travel times, and would likely not be observed or enforceable."

Best practice is to accommodate cycling routes while managing speed and over-crowding. For example, the cyclist on the right above is riding on Ross Street, which is closed to vehicle traffic. Still, she is riding on the sidewalk.



Painted bike lanes on streets present opportunities to upgrade to protected bike lanes, which have a proven record of attracting cyclists, especially the less confident. Protected bike lanes are also safer.

Generally, the Mobility Master Plan will need to understand the relationship between the Campus Master Plan and the Bicycle Master Plan. The BMP is organized according to the commonly used 5 Es (engineering, education, encouragement, enforcement, evaluation). The 5Es approach is siloed, contains no performance metrics, and is not consistent with a Safe Systems approach, also known as Vision Zero. BMP crash data suggests the campus is safe, but safety issues are often cited in the CMP. More dialogue is needed on Texas A&M's preference for protected facilities, lower speeds in general, wider paths, signs, and penalties.

Campus Life & Sustainability

Texas A&M University developed a Sustainability Master Plan that was issued October 2018 and followed by a Residence Life Sustainability Plan (RLSP) that was issued November 2018.

Sustainability Master Plan

Under its Energy Use and Greenhouse Gas Emissions Chapter (page 16), the plan seeks to minimize the number of total vehicle miles (VMT) traveled by campus users and operate a campus fleet that minimizes demand for fossil fuels, resulting in:

- 50% reduction in GHG by 2030
- Net zero emissions by 2050
- Metrics weighted by campus user[1]

"A shift from a vehicle-centric campus to a pedestrian-focused campus requires investment in both transportation systems and the built environment. These investments include increases to on-campus transit capacity, relocation of parking to the perimeter of the campus, and improved connectivity with the surrounding community" (SMP 2018, page 25).

Under its Campus Mobility Chapter (page 26), the plan seeks to minimize the number of total vehicle miles traveled by campus users:

- "Decrease the number of business parking permits that are sold. They are an inefficient use of the parking system and increase campus traffic. The campus parking system should encourage customers to park once and then walk, bike, or use transit to move around campus."
- "Increase capacity of the on-campus transit system." More buses, larger buses, and clean-fuel buses.
- "Increase the number of students, faculty, and staff who commute to campus using something other than a single-occupancy vehicle (SOV). Per the latest [2017] Transportation Mode Split Survey, 65% of students travel to campus in something other than a single-occupant vehicle, while only 16% of faculty and staff report commuting via an alternative mode of transportation" (SMP 2018, page 27).

Residence Life Sustainability Plan

This plan reiterates that "the University is focused on creating a pedestrian-focused campus that enhances the experiences of campus users, promotes safety for pedestrians and bicyclists, and places less emphasis on single occupancy vehicles" (RSLP 2018, page 26).

[1] Weighted campus user is a STARS-defined statistical measurement that is used to normalize information across campuses of varying student, faculty, and staff populations. See RLSP 2018 for more details.

"As the pedestrian priority zone of the campus increases in size, and fewer single occupancy vehicles are driven within campus, the need for a more robust and cohesive bicycle network and transit system increases. Much of the existing bicycle and transit system focuses on how to move off-campus residents to campus without using single occupancy vehicles, but many on-campus residents similarly rely on bicycles and transit to travel around campus's 5,200 acres each day" (RSLP 2018, page 26).

"Transportation Services estimates that 63% of on-campus residents have cars on campus. Residents expressed that while they do not use their cars every day to move around campus, they still felt they needed a car to conveniently take infrequent trips to off-campus destinations. These infrequent trips are mostly errand-type activities such as grocery shopping and getting a haircut and typically occur on the weekends." (RLSP 2018, page 26-27).

The Residence Life Sustainability Plan points out that in order to achieve a pedestrian-focused vision for campus and reduce vehicle miles traveled, the University needs to provide safe and convenient access options to on and off campus destinations for students residing on campus as well as those commuting to campus.

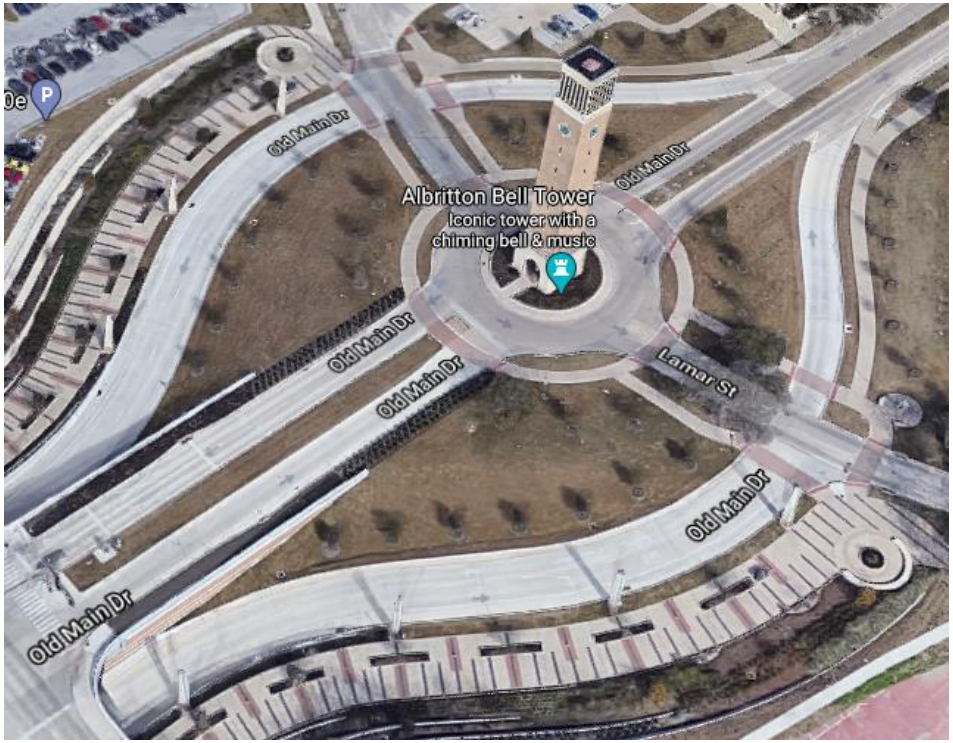
Big Ideas and Issues for Further Study

Let's celebrate transit!

The Memorial Student Center is a major bus stop and terminal (see also CMP 2017, p. 54). It is perhaps an opportunity to develop a more expansive, sheltering, and welcoming structure like a signature bus station.

Shared Streets

Ross Street is closed to motor vehicles during the day (6:00 a.m. – 6:00 p.m.). This provides an opportunity to redesign the street, e.g., remove the curbs, add a bike path, and widen the walkway while maintaining the historic tree lines and canopy. The idea would be to raise the street, eliminate the curb, re-design and convert it to a shared street with a narrow vehicle path that can support buses and maintenance vehicles, and be open to motor vehicles at night. The CMP proposes similar conversions on Lamar, Nagle, Spence, and Houston Streets.



Old Main Drive is essentially a dead-end street with low vehicle volume. Perhaps there is an opportunity for a "greener" design. The CMP proposes renovating the adjacent Simpson Drill Field and proposes infill development and a parking garage on the adjacent Northside (to replace Parking Lot 30e).

Traffic Calming of University Drive

Source: Michael King

College Main Street, Northgate Promenade, Bottle Cap Alley—these popular attractions are separated from campus by University Drive, which is a wide, high-speed road designed to move vehicles. There are opportunities to cross the street at traffic signals, and these have been upgraded in recent years, but the overall design of the street is not inviting for people walking or cycling.

In contrast, South University Drive in Fort Worth similarly bisects the Texas Christian University campus, but there have been recent efforts to "calm" it. Image below shows the street, a major arterial in the city, "calmed" with a median, bike lanes, crosswalks aligned with campus paths, and traffic signals.

Source: Google Street View

More Information Needed

Street Dimensions

More information is needed on the street dimensions proposed in the CMP and BMP. It would also be good to explore pedestrian crossing islands and traffic calming devices.

- Shared use paths
  - CMP shows a 14-foot wide shared use path (p. 160). A level of service analysis could help determine if this width will be sufficient to provide acceptable comfort.
- Bicycle lane width
  - CMP shows 4-foot wide on-streets bike lanes (p. 160)
  - BMP recommends 5 to 6-foot wide bike lanes (p. 38)
- Vehicle lane width
  - CMP shows 11- and 12-foot vehicle lanes (p. 172). The North American Association of City Transportation Officials (NACTO) recommends 10-foot lanes, with 11 feet for transit.
- Roadway shoulders
  - CMP shows shoulders along campus streets. NACTO recommends against shoulders on urban streets.

University Drive

The CMP's evaluation of University Drive speaks to how the street could be reimagined to better and more safely connect campus with the College Main retail area.

- "University Drive has the potential for a strong town-gown relationship, but it currently lacks a defined edge. This weakens the physical connection into the community. The pedestrian paths along University [Drive] are undersized and in need of repair. Traffic movement along University Drive tends to be fast, hindering pedestrian movement across the drive" (CMP 2017, p. 38).
- "One of the most successful edges to campus is the stretch of University Drive between Boyett Street and College Avenue. On the north side of University Drive (community side), active uses such as restaurants and stores provide a destination for the University community and local residents alike. Good spacing of crosswalks [560 feet] keep the pedestrian block size manageable and facilitate movement on and off campus. Opportunities still exist to improve this stretch. Presently, the landscaping poorly defines Texas A&M's presence, and driveways and parking lots on both sides of the street still present pockets of unsafe vehicular obstacles for pedestrians" (CMP 2017, p. 40).
- "Alterations are scheduled from College Main through Bizzell Street to improve pedestrian safety, including wider sidewalks and pedestrian crossings, pedestrian-only crossing phases at traffic signals, and landscape buffer plantings [this work has already been completed].
- "The Master Plan's proposed grade separations would complement these alterations to greatly improve the pedestrian experience along University Drive. Decreased vehicle lane widths will lower vehicle speeds, and reconfigured left-turn lanes will improve traffic flow" (CMP 2017, p. 196).

This subject is ripe for discussion. Making University more "urban" seems contrary to the grade separation called for above and below. At-grade pedestrian crossings suggest slower traffic and more pedestrian activity while grade-separated crossings suggest faster traffic and fewer people at-grade. In addition, the crosswalk spacing suggested (560') is longer than best practices (265').

Moreover, the Bryan College Station Metropolitan Planning Organization commissioned a Bicycle and Pedestrian Connectivity Study for FM60 (University Drive and Raymond Stotzer Parkway)[2] from Easterwood Airport to FM 158 (Boonville Road). The study proposes tunneling University Drive from Wellborn Road to College Avenue/Bizzell Street, building a lid over the tunnel with a multi-modal boulevard, and a series of ped/bike grade separations at key intersections, including a spider overpass at Agronomy Road, a triple-level roundabout at College Avenue/Bizzell Street, and a circular overpass and underpass at Texas Avenue.

Source: BCSMPO FM60/University Drive Bicycle & Pedestrian Connectivity Study (February 2018)

The MPO study recognizes the segment of University Drive between Wellborn Road and Texas Avenue as the segment with the highest ped and bike traffic and number of crashes in the corridor. However, the designs presented represent a "highway in the city" approach where conflicts with cross-traffic, transit, cyclists and people walking are separated but not treated equal, which is the opposite of multi-modal and complete streets – core tenets of the study.

The short multi-modal boulevard, proposed over the University Drive tunnel, widens existing ped and bike crossings but does not call for additional street crossings to shorten the distance between crossings, calm traffic and augment travel paths to connect the College Main area with the Texas A&M University campus.

Source: BCSMPO FM60/University Drive Bicycle & Pedestrian Connectivity Study (February 2018)Study (February 2018)

[2] FM60/University Drive Bicycle and Pedestrian Connectivity Study. HALFF Associates, Inc, February 2018. Retrieved from http://bcsmpo.org/DocumentCenter/View/300/FM-60---University-Drive-Approved-Final-Report.

Grade Separation

The CMP evaluates the existing pedestrian underpasses and recommends a number of grade separations. The existing underpasses at Wellborn Road are of high quality and making the Raymond Stotzer Parkway underpass more accessible seems correct.

- "Future development along University Drive will boost foot traffic through the University-Stotzer separation. To better support development, the underpass needs improvement including lighting that clearly marks pedestrian and bicycle paths, and aesthetic upgrades to create a safer, more positive experience" (CMP 2017, p. 156).
- "Treatments to discourage street-level crossings and direct pedestrians toward the underpasses, as described in the preceding pages, are desirable at all existing grade separations" (CMP 2017, p. 156).
- "Additional grade separations at the campus perimeter are needed to increase the seamlessness and safety of the Pedestrian-Priority Zone on campus" (CMP 2017, p. 156).

Building more bridges and underpasses and discouraging foot traffic along/across University Drive may be contrary to efforts to (re)connect the campus with surrounding neighborhoods. Grade separated crossings generally lead to higher speeds and decreased safety, and are generally not used, unless they are designed like the underpasses at Wellborn, which are expensive to build and maintain.

The segment of University Drive between Wellborn Road and Texas Avenue is a critical juncture between the Texas A&M University Campus and the City of Bryan. Calming down traffic along University Drive and providing additional pedestrian crossings will increase access routes and connectivity between campus and the city. The multi-modal boulevard design concept in the MPO study can be achieved without building massive multi-level street intersections and tunneling of vehicle traffic underneath, if the design goal is to prioritize pedestrian traffic and local access.

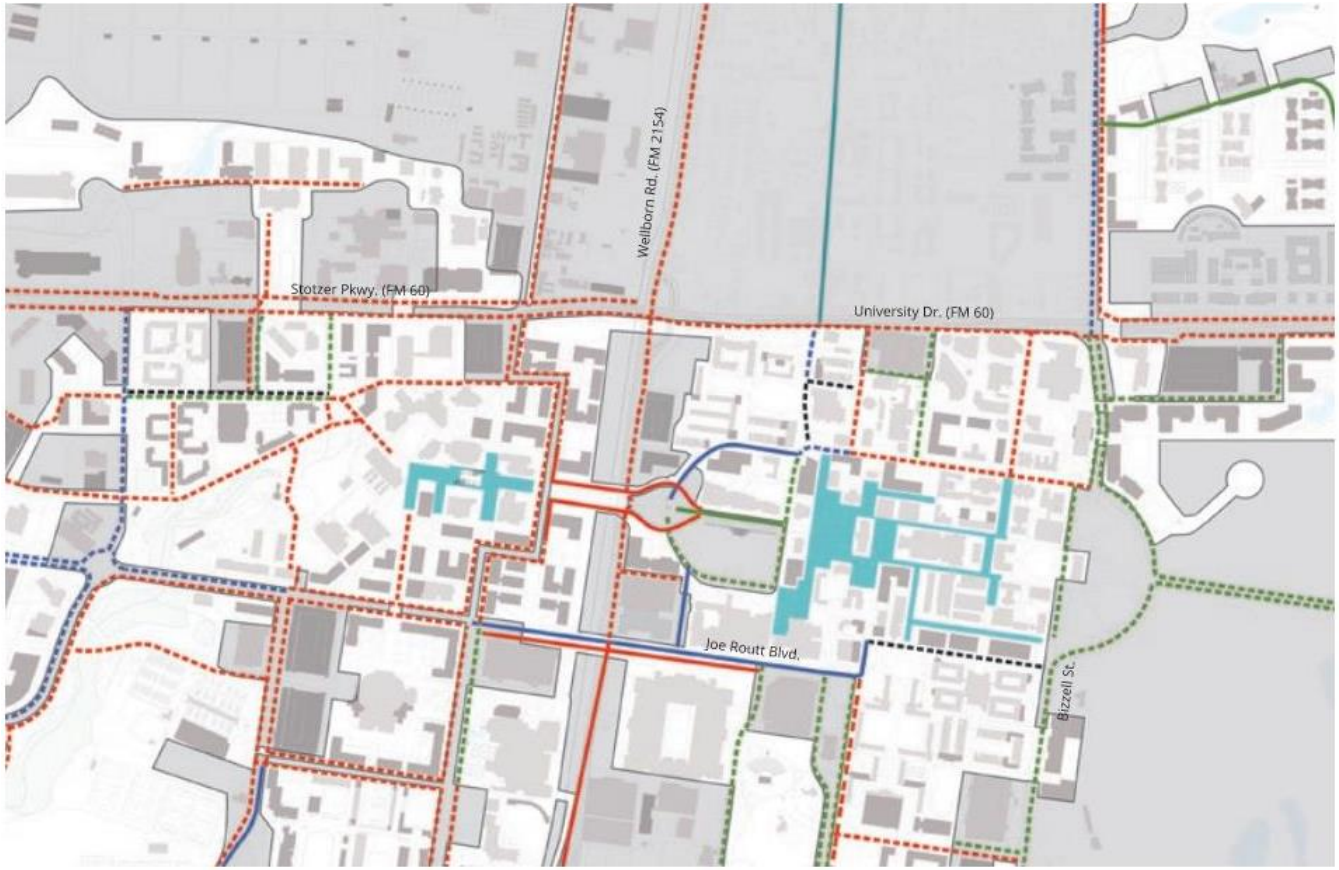
Dismount Zones

The CMP recommends two dismount zones on campus (CMP 2017, p. 161).

- "The sheer volume of cyclists traveling within certain areas of campus during class change periods is a hazard to pedestrian safety."
- "Precedent for such a policy exists on campus at Rudder Fountain, where cyclists are currently expected to dismount and push their bicycles."
- "Bidirectional bicycle routes are planned to loop around the dismount zone."

A "wheels route" is a positive and welcoming indicator for cyclists and skaters. More information is needed on the effectiveness of the existing dismount zone. This will inform about the potential success of the proposed dismount zone.

Figure 43: Proposed Bicycle Dismount Zones (Displayed in Light Blue)



Arizona State University - Walk-Only Zones

University of California, Berkeley - Walk-Only Zones

Source: Texas A&M University Campus Master Plan 2017, page 161

The proposed dismount zone on the historic campus is about 1,500 feet wide. At best one could park one's bike then walk to the midpoint in just over three minutes (750' at 4 fps). If one is cycling from the south side to a location on the north side of the zone, then the walk would be six minutes. To cycle around the 2,300-foot long zone would take about 2.5 minutes (at 10 mph). As such, the zone may penalize cyclists and seems a disincentive.

Best practice is to limit dismount zones to very specific locations and times, use design to discourage cycling in particular locations, create bicycle-priority routes through the zones, and/or create bicycle priority routes around the zone (as proposed by the CMP). Other campuses that have successfully incorporated cycling include U. Victoria (BC), UC-Davis, Boise State, CU-Boulder, BYU, and Portland State.

Source: Michael King

CONCLUSIONS

1. The Mobility Master Plan is guided by the projects and goals contained in the Campus Master Plan (CMP) 10-year plan (Phases I and II, Immediate High Priority and Medium Priority, respectively).
2. The Texas A&M University ("Texas A&M" or "University") main campus covers a large area with concentrations of buildings and amenities in the historic core, and dispersed buildings in the newer sections of campus. Walking to and between destinations in the newer areas of campus is more challenging because of distance, heat, and absence of shade. The CMP acknowledges and addresses this, with the Immediate High Priority Phase emphasizing shade and landscaping projects, and later phases developing density around the West Campus quad and residential and academic/research neighborhoods.
3. At about one mile wide and 2.5 miles long, one can walk the core sections of campus and cycle throughout campus in 15 minutes, and thus it can be thought of as 15-minute city.
4. The sun and heat make shade an omni-present issue.
5. The quads proposed in the CMP (West Campus and Memorial Student Center) offer the opportunity to celebrate transit and create transit-oriented development. A signature bus station at one or both of these locations could be transformative.
6. The malls and greenways proposed in the CMP offer the opportunity to upgrade walking and cycling facilities.
7. University Drive near College Main is a prime location to (re)connect the campus to the city.
8. More discussion is needed on the bicycle dismount zone proposed in the CMP, that was rejected by the Bicycle Master Plan of 2015).
9. Additional discussion is also needed on:
    a. The bicycle/pedestrian bridges and underpasses proposed in the CMP.
    b. Street cross-sections, which differ between the CMP and BMP.
    c. Separated bicycle facilities, traffic calming, and shared streets/paths.
    d. Passenger loading and unloading locations for ride-sourcing companies (e.g., Lyft and Uber) and on-line deliveries.
10. Crash maps suggest the campus is generally safe, but the perimeter roads are not. Surveys suggest a disconnect between actual and perceived safety with regards to cyclists.
11. Campus police cannot ticket cyclists not in the roadway. This presents the opportunity to engage cyclists, especially BIPOC (black, indigenous, and people of color) cyclists differently than through negative enforcement campaigns.

TRANSPORTATION DEMAND MANAGEMENT

Introduction and Context

A core component of any comprehensive parking and transportation program, transportation demand management (TDM) encompasses programs, policies, and infrastructure to support commuting and travel options beyond single occupant (i.e., drive-alone) options. This is certainly the case at Texas A&M University (Texas A&M), where TDM initiatives will play an important role in managing parking demand and vehicle congestion, while offering students, faculty, and staff a variety of transportation options.

The TDM program operated by Texas A&M Transportation Services (Texas A&M Transportation Services) encompasses a range of options, services, and support programs aimed at making it easier for Aggies to commute to and from campus, and travel around campus during the day. In addition to current offerings, there is an opportunity to grow the TDM program in its scope, scale, and effectiveness to promote non-drive-alone commute modes and greater adoption of walking, biking, rolling, and transit options for circulating around campus. A robust and comprehensive TDM Program will continue to be a central part of the Texas A&M Transportation Services mission moving forward and will be critical to helping the university achieve long-term land-use, master-planning, and sustainability goals.

Key Takeaways

- According to a recent user survey, overall drive-alone rates are nearly 68%, including 87% of staff.
- Nearly 63% of general staff and 45% of faculty/research staff indicated they drive alone when they need to travel around campus during the day.
- Texas A&M Transportation Services offers a comprehensive set of infrastructure, services, policies, and programs to support TDM. However, Texas A&M Transportation Services does not leverage pricing, flex commuting, or other incentive-based policies to support and encourage non-single occupant vehicle commuting.
- Survey results indicate a significant lack of familiarity among campus users with Texas A&M Transportation Services offerings, such as the bike lease program and Zipcar.
- An analysis of home addresses suggests a significant potential to encourage more students, faculty, and staff to walk, bike, and take transit to campus.
- To increase walking, bicycling, and transit mode share, attention should be paid to ensuring comfortable and connected walking and bicycling infrastructure that connects to bus stops and the center of campus.

CURRENT MOBILITY PATTERNS

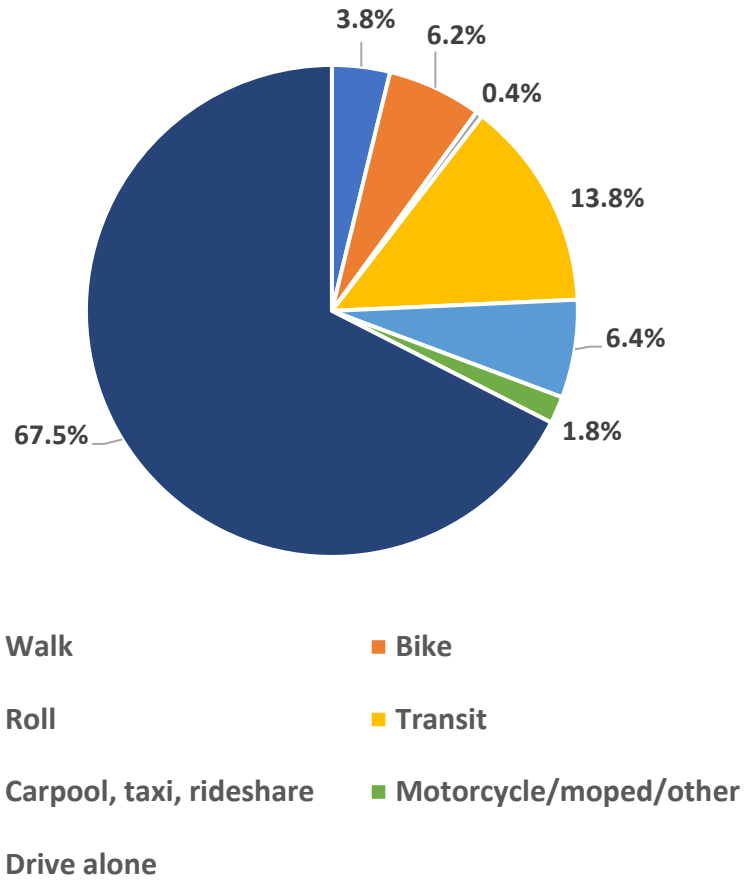
A 2019 Texas A&M Transportation Services survey of the campus offers insights into the commuting and travel patterns of Aggies. Of the roughly 2,500 survey respondents, over 40% were staff, nearly 24% were undergraduate students, and the rest were graduate students, faculty or research staff, postdocs, and others. Nearly 67% of respondents traveled to Main Campus daily or almost every day. The discussion of current mobility patterns below is focused on Main Campus, as it is the most significant generator of trip and parking demand. However, commute mode-share data summarized below do not distinguish whether the respondent travels to Main Campus or another campus unit, such as the RELLIS Campus.

Commute Mode Share

Commute mode share is an estimate of the proportion of the type of transportation mode a particular group uses to travel to and from campus. In the context of TDM, modes are primarily evaluated through a prism of impacts on expensive infrastructure, as well as sustainability. Specifically, modes are evaluated based on whether they result in a net increase in campus parking demand, vehicle/roadway congestion, and emissions. Single-occupancy vehicle (i.e., drive-alone) travel adds to both congestion and parking demand. Travel modes like carpool and rideshare help reduce overall parking demand, but do not necessarily reduce vehicular and roadway congestion. Walking, bicycling, rolling, and transit are beneficial in both taking vehicles off the road, and reducing parking demand. TDM initiatives aim to reduce the mode share of drive alone and vehicular modes and increase the mode share of modes like walking, bicycling, rolling, carpool/vanpool, and transit.

The mode share of survey respondents of all user types is depicted in the Figure below. The current drive-alone rate is 67.5% or roughly 2/3 of those commuting to and from campus. Nearly 14% commute by transit, while a combined 10% walk and bike to and from campus.

Figure 44: Overall Mode Share, All Campus Users

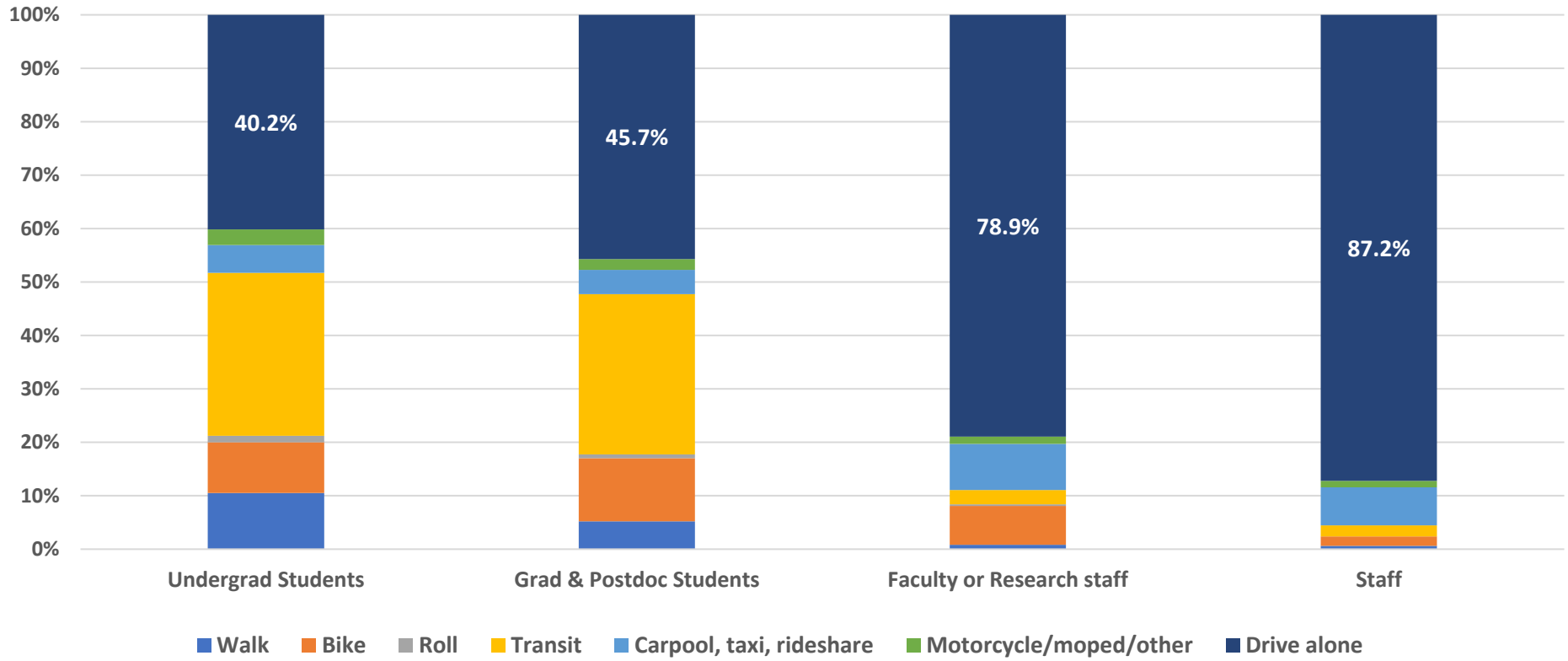


Source: Texas A&M Transportation Services, 2020

Comparing mode share across different user types helps to understand the scale of adoption among the different travel modes for each type of user. General staff have the highest drive-alone rates at over 87%, nearly 10% higher than the proportion of faculty or research staff who drive alone. The difference is in large part due to the significantly higher bicycle mode share Community Survey data indicate that roughly 80% of workers 16 years and over in Brazos County drive alone to work, greater than the national average. among Faculty or Research Staff (7.3%) than the bicycle mode share for general staff (1.8%). According to 2019 American Community Survey data, nationwide, more than 75% of commuters drive alone to work, 5% take transit, less than 3% walk, and 0.5% bike to work. As a point of comparison, American

The figure below compares the mode share across the different campus user types, based on the results of the 2019 survey. Drive alone rates are labeled.

Figure 45: Mode Share Comparison by User Type



Source: Texas A&M Transportation Services, 2020

Among undergraduate students, although a relatively small sample size, the drive alone rate increased significantly as students got further along in their education. First-year undergraduates surveyed had a drive alone rate of approximately 6%, while fourth-year undergraduates had a drive alone rate of 49%. This corresponds to a decrease in commuting on foot, by bike, and via transit over this same time. These data points suggest that drive alone habits become more prevalent as students progress in their time at Texas A&M. Deliberate communications and messaging related to TDM to these students early and throughout their academic careers could help reduce drive alone rates as students gain seniority on campus.

Expectedly, drive-alone rates increase, and non-drive-alone rates decrease based on whether users live on campus, off campus in College Station, or further out. Those students living off-campus in College Station and Bryan, however, have higher bicycle and transit mode shares than nationwide averages. This suggests willingness to commute via non-drive alone modes where reliable service exists.

Intra-Campus Travel Patterns

The other critical component of the campus mobility profile is travel within and around campus during the day. Nearly 80% and above for all user types indicated that walking is one of their primary means of circulating around campus during the day (other than staff, of whom 66% indicated walking).

Nearly 46% of undergraduate and graduate survey respondents indicated transit as a primary means of travel around campus during the day. However, 20% of faculty/research staff and 33% general staff indicated such, suggesting room for further transit adoption among these user groups.

Nearly 63% of general staff indicated that they drive alone when they need to travel throughout campus during the day. Nearly 45% of faculty or research staff indicated the same thing, while fewer than 6% of undergraduate students indicated they use drive alone as a means of circulating around campus during the day. Those that rely on driving as the primary means to travel around campus during the day should be the primary focus of efforts to shift their mode to transit and other options.

INVENTORY OF CURRENT TDM OFFERINGS

Texas A&M Transportation Services offers a variety of TDM programs, services, and infrastructure to encourage, enable, and support non-drive alone travel to, from, and around campus. Current offerings are summarized below in three primary categories: Infrastructure and Services, Policies, and Programs. Note that clear distinctions do not exist among these three categories: overlap does exist, and some TDM offerings can be placed in more than one category. Nevertheless, these three categories provide a useful framework through which to understand current TDM offerings.

Infrastructure and Services

Infrastructure encompasses the built environment—roadways, transit stations, parking facilities, walking and bicycling routes and facilities, and physical and tangible services like transit, paratransit, carshare, mobile rider applications, and the like. These options are summarized below.

All Modes

Texas A&M Mobile Application: Texas A&M has a free mobile application with information useful to life on campus. Related to transportation and parking, the application contains: parking maps; real-time parking availability information; bus route, schedule, and location information; and information about alternative transportation.

Driving/Parking

- **Campus Parking Facilities:** Texas A&M has over 40,000 parking spaces in six parking garages and over 150 surface parking lots on campus.
- **Electric Vehicle Charging Stations:** There are 14 electric vehicle charging stations on main campus, and two on RELLIS campus. Some charging stations have a 16' cable, and some have a 25' cable. Charging stations require a network membership (either ChargePoint or nrg) to activate the charger. Both Level 1 and Level 2 chargers exist.
- **Zipcar Carshare:** Four Zipcars are available on campus for hourly and daily car rental, offering flexibility for those that do not own a car. Vehicles must be returned to the same location that they are picked up.
- **Rideshare:** Texas A&M Transportation Services had a partnership with Zimride (an Enterprise entity) until Zimride suspended operations at the end of 2020 because of the COVID-19 pandemic. Texas A&M Transportation Services is working to secure a new rideshare partnership beginning in Spring 2021 that will enable Aggies to connect with others for shared rides.

Transit/Shuttling

- **Transit service:** Texas A&M Transportation Services operates eight on-campus and 14 off-campus bus routes, providing services throughout the area on days, nights, and weekends. The system is integrated with the Brazos Transit District. Brazos Transit pass holders may ride on and off-campus Texas A&M bus routes. Additionally, those with a Texas A&M University ID card may ride Brazos Transit District buses.
- **Paratransit:** Texas A&M Transportation Services offers a curb-to-curb shared ride service for students, faculty, and staff that are functionally unable to use the standard fixed-route service. Paratransit service operates only when the fixed-route service is also operating.
- **Park-and-Ride:** A park-and-ride facility exists at First Baptist Church of College Station at 2300 Welsh Avenue in College Station. The park-and-ride is serviced by Route 34.

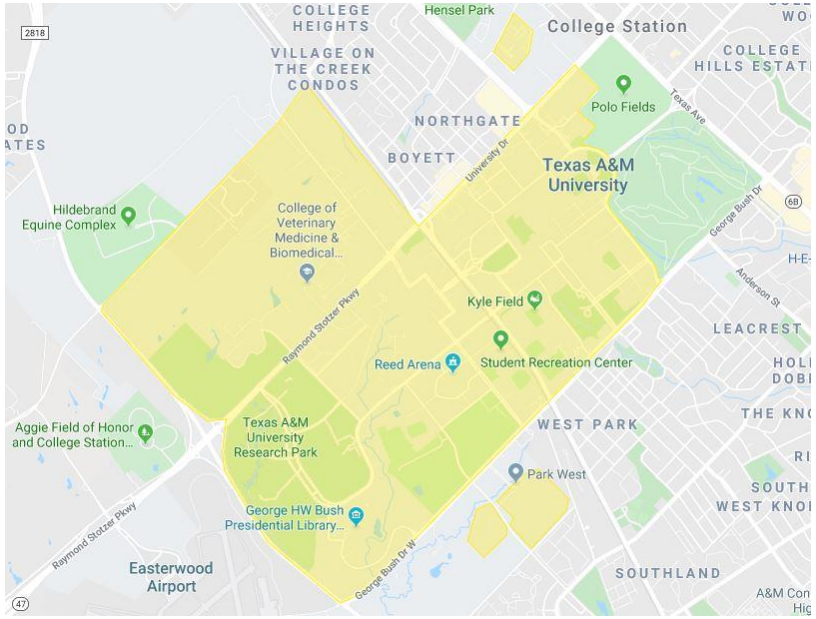
Bicycling

- **Bicycle Lanes:** Although not a complete network, painted on-street bicycle lanes are present on many streets on and adjacent to campus (e.g., John Kimbrough Boulevard west of Wellborn Road).
- **Bicycle Parking:** Thousands of bicycle parking locations exist on campus. Observation indicates that the predominate bicycle rack style is a one-piece portable/surface mount triangle loop bicycle rack that holds up to eight bicycles.
- **Summer Bicycle Storage:** Bicycle storage can be purchased for the summer in a secure indoor facility.
- **Unsignalized "Dutch Junction" Intersection:** A first in the United States, a Dutch-style bicycle intersection was installed in 2016 at the intersection of Bizzell and Ross Streets. The intersection handles significant vehicular, pedestrian, and bicycle volumes. Intersection treatments include green paint, marked crosswalks for both pedestrians and bicyclists, and raised curb areas at the corners and in the median to provide refuge and protection for pedestrians and bicyclists.

A portion of the "Dutch-style" intersection at Bizzell and Ross Streets on campus. Source: Google Maps.

- **VeoRide Bikeshare:** Texas A&M Transportation Services and Veo have a partnership for bikeshare on campus. Students, faculty, and staff can get discounted rates, and memberships can be accessed by the ride, day, month, semester, or year. As of March 2021, Veo launched electric throttle e-bikes called "Cosmo," bringing the total Veo fleet on campus to a mix of 2,500 pedal and throttle e-bikes. Riders must park shared bikes within the designated geofence which includes Main Campus, the Research Park area, and the Veterinary Medicine and Biomedical Sciences portion of northwest campus.

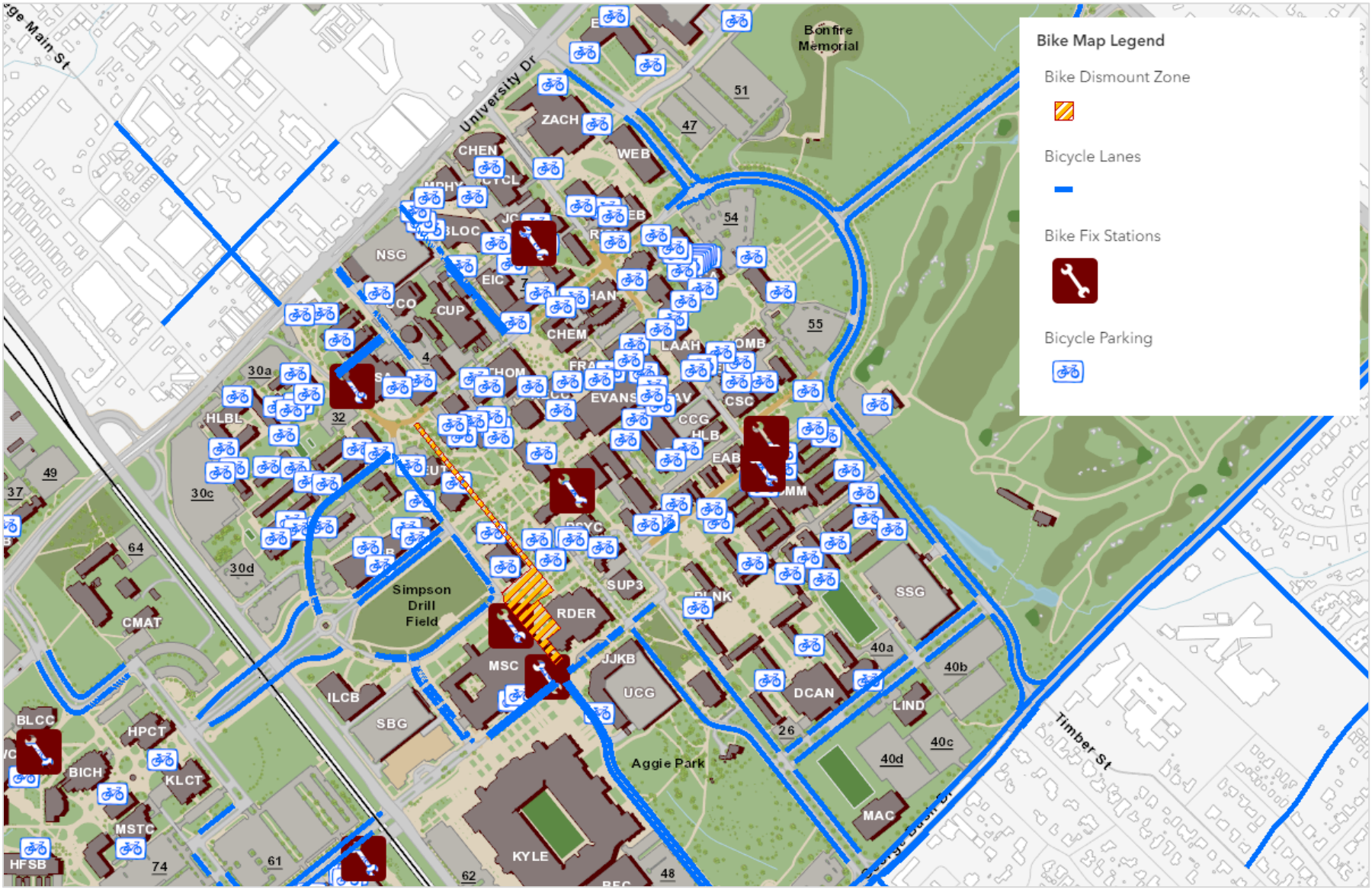
- **FIXIT Bicycle Stations:** 10 FIXIT stations are located around campus. Each station is equipped with a bicycle tire air pump and tools to conduct basic bicycle repairs.



This map depicts the geofence of the VeoRide bike share. Source: Texas A&M Transportation Services.

The figure below depicts bicycle lanes, bike FIXIT stations, and bicycle parking centered around the Simpson Drill Field and Academic Plaza in the center of campus.

Figure 46 Bicycling Infrastructure Near Core of Campus



Source: Texas A&M University Transportation Services, 2021.

Policies

TDM policies include specific strategies that are meant to enable, encourage, or incentivize trip flexibility, and transportation and parking demand reduction. In the context of university TDM programs, policies typically manifest themselves as parking pricing, commute incentives/rewards, and parking and commute options that promote flexibility in payment, mode choice, and commuting and travel behavior. Texas A&M Transportation Services offers two core policies that promote flexible commuting:

- **Hourly Visitor Parking:** Hourly parking offers a "pay-as-you-go" parking option in parking facilities across campus. Parking may be paid for via multi-space pay station kiosks or the ParkMobile mobile payment application. Although deemed "visitor parking" these spaces are used by students, faculty, and staff who want the convenience and flexibility of this option, even by those who already possess a permit to park on campus.
- **Flexible Parking Options:** In addition to hourly parking, Texas A&M Transportation Services offers free time-limited parking in specific locations across campus and temporary parking permits for students, faculty, and staff who do not currently have a parking permit. Additionally, Texas A&M Transportation Services offers pre-paid daily, weekly, and monthly parking permit options, purchased mostly by students and staff. In fiscal year 2020, Texas A&M Transportation Services sold 2,803 daily permits, 564 weekly, and 2,917 monthly permits.
- **Telework:** Before the COVID-19 pandemic, employees could request work-from home status. Employees' ability to telework is dependent on permission from their department and supervisor. Texas A&M Transportation Services recognizes the long-term effects of the COVID-19 pandemic on commuting patterns and expects an increase in the adoption of telework moving forward.

Programs

Programs include those aimed at providing promotion, education, encouragement, and support to TDM goals and initiatives. Texas A&M Transportation Services TDM programs are outlined below:

- **Mandatory Bicycle Registration:** In order maintain an accurate record of the bicycles and bicycle ownership on campus, Texas A&M Transportation Services requires all bicycles on campus to be registered. There is a one-time fee of $10 for bicycle registration. This revenue goes to support campus bicycle programs and initiatives.
- **Bike Lease Program:** Texas A&M Transportation Services offers a first-come, first-served bike lease program. A limited number of bicycles are available for lease for $75 per bike per semester. The lease includes the bicycle, a U-lock with cable, monthly safety/preventative maintenance check-ups, and on-demand help with basic bicycle maintenance needs.
- **Borrow-A-Bike Program:** Texas A&M Transportation Services operates a program where students, faculty, and staff can borrow a bicycle free of charge for a day's use. Users can borrow a bike up to twelve times per year.
- **Bicycle Concierge Service:** Texas A&M Transportation Services operates a bicycle concierge program for students, faculty, and staff seeking bicycling resources and help. The concierge offers trip planning, safe bike route review, bike education and resources, and other information about bicycling in the area.

- **Wheelers at the HUB:** Across from The Commons, Wheelers at the HUB offers a comprehensive center for bicyclists to get assistance from specialists on questions related to alternative transportation information, bicycle check-ups and maintenance, bicycle ID engravings, registration, and other matters.

- **Annual Bike Sale:** The Surplus Property Office conducts an annual bike sale in late September or early October. All bikes are sold as-is for $30.
- **Online Public Auction:** The Surplus Property Office also conducts online bike sales every three weeks throughout the year as bicycle inventory allows.
- **Marketing, Promotions, and Communications:** Marketing and communications is a critical part of any TDM program. Texas A&M Transportation Services utilizes Twitter, Facebook, Instagram, YouTube, and other marketing methods to communicate with users about programs, services, and options. Texas A&M Transportation Services regularly participates in "ride-to-work" day activities.

EVALUATION OF EXISTING TDM OFFERINGS

Existing TDM offerings were evaluated in the context of Texas A&M goals and industry best practices. The purpose of evaluating existing programs, policies, and offerings is to identify what is working and what could be improved, and to identify challenges and opportunities related to the current TDM program. This exercise is critical to building scenarios for future TDM operations, identifying specific TDM actions and strategies that may build upon Texas A&M Transportation Services' successes, and support achieving long-term goals and objectives.

Infrastructure and Services

A system of on and off-street pedestrian and bicycle facilities help to move students, faculty, and staff around campus, and connect to surrounding areas. A summary and evaluation of the existing walking and biking network, including opportunities for improvement, is included in Chapter 3 of this report titled *Mobility and Urban Design*.

Transit is a primary means of travel for commuting and campus circulation and is a core component of Texas A&M's TDM program. Texas A&M Transportation Services has nearly 100 vehicles in its fleet and operates approximately 150,000 service hours annually. Transit service will become even more critical as the university works to achieve its vision of relocating parking from the core of campus to the periphery. A summary and evaluation of existing transit services, including opportunities for improvement, is included in the *Transit* section of this report, found in Chapter 2.

Policies

Commuting and mode choice reflect human behavior and needs. Commuters value options and flexibility, but also want predictability, consistency, and reliability in how they commute and travel. Commute and travel choices are driven by commuter's needs related to cost, schedule, security, physical ability, and other factors. Universities and other parking providers are increasingly understanding the value of mode choice and incentives to drive the increase share of non-drive alone modes.

Traditional parking permits are sold in the form of long-term semester or annual commitments, paid in full as one initial cost. This represents a sunk cost for commuters. Commuters are incentivized to drive and park every day as they already paid for the parking permit and are looking to get the most value out of it. Universities are working to provide additional flexible, daily, and "pay-as-you-go" parking options so commuters can drive and park when they need to and use alternative modes other times.

Some universities are even moving to daily parking in-lieu of longer-term permit types. The University of California, Davis, for example, is transitioning to daily parking for all affiliates in the summer of 2021 in response to the changing dynamics of parking demand coming out of the COVID-19 pandemic. The university is leveraging its existing mobile parking payment technology to facilitate the program. This forces commuters to make a "daily decision" about which mode to use for commuting each day based on schedule needs and other factors, leading many users to choose non-SOV commute modes some days. There are pros and cons to this approach, based on a campus' goals, and an investment in technology is usually required.

Programs

TDM support programs are wide-ranging and comprehensive. Programs offered place particular emphasis on promoting and supporting bicycling as a viable and comfortable means of travel to, from, and around campus. The concierge and Wheelers at the HUB are excellent examples of programs that provide support to commuters (in this case to bicyclists and prospective bicyclists), while breaking down barriers to alternative commute modes. Additionally, Texas A&M Transportation Services operates a transit program and partnership with Brazos Transit. There is an opportunity to expand concierge offerings to include one-on-one commute consultations for all modes of travel, including walking, micromobility, transit, and telework.

A key supporting offering in many successful TDM programs is that of a commute incentive program. Universities are exploring ways in which they can reward commuters who forego SOV commuting with financial and other incentives, such as credits that can be used to access a variety of mobility resources. For maximum results, incentives could be combined with programs that detach commuters from long-term parking permit commitments, and a variety of reliable and connected commuting and travel options must be available to enable commuting non-SOV commuting. Guaranteed ride home (GRH) programs are critical to facilitate non-SOV commuting, giving those that do not drive to campus the peace of mind that they can get home quickly in the event something unforeseen comes up. Commute management software platforms that integrate with permitting, employee recording keeping, and parking and commute tracking software are available to help manage commute incentive programs.

Stanford University, for example, operates a "Commute Club" which provides a series of perks and options to those that forego single-occupant vehicle commuting. Incentives include "Clean Air Cash" rewards for sustainable commuting, access to shared dynamic carpool services, bicycle- and carsharing options, carpool and vanpool programs, subsidized transit, and guaranteed ride home program for those that need to get home due to an emergency during the day after commuting in a non-SOV mode in the morning.

A key part of successful TDM programs is marketing, advertising, and promoting the program and options to students, faculty, and staff. Texas A&M Transportation Services maintains active social media accounts and conducts engagement and outreach through several fronts. However, the 2019 survey of 2,500 respondents indicated a low degree of familiarity with several TDM offerings. Specifically:

- 73% of respondents had never heard of Zimride;
- 40% had never heard of Zipcar;
- 56% had never heard of the Borrow-A-Bike program;
- 62% had never heard of the bike lease program; and,
- Nearly 87% had never heard of the Wheelers at the HUB resource.

This data indicates that a more robust and targeted marketing is warranted to increase familiarity with and use of TDM programs. Stanford University, for instance, conducts targeting marketing to faculty and staff that live close to transit facilities.

Moving the Mode Share Needle: Capture Analysis

Introduction

Achieving long-term master planning and sustainability objectives at Texas A&M (i.e., re-programming parking into other uses and/or relocating parking to the fringe of campus) will depend in large part on lowering the overall footprint of parking on campus. The ability to reduce the campus parking footprint requires a shift in the drive-alone mode share among students, faculty, and staff and the resulting decrease in parking needs. Phase 2 of this report will discuss scenarios of varying intensity and ambition pertaining the goals and targets pertaining to the precise scope, scale, and timing of mode shift away from drive-alone modes that is needed to meet specific sustainability and master planning objectives.

Relative to the local context, the most likely non-single-occupant vehicle commute options to the Texas A&M campus are walking, bicycling, carpooling, vanpooling, and taking transit.

The ability to "move the needle" of mode share away from drive alone commuting to non-drive alone commuting can be quantified in large part by conducting a capture analysis. The capture analysis estimates the quantity or proportion of students, faculty, and staff living within a catchment area of certain criteria, and therefore who have reasonable access to commuting via a particular mode. For the purposes of this project, the following were considered as part of the capture analysis:

- **Walking and Rolling—**Target populations: students, faculty, and staff that live within one mile of campus. This is approximately a 20-minute walk at a comfortable 3 miles per hour pace.
- **Bicycling—**Target populations: students, faculty, and staff that live within five miles of campus. This is approximately at 30-minute bike ride at a comfortable 10 miles per hour pace.
- **Transit—**Target populations: students, faculty, and staff that live within with a 10-minute walk of a Texas A&M Transportation Services bus stop.

A subset of anonymized student, faculty, and staff address data were used to conduct the capture analysis. Analysis was conducted on those living both on and off-campus. For the purposes of the analysis, as recommended by Texas A&M, the center of campus was defined as the location of the Memorial Student Center at the Simpson Drill Field. Address locations are approximate, and although the data is not comprehensive, the analysis indicates the potential to shift the mode share away from the drive-alone mode. It illustrates what is possible with good infrastructure, communications, marketing, encouragement, policies, and support programs. Note that Walker Consultants will update this analysis and these maps as more complete data is received.

Additionally, it should be noted that student addresses include campus residents who do not have to "commute" to campus in the traditional manner, these addresses will be excluded from some of the updated analyses to more accurately illustrate the potential for shifting commuting behaviors.

A variety of factors influence commuters' mode choices and likelihood that they will walk, bike, or take transit, other than where they live and their access to facilities. Such factors may include: the quality of walking, biking, and transit facilities; the convenience of transit schedules and routes; and, the specific opinions, needs, schedules, and characteristics of commuters themselves. For example, even though someone lives within a 20-minute walk or a 30-minute bike ride of campus does not mean that the facilities exist or that the person would be willing or able to walk or bike to campus. The results of capture analysis are summarized and illustrated below.

Walking

Analysis indicates that nearly 54% of students included in the data live within one mile (an approximately 20-minute walk at a comfortable 3 miles-per-hour pace) of the center of campus. This distance can be assumed to be a reasonable walkshed to the center of campus. Many of these students likely live within university housing, although many live southeast of George Bush Drive in the West Park and College Park neighborhoods. It is critical to promote comfortable and connected walking facilities and crossings within this area to maximize walkability. The following figures depict student addresses relative to the one-mile area, as well as proximal faculty and staff addresses.

Figure 47 Students Living Within One Mile of Center of Campus

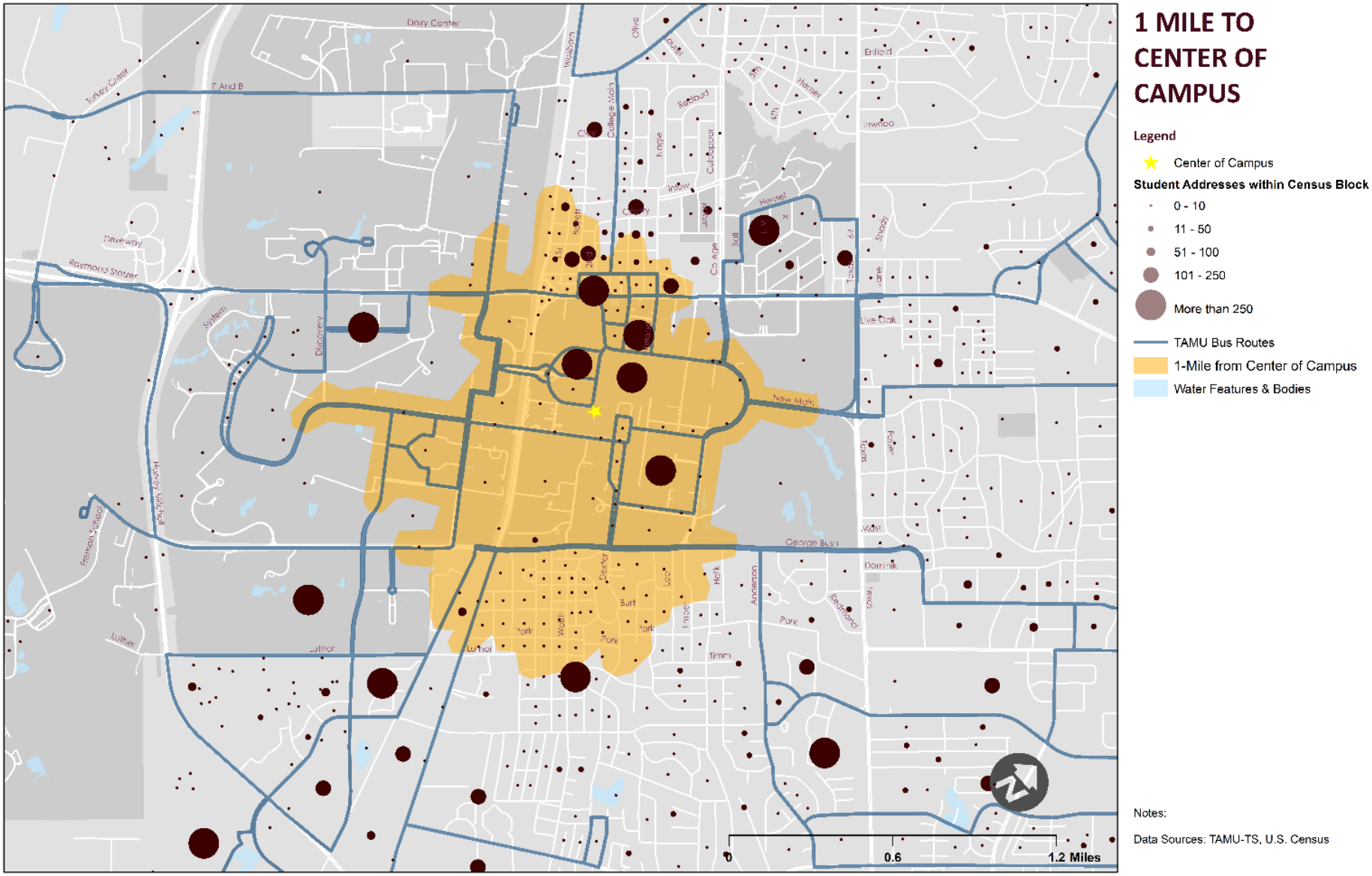
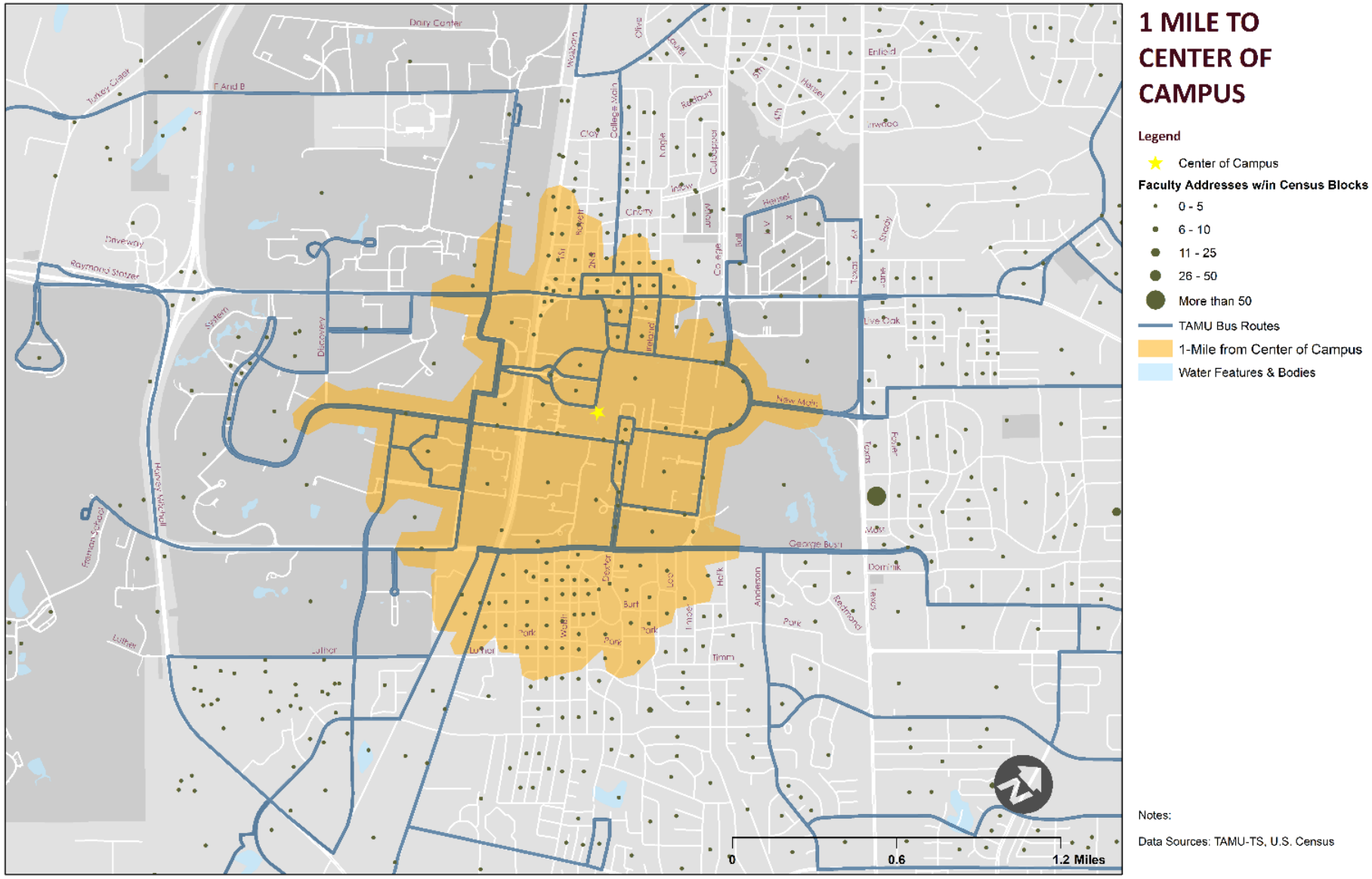


Figure 48 Faculty and Staff Living Within One Mile of Center of Campus



Bicycling

Analysis indicates that over 36,000 students live within five miles (an approximately 30-minute bicycle ride) of the center of campus, representing over 96% of all student addresses included in the dataset. Over 1,300 faculty and staff live within five miles of the center of campus, representing nearly 40% of faculty and staff addresses included. As is the case with walking, it is critical that comfortable and connected bicycling facilities and crossings be promoted within this area to promote bicycling, including cohesive connections between City and campus networks. Figure 49 below depicts student addresses relative to the 5-mile area, and **Error! Reference source not found.** shows faculty and staff addresses.

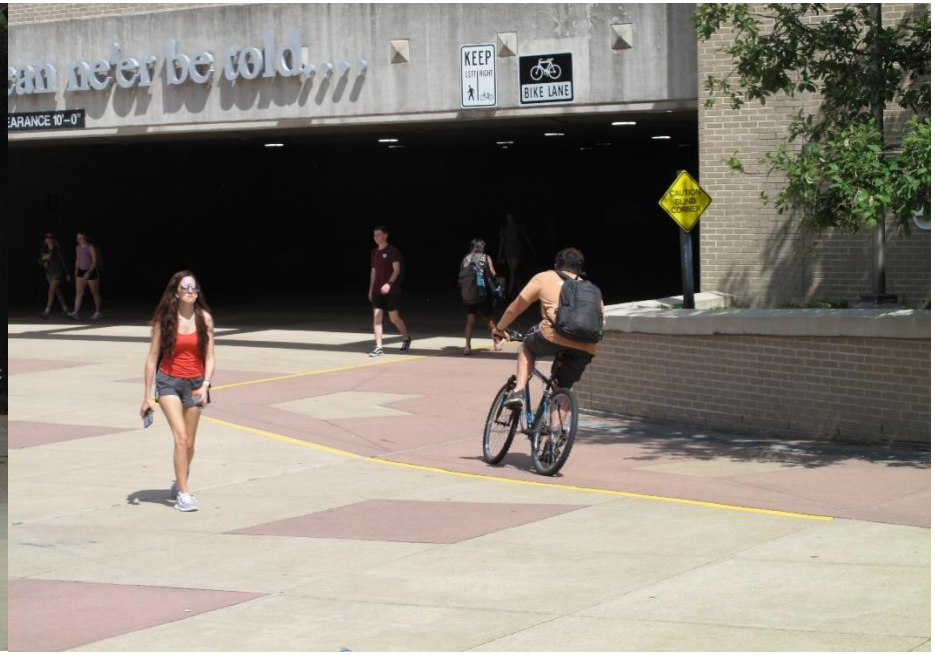


Figure 49 Students Living Five Miles from the Center of Campus

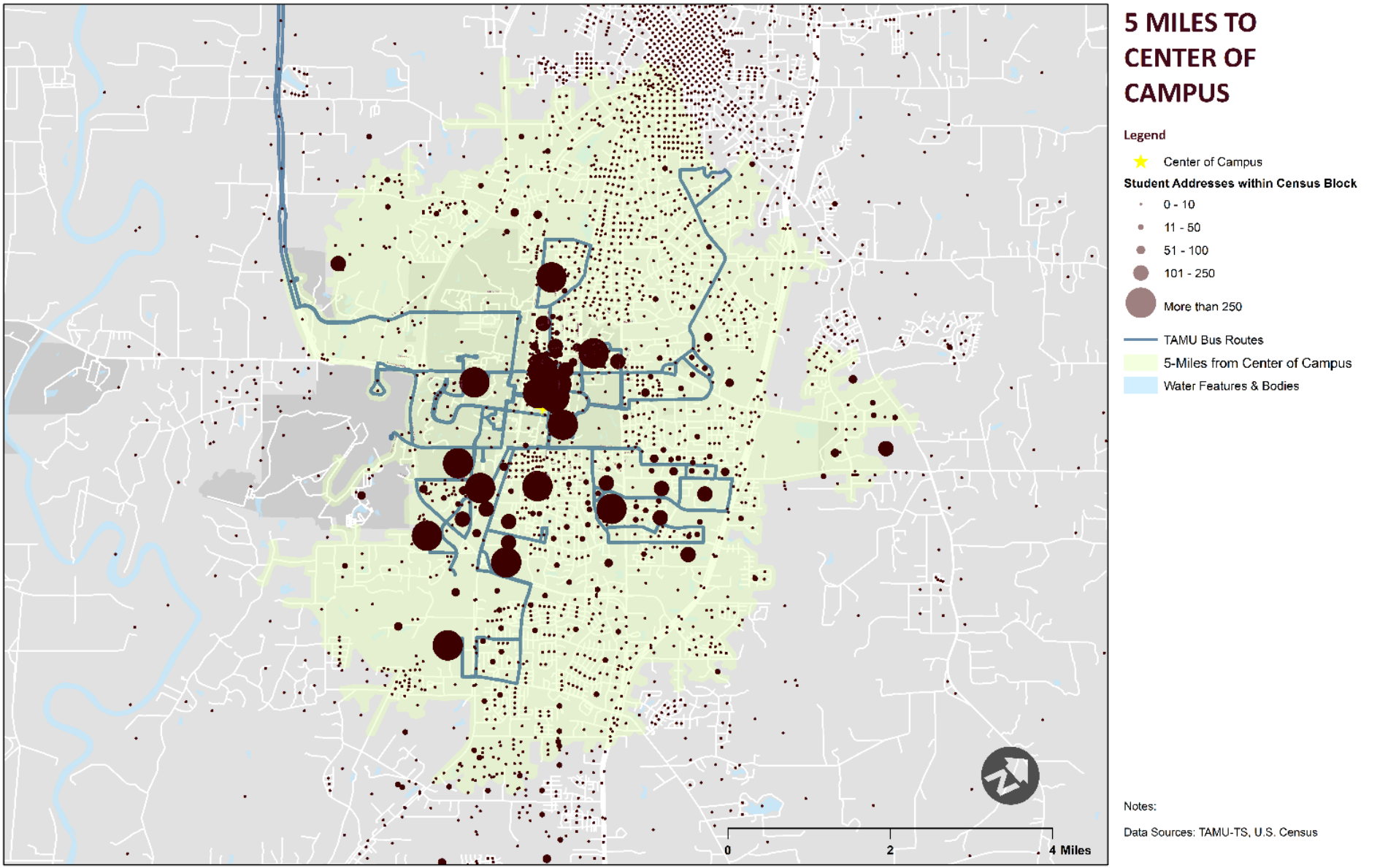
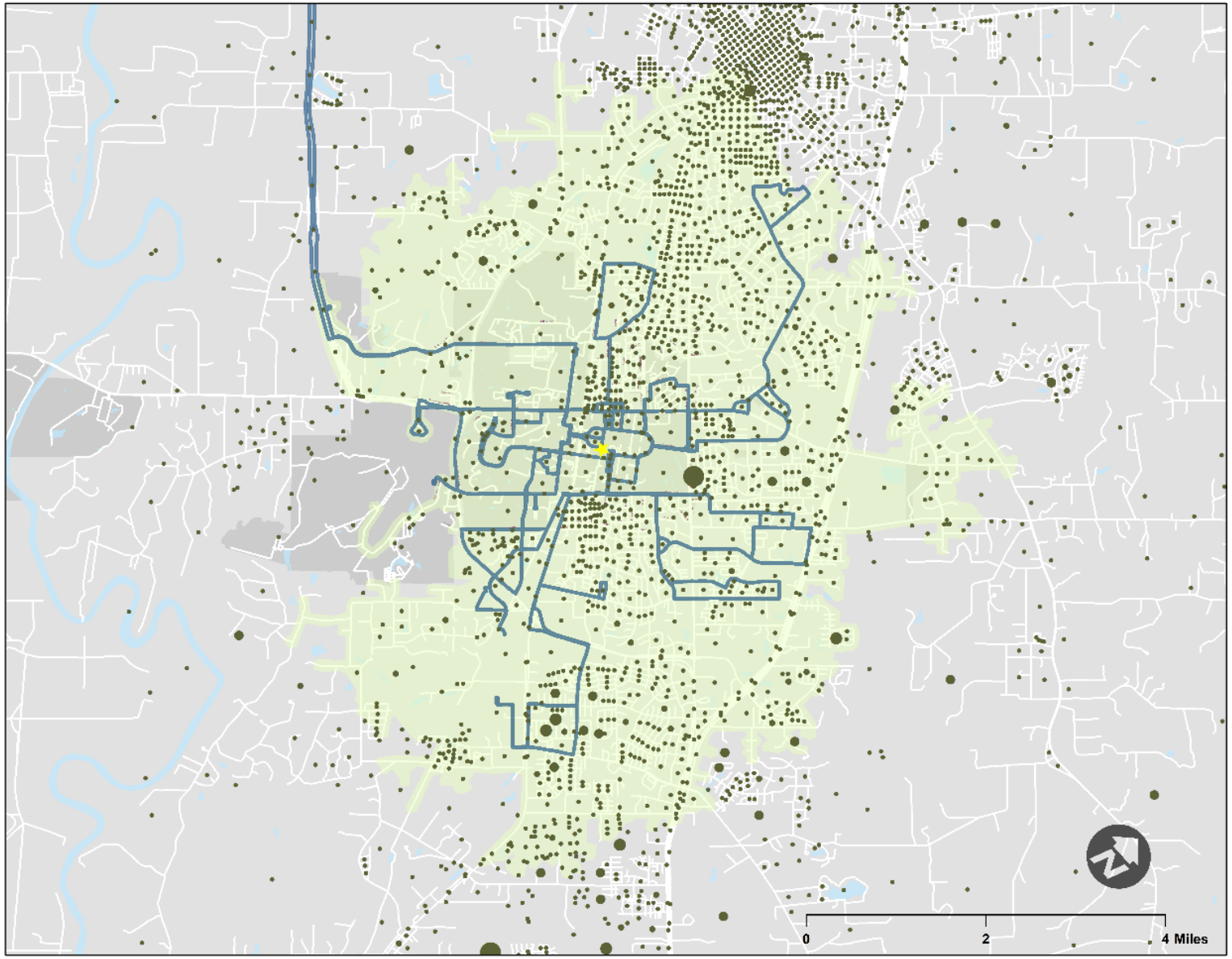


Figure 50 Faculty and Staff Living Five Miles from the Center of Campus



Transit

Access to transit is critical to expanding the adoption of non-SOV commuting. Analysis indicates that nearly 83% of students (over 31,000) live within a 10-minute walk of a Texas A&M bus stop (approximately ½ mile). Just over 16% of faculty and staff addresses analyzed lived within a 10-minute walk of a Texas A&M bus stop.

The figures below depict the location of student, faculty, and staff addresses relative to the 10-minute walkshed to Texas A&M bus stops. Figure 51 depicts student addresses, and **Error! Reference source not found.** shows faculty and staff addresses. High concentrations of affiliate residences (especially ones that are outside of the 10-minute bus stop walkshed) may present an opportunity for focusing potential transit improvements to reach more riders, including adding stops, realigning existing routes, or adding additional service. Additionally, it is critical to ensure comfortable and convenient walking infrastructure within this 10-minute walkshed.

Figure 51 Ten Minute Walk to Texas A&M Bus Stop with Student Addresses

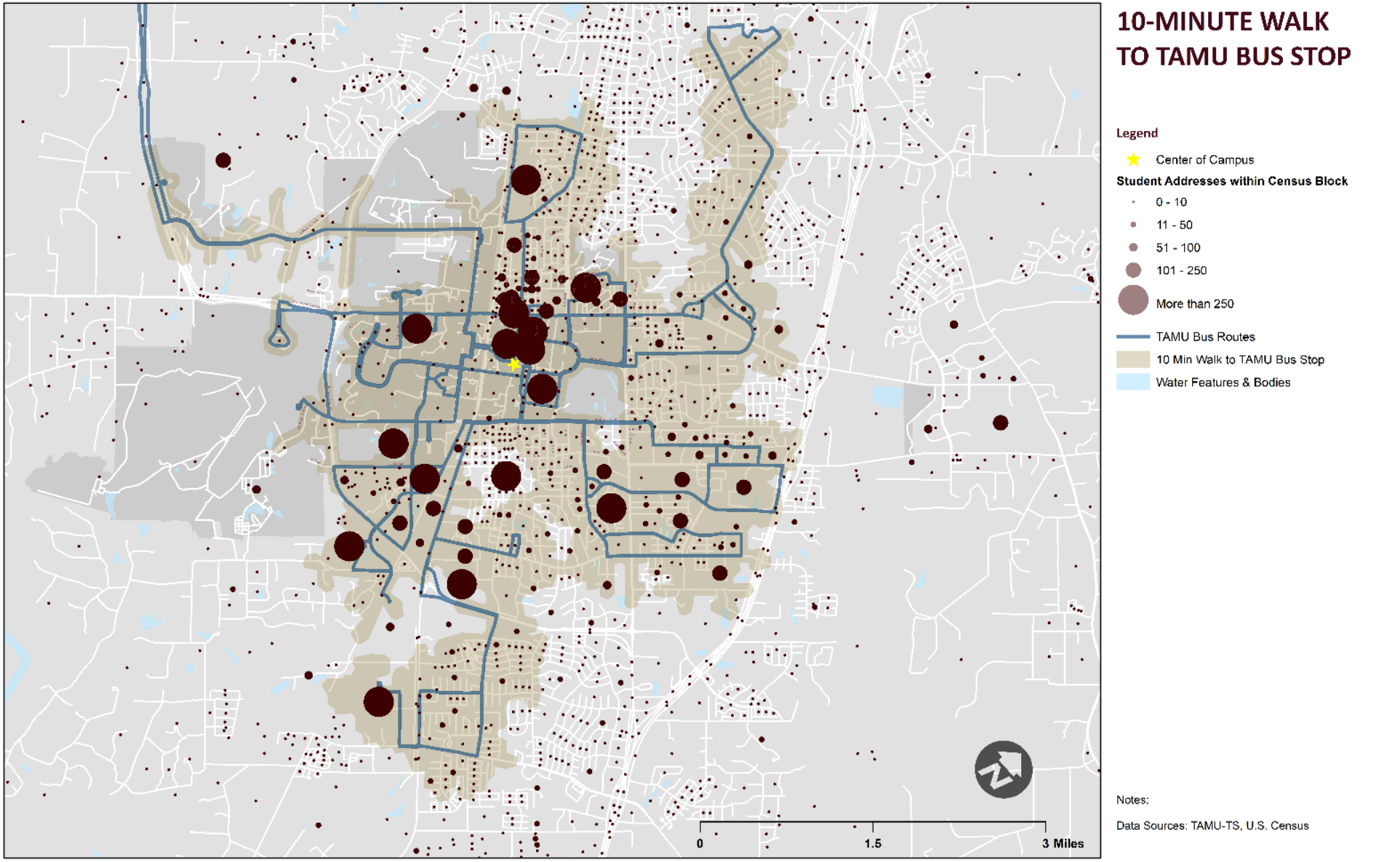
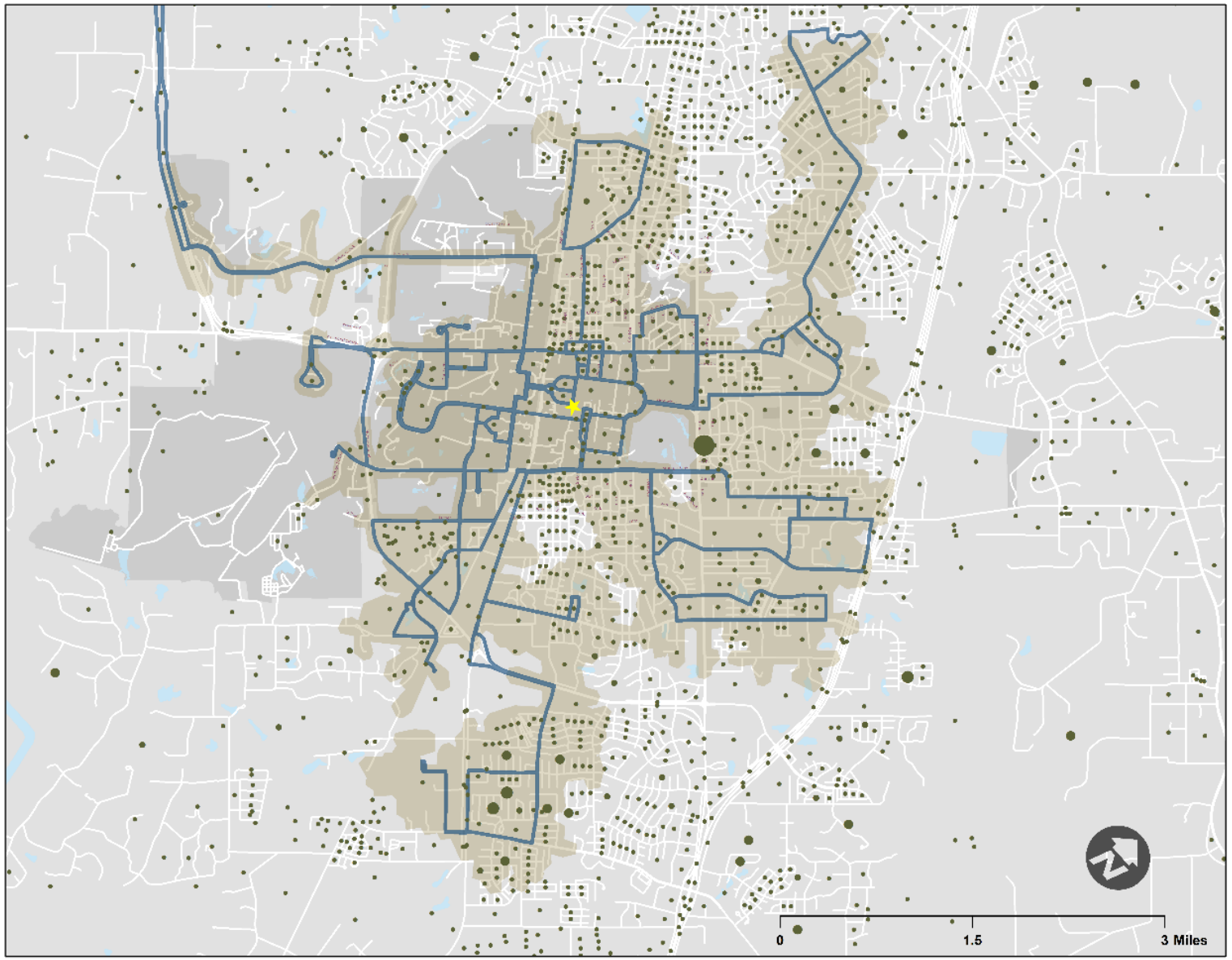


Figure 52 Ten Minute Walk to Texas A&M Bus Stop with Faculty and Staff Addresses



10-MINUTE WALK TO TAMU BUS STOP

Legend

- Center of Campus

Faculty Addresses w/in Census Blocks

- 0 - 5
- 6 - 10
- 11 - 25
- 26 - 50
- More than 50
- TAMU Bus Routes
- 10 Min Walk to TAMU Bus Stop
- Water Features & Bodies

Notes:

Data Sources: TAMU-TS, U.S. Census

CONCLUSION

Texas A&M Transportation Services offers a range of facilities, infrastructure, policies, and programs that support and enable non-single-occupant vehicle commuting and campus travel. A comprehensive TDM program will be critical to the ongoing high quality of life on campus, and the success of the university in achieving its long-term land use, mobility, and sustainability goals. Despite its success, potential exists to improve the breadth of TDM offerings, and leverage TDM more deliberately to influence and promote sustained behavioral change.

PARKING MANAGEMENT

Current Parking Inventory

Texas A&M provided Walker with the entirety of the campus parking inventory. The detailed designations of every spot in every lot and garage have been simplified so that within each facility, the designations are grouped between “regular spaces” and “other spaces.” Regular spaces refer to permit-controlled spaces; “other spaces” include all loading, timed, RNS/PB, ADA, visitor, clinic client, service, contractor, UB, police, carpool, and hybrid-only spaces. The full inventory of parking spaces tallies at 38,451. However, this includes the Polo Road Garage (PRG), which during the “survey day” was not opened so this facility has been line itemed separately in this analysis; the calculated systemwide occupancy percentage does not include PRG. No recreational vehicle (RV) spaces or motorcycle spaces are included herein.

Key Takeaways

- Of 38,451 parking spaces, 84% (32,180) are dedicated to permit holders that include faculty, staff, and students. The remaining 16% (6,271 spaces) are for all other uses such as ADA, metered, loading, and service vehicles.
- At a typical busy period, approximately 70% of all permit parking spaces are occupied.
- The least-occupied parking facilities represent nearly 17% of the entire permit parking capacity but only account for approximately 4% of the parking occupancy.
- The most-occupied parking facilities represent just over 50% of the total capacity but account for nearly 70% of the total demand for parking.
- There are thousands of available parking spaces on the periphery of campus, and more specifically in the southwestern quadrant, that go underutilized during busy periods—there are opportunities to spread demand throughout campus more evenly.
- Overall, the Texas A&M University Transportation Services website is thorough, expansive, and Transportation Services seeks to be forthcoming and transparent with information presented.

Figure 53 Full Parking Inventory, by Facility (1 of 2)

Parking Facility	Regular Spaces	Other Spaces	Total Inventory
1	381	27	408
3	7	1	8
4	92	82	174
5	0	49	49
6	0	75	75
7	0	65	65
8	0	33	33
10A	0	38	38
10B	0	14	14
11	0	15	15
12	47	1	48
13	69	25	94
14	0	26	26
15	0	165	165
18	166	5	171
19	0	19	19
20	36	54	90
21	33	2	35
22	0	50	50
23	0	77	77
24	254	52	306
25	32	6	38

Parking Facility	Regular Spaces	Other Spaces	Total Inventory
55	204	14	218
58	310	8	318
59	16	3	19
60	168	6	174
61	830	35	865
62	320	31	351
63	177	10	187
64	90	0	90
65	142	6	148
66	0	57	57
67	125	6	131
68	0	69	69
69	77	18	95
70	46	7	53
71	78	4	82
72A	0	174	174
72B	0	194	194
73	130	15	145
74	671	89	760
75	62	14	76
76	86	13	99
77	146	18	164

Parking Facility	Regular Spaces	Other Spaces	Total Inventory
100A	308	8	316
100B	304	0	304
100C	625	4	629
100D	317	62	379
100E	637	16	653
100F	280	10	290
100G	298	17	315
100J	613	102	715
100M	218	19	237
101	126	30	156
102	82	36	118
103	0	17	17
104	0	108	108
107	80	11	91
108	233	43	276
109	170	18	188
110	171	16	187
111	267	17	284
112	40	9	49
113	432	22	454
114	228	20	248
115	24	6	30

Note: Regular = any regular permitted spaces
Other = loading, timed, RNS/PB, ADA, visitor, clinic client, service, contractor, UB, police, carpool, and hybrid-only spaces

Figure 55 Full Parking Inventory, by Facility (2 of 2)

Parking Facility	Regular Spaces	Other Spaces	Total Inventory
26	37	13	50
27	4	15	19
30A	95	20	115
30C	537	57	594
30D	140	0	140
30E	124	7	131
32	56	11	67
33	7	1	8
34	8	2	10
36A-E	637	58	695
37	81	8	89
38	101	55	156
40A-D	1,093	42	1,135
41	0	260	260
42	19	18	37
43	340	0	340
44	22	3	25
45	59	11	70
47	126	88	214
48	183	23	206
49	178	0	178
50	448	1	449
51	587	11	598
54	194	76	270

Parking Facility	Regular Spaces	Other Spaces	Total Inventory
78	32	2	34
79	17	8	25
80	42	7	49
81	21	1	22
82	46	6	52
83	49	5	54
84	98	3	101
85	223	25	248
86	9	32	41
87	53	11	64
88	751	36	787
89	51	3	54
90	55	24	79
91	24	1	25
92	9	1	10
93	21	1	22
94	12	3	15
95A	84	6	90
95B	2	18	20
96	0	48	48
97	358	118	476
98	240	8	248
99A	273	10	283
99B	196	8	204

Parking Facility	Regular Spaces	Other Spaces	Total Inventory
117	11	1	12
118	267	8	275
119	24	6	30
120	68	6	74
122A-D	816	90	906
123	135	16	151
124	38	3	41
125	23	6	29
126	351	15	366
127	9	1	10
128	11	2	13
129	45	10	55
CCG	379	207	586
NSG	1,175	662	1,837
SBG	937	497	1,434
SSG	1,931	33	1,964
UCG	746	742	1,488
WCG	3,193	497	3,690
WXROW	88	5	93
FAN FIELD	2,300	0	2,300
Total	30,537	6,235	36,772
PRG	1,643	36	1,679
Total	**32,180**	**6,271**	**38,451**

Note: Regular = any regular permitted spaces
Other = loading, timed, RNS/PB, ADA, visitor, clinic client, service, contractor, UB, police, carpool, and hybrid-only spaces

OBSERVED PARKING DEMAND

Texas A&M University staff provided Walker with estimated peak occupancy counts. The target date of these occupancy estimates is the week of October 7, 2019 (between the dates of 10/8/19-10/10/19). These estimates are intended represent a concurrent peak "snapshot" in time. This week was selected to represent "design day" conditions (i.e., judged to be typically busy days) and is used consistently with the other mobility analysis. This date range is intended to be indicative of typical pre-pandemic conditions; projections throughout this report assume that post-pandemic conditions will be similar to fall 2019—though projections also account for expected population growth.

The occupancy estimates were parsed into two categories: "general," which represent all permit spaces and "other," which include loading, timed, RNS/PB, ADA, visitor, clinic client, service, contractor, UB, police, carpool, and hybrid-only spaces. The "other" spaces are considered reserved for the designated purposes, therefore, were estimated at 100% occupancy. If, in aggregate, the "general" spaces were overtaxed, we would recommend reassessing the inventory of "other" spaces to see if some should be reassigned as permit-controlled. Since this isn't the case, and at Texas A&M-Transportation Services' request, the "other" spaces have not been analyzed in this parking demand section. We have noted the Texas A&M Transportation Services' inventory and estimated occupancy but do not speak to the management of these spaces.

The following "heat map" provides a geographical representation of campus demand. The overall demand of all permit parking spaces occupied was 72% (or 22,048). Occupancy estimates represent demand during the week of October 7, 2019, at which time the Polo Road Garage (PRG) was not yet available for use. Moving forward, the garage represents additional supply. We have added this facility's inventory below the line. The inclusion of this 1,639-space facility moves the overall demand for permit parking spaces from 72% to 69%.

With over a quarter of parking spaces unoccupied during the typical daily peak, the campus—as a whole—is not short of parking. Individual experiences, however, will vary on a lot-by-lot basis, as well as throughout the year and within each day. One user may have a personal experience that is quite pleasant, in which they arrive early to campus and park in the same lot every day finding a space easily. Whereas another user might frequently be unable to find parking in their preferred location and may have a negative perception of the system.

The heat map and the occupancy table by facility display not only the variances in occupancy during the estimated peak, but also point out entire facilities with extremely low occupancy. These facilities vary in geography and by capacity. However, there are several locations with occupancies of less than 60% in the southwestern quarter of campus. The map also indicates two general nodes where parking demand is located—in the area surrounding the center of campus (east of Wellborn Road) and, in a cluster in the western quadrant of campus (north of Raymond Stotzer Parkway and west of Wellborn Road). In these two nodes individuals' parking and driving experiences could be negative, while the southwestern node of lower demand indicates opportunities for spreading this demand throughout campus more evenly. These opportunities and the associated recommendations are detailed in the Phase 2 and 3 sections of this report.

Figure 56 Estimated Peak Utilization – All Permit Spaces

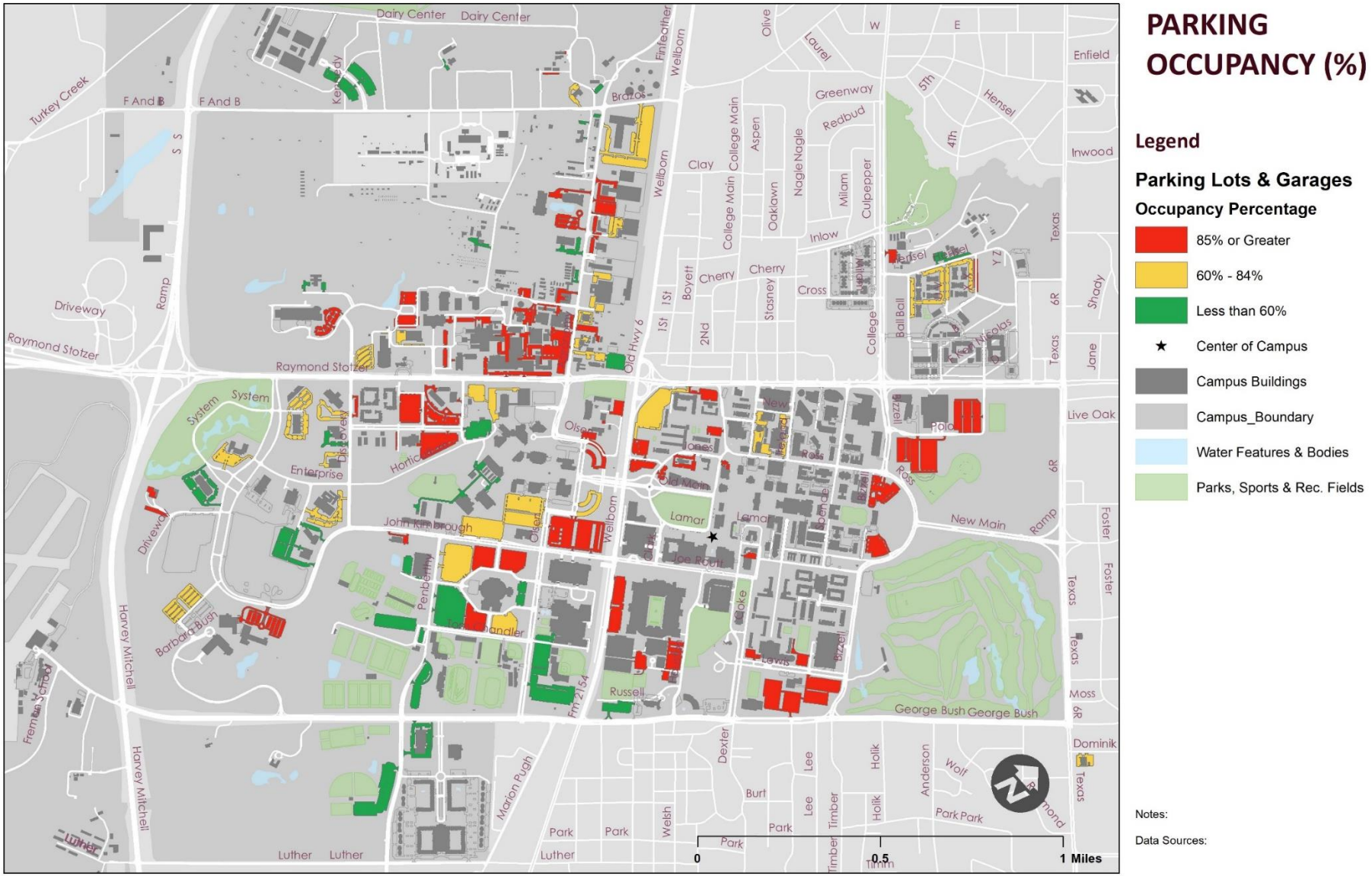


Figure 57 Estimated Peak Occupancy, by Facility

Parking Facility	Regular Spaces
1	33%
3	95%
4	75%
5	n/a
6	n/a
7	n/a
8	n/a
10A	n/a
10B	n/a
11	n/a
12	100%
13	85%
14	n/a
15	n/a
18	78%
19	n/a
20	100%
21	100%
22	n/a
23	n/a
24	93%
25	84%

Parking Facility	Regular Spaces
55	86%
58	1%
59	100%
60	52%
61	93%
62	86%
63	30%
64	90%
65	74%
66	n/a
67	86%
68	n/a
69	100%
70	100%
71	100%
72A	n/a
72B	n/a
73	73%
74	81%
75	100%
76	75%
77	90%

Parking Facility	Regular Spaces
100A	100%
100B	100%
100C	80%
100D	35%
100E	50%
100F	95%
100G	70%
100J	50%
100M	30%
101	60%
102	35%
103	n/a
104	n/a
107	80%
108	80%
109	70%
110	80%
111	88%
112	30%
113	30%
114	90%
115	50%

Parking Facility	Regular Spaces
26	100%
27	100%
30A	100%
30C	75%
30D	100%
30E	100%
32	85%
33	10%
34	100%
36A-E	94%
37	74%
38	88%
40A-D	95%
41	n/a
42	100%
43	65%
44	20%
45	100%
47	92%
48	87%
49	40%
50	87%
51	93%
54	92%

Parking Facility	Regular Spaces
78	70%
79	85%
80	100%
81	25%
82	100%
83	100%
84	75%
85	100%
86	15%
87	40%
88	75%
89	100%
90	20%
91	100%
92	20%
93	80%
94	30%
95A	30%
95B	85%
96	n/a
97	84%
98	59%
99A	80%
99B	70%

Parking Facility	Regular Spaces
117	100%
118	30%
119	75%
120	60%
122A-D	89%
123	100%
124	60%
125	30%
126	20%
127	30%
128	40%
129	40%
CCG	91%
NSG	86%
SBG	68%
SSG	93%
UCG	86%
WCG	87%
WXROW	100%
FAN FIELD	4%
Total	72%

PRG	n/a
Total	69%

	= 85-100% occupied
	= 60-84% occupied
	= 0-59% occupied
n/a	= no eligible permit spaces

Note: Regular = any regular permitted spaces

Other = loading, timed, RNS/PB, ADA, visitor, clinic client, service, contractor, UB, police, carpool, and hybrid only spaces

Overall, permit-controlled spaces were 72% occupied. As noted, there were several facilities where occupancy was significantly below 60%. These facilities are presented in the following table. They represent nearly 17% of the entire permit parking capacity while only accounting for approximately 4% of the occupancy. All except two of the facilities are located in the south and western quadrants of campus, with zero being located in the north.

Upon review of the highest occupied parking facilities (an estimated occupancy of 85% or higher), an inverse situation occurs. These facilities with represent just over 50% of the total capacity but account for nearly 70% of the total demand for parking. These are displayed in the table below.

Figure 58 Low-Demand Parking Facilities

Parking Facility	Inventory	Occupancy Percentage	Occupied Spaces	Available Spaces	Geographic Quadrant
1	381	33%	126	255	East
90	55	20%	11	44	East
58	310	1%	3	307	South
63	177	30%	53	124	South
86	9	15%	1	8	South
95A	84	30%	25	59	South
100D	317	35%	111	206	South
100M	218	30%	65	153	South
102	82	35%	29	53	South
112	40	30%	12	28	South
113	432	30%	130	302	South
118	267	30%	80	187	South
FAN FIELD	2,300	4%	81	2,220	South
33	7	10%	1	6	West
44	22	20%	4	18	West
49	178	40%	71	107	West
81	21	25%	5	16	West
87	53	40%	21	32	West
92	9	20%	2	7	West
94	12	30%	4	8	West
125	23	30%	7	16	West
126	351	20%	70	281	West
127	9	30%	3	6	West
128	11	40%	4	7	West
129	45	40%	18	27	West
Total	5,413		937	4,476	

As the overall occupancy percentage indicates—based on estimated, aggregated parking demand—the system has an adequate parking supply. However, based on the heat maps and the previous figures listing occupancy by facility, there may be ways to reallocate and spread demand more evenly throughout the system, to benefit efficient operations, to delay the need to add parking infrastructure, and to improve customer experience Detailed recommendations related to the potential reallocation of parking spaces are discussed in later sections of the report. Walker's recommended reallocations take future parking demand into account.

Figure 59 High-Demand Parking Facilities

Parking Facility	Inventory	Occupancy Percentage	Occupied Spaces	Available Spaces
3	7	95%	7	0
12	47	100%	47	0
13	69	85%	59	10
20	36	100%	36	0
21	33	100%	33	0
24	254	93%	235	19
26	37	100%	37	0
27	4	100%	4	0
30A	95	100%	95	0
30D	140	100%	140	0
30E	124	100%	124	0
32	56	85%	48	8
34	8	100%	8	0
36A-E	637	94%	596	41
38	101	88%	89	12
40A-D	1,093	95%	1,036	57
42	19	100%	19	0
45	59	100%	59	0
47	126	92%	116	10
48	183	87%	159	24
50	448	87%	389	59
51	587	93%	544	43
54	194	92%	178	16
55	204	86%	176	28
59	16	100%	16	0
61	830	93%	771	59
62	320	86%	275	45
64	90	90%	81	9

Parking Facility	Inventory	Occupancy Percentage	Occupied Spaces	Available Spaces
67	125	86%	107	18
69	77	100%	77	0
70	46	100%	46	0
71	78	100%	78	0
75	62	100%	62	0
77	146	90%	131	15
79	17	85%	14	3
80	42	100%	42	0
82	46	100%	46	0
83	49	100%	49	0
85	223	100%	223	0
89	51	100%	51	0
91	24	100%	24	0
95B	2	85%	2	0
100A	308	100%	308	0
100B	304	100%	304	0
100F	280	95%	266	14
111	267	88%	235	32
114	228	90%	205	23
117	11	100%	11	0
122A-D	816	89%	725	91
123	135	100%	135	0
CCG	379	91%	343	36
NSG	1,175	86%	1,005	170
SSG	1,931	93%	1,801	130
UCG	745	86%	644	101
WCG	3,193	87%	2,792	401
WXROW	88	100%	88	0
Total	16,665		15,190	1,475

TRANSPORTATION SERVICES WEBSITE REVIEW

This section provides a comprehensive summary and review of the Texas A&M University Transportation Services homepage and accompanying website pages.

Current Conditions

The Texas A&M University Transportation Services website includes the following primary components and hierarchy structure:

- Transportation Services Landing/Home Page
  - Parking
  - Transit
  - Alternatives
  - Departments
  - About/Transportation Services Information
  - Maps

These pages represent the foundational components of the project website, with all other subordinate pages branching from these core pages. The main Home page, Parking, Transit, and Alternatives are the primary technical pages, while the About page and the Maps page are pages with supporting resources.

While there is a Visitors quick link on the top website banner, the visitor information is embedded primarily in the "Parking" portion of the website.

Transportation Services Landing Page

The Texas A&M University Transportation Services homepage (https://transport.tamu.edu/) consists of several distinct sub-sections. The top banner includes quick links with dropdown menus to pages with information on the following common topics: maps, accessing campus as a visitor, campus parking, transit options, transportation alternatives, Texas A&M department parking and fleet resources, and an 'about us' link with information on FAQs, employment, construction, and internal committee structure. The top banner also offers a quick "My Account" link for faculty, staff, students, contractors, vendors, and visitors to log-in to their Texas A&M University Transportation Services accounts. The top quick links banner exists on all site pages.

Below the top banner, the homepage includes quick links to information on bus routes, parking, transit, alternatives, Texas A&M University Transportation Services information, employment, and a maps portal. Below these quick links, the site contains timely news updates (currently including COVID-19 updates), information on current initiatives, and six panels at the bottom, each containing different information (e.g., at the time of writing, the panels consisted of information on campus traffic and construction, employment opportunities, football parking and shuttles, voting, real-time garage parking availability, and a "Transportation Services 101" video). Below these panels, there are more quick links about FAQs, maps, facts and figures, committees and forums, and contact information for the department.

Parking

The parking page has quick links to information on real-time garage availability, visitor parking, sporting events, campus events, parking map, additional parking resources, and payments and forms. Below the quick links, the parking pages has the following separate sections:

- Current public health updates found on the homepage;
- "What You Need to Know" information panels;
- Parking permit updates;
- Links to resources;
- "What's Happening Now," currently populated with information on Zipcar;
- Information on department awards;
- Announcements, updates, and Tweets; and
- Quick links at the bottom featuring account and permit information, services, forms, and frequently asked questions.

Transit

The transit page includes quick links at the top on bus routes and locations, service information, a "how to ride" section, and FAQs. Below these quick links, the page includes current updates found on the home page and other content pages, as well as the "What You Need to Know" information found on other website page, and more links to useful information, the "What's Happening Now" pane found on other pages, and additional updates and links at the bottom.

Alternatives

The alternatives page includes quick links to information and resources on bike share, bicycle services, FAQs, and alternative parking options. Below this top banner is the "What's Happening Now" pane found on other website pages, followed by information on bicycle concierge services, shared mobility, shuttles, and park and ride options. Below this information is additional information on new bicycle infrastructure on campus and a collection of bicycle options and alternative services.

About/Transportation Services Information

The About Us page is a concise collection of facts and figures, department information, news, and other resources. The page includes a quick links panel at the top, the Texas A&M University Transportation Services mission and vision statements, then additional quick links below that, including an introductory video to Transportation Services.

Map Resources

The maps page is a repository of static and dynamic maps showing the locations of parking, transit, bicycling, and other facilities. Many of the links connect users to the dynamic transport.tamu.edu map, but some such maps showing street/facility parking areas and bus parking take users to static PDF maps.

Critical Evaluation

Overall

Overall, the Texas A&M University Transportation Services website is thorough and expansive, and includes a wealth of useful information. It is clear that Texas A&M University Transportation Services seeks to be forthcoming and transparent with information and has sought to leverage the website as a repository of details and resources. Quick links provide easy access to useful information, and there are multiple pathways to the same information.

- Overall, the website could benefit from some simplification, streamlining, and better-defined pathways that help clearly direct website visitors based on who they are and what they need.
- Web pages can be static (not changing frequently) or dynamic (changing frequently, e.g., annual reports or fee changes). Dynamic information, including "facts and figures" are an appealing feature, and can keep people returning to the site, but requires diligence and maintenance.

Figure 60 Representative Sample of Website Inconsistences

Page	File path	Inconsistency/Issue
Alternative Permit Pricing Options and History	Home > About Us > Alternative Permit Pricing Options and History	"Rates at comparable universities" link says "Page Not Found"
Parking Forums	Home > About Us > Forums	Information is outdated – from 2011
Industry Conference Presentations	Home > About Us > Presentations	Information may be outdated – from 2019
Campus Master Plan	Home > About Us > Campus Master Plan	Link takes user to https://vpfo.tamu.edu/
Historic Bike Committee	Home > Alternative Transportation > Bicycles	Information is outdated – from 2008
Permit and Rate Information	Home > Parking > Permit and Rate Information	Information slightly outdated, from Summer 2020
Resident Student Parking	Home > Parking > Resident Student Parking	Information slightly outdated, from Summer 2020
Faculty and Staff Parking	Home > Parking > Faculty and Staff Parking	Page cites $835 for garage permit for priority bay space; Permit and Rate Information page cites $836 for this type of space
Budget Facts and Figures	Home > About Us > Budget Facts and Figures	Information is outdated, from FY 2016
Parking Facts and Figures	Home > Parking > Parking Facts and Figures	Information is outdated; information cited from FY 2016
Parking Facts and Figures	Home > Parking > Parking Facts and Figures	"Parking Rates" Excel file linked under "How do A&M University parking permit rates compare to other large universities?" is outdated - contains rates from 2013

Page (continued)	File path (continued)	Inconsistency/Issue (continued)
Parking Facts and Figures	Home > Parking > Parking Facts and Figures	Citation Data PDF linked under "How many citations are written each month and what are the citation types" is outdated – most recent information is from 2009
History of Parking Permit Prices	Home > Parking > Permit FAQs	2020 rates listed in this table are inconsistent with other pages (e.g., $718 is listed as the numbered garage space lot on this page; the Permit and Rate Information page lists this permit as $725)
Parking Citations; Accessible Parking for Customers with Disabilities	Home > Parking > Parking Citations; Home > Parking > Accessible Parking for Customers with Disabilities	Inconsistencies were found in citation rates included in the Parking Citations (listed as a $150 fine) and Accessible Parking for Customers with Disabilities (listed as a $160 fine)

Noteworthy Secondary Pages

The Texas A&M University Transportation Services homepage has a wealth of information, with a multitude of links, requiring the reader to scroll down several sections to reach the bottom of the page. Several of the links provided are duplicative and as a result, unnecessary and confusing. For example, the main panel includes two separate links: one for "Bus Routes," and one for "Transit," even though all information on bus routes can be found on the transit page. Additionally, this also happens with the "About Us" and "Employment" links, both of which are provided, as employment information can be found on the About Us page. additional employment information can be founded further down in one of the site panels. The amount of content and the repetitive links may confuse and/or overwhelm site visitors.

- **Parking Page**: Like the homepage, the Parking page has a significant amount of information, some of which is repetitive. For example, real-time garage space availability is provided as a quick link at the top, as well as in a panel under the "What You Need to Know" section. Sports and event parking information is also provided as a quick link at the top of the page, along with at the bottom of the page.
- **Transit Page**: The Transit page is a concise page with useful and timely information.
- **Alternatives Page**: Like several other website pages, the Alternatives page could benefit from some simplification and reorganization.
- **Maps Page**: The collection of maps is comprehensive and the page acts as a resource repository for those seeking information about Texas A&M University Transportation Services facilities. There are a multitude of maps available on this page, some of which may be extraneous. It is not typical to include, for example, floor-by-floor diagrams showing parking garage space configuration as this page does, but Texas A&M University Transportation Services is being open and forthcoming with information.
- **About Us Page**: The About Us page is concise and well-presented.

Recommendations can be found in the Phase 3 report. These include considerations for consolidating facts and figures into a single page, streamlining and simplifying pages, improvements to navigation, removal of superfluous information, and a reorganization and prioritization of some pages.

CONCLUSIONS

While the most occupied parking facilities represent approximately half of the total capacity and account for nearly 70% of the total demand for parking, there are still thousands of available parking spaces—most of which are located on the periphery of campus. There are opportunities to spread this demand throughout campus more evenly and encourage users to want to park in the currently underutilized locations. The Texas A&M University Transportation Services website is thorough, expansive, and Transportation Services seeks to be forthcoming and transparent with information presented.

PEER REVIEW

PEER INSTITUTIONS

Five universities, not including the Texas A&M University, are included in the benchmark study of peer institutions. These universities range in size and geographic location, but are generally large, state higher educational institutions. These universities are listed below, with their respective student populations.

Figure 61 Benchmark Peer Institutions

Peer Institution	Student Population	Location
The Ohio State University	61,391	Columbus, OH
University of Texas Austin	51,090	Austin, TX
University of Alabama	38,100	Tuscaloosa, AL
University of Arizona	45,918	Tucson, AZ
University of Florida	52,407	Gainesville, FL
Texas A&M University	68,390	College Station, TX

Source: U.S. News Report – 2020 Quick Stats Profiles

Key Takeaways

- Texas A&M's highest parking fees are lower than peer average highest fees for faculty, staff, and commuter students; while, at the same time, the lowest parking fees are higher than peer average lowest fees for all users. This compression of rates may provide some insight into the imbalances of parking demand between the most- and least-desirable parking areas.
- All hourly and daily fees are at or higher than peer average fees.
- Texas A&M has many opportunities to bolster and promote new transportation demand management programs and strategies, and has recently taken steps to incentivize alternative modes as most peers currently do.

Parking Fees

Fee ranges across institutions, the associated average fee from each insitution, and the peer average amoung all institutions are presented in the tables and charts that follow. Walker has displayed the highest and lowest fee for each associated category (faculty/staff, resident students, and commuter students). All permit prices are annualized.

In each of these categories, there are often varying options of other parking permits available. At the same time, from one user group to the next, the fees may be identical—this is the case at the University of Arizona where resident and commuter students pay the same fees. At every institution, with the exception of the University of Texas at Austin, the average fee for faculty/staff is greater than those of both resident students and commuter students. In some cases, these fee ranges between faculty/staff and any student option are over double the student fee and in one case (the University of Florida), the faculty/staff fees are over 4.5 times the rate of the student fees. Note: a range does not appear in the bar graphs for the University of Florida resident students and commuter students because there is only a single rate for all users in each of those user groups.

Figure 62 Faculty/Staff Parking Fees Across Peer Institutions

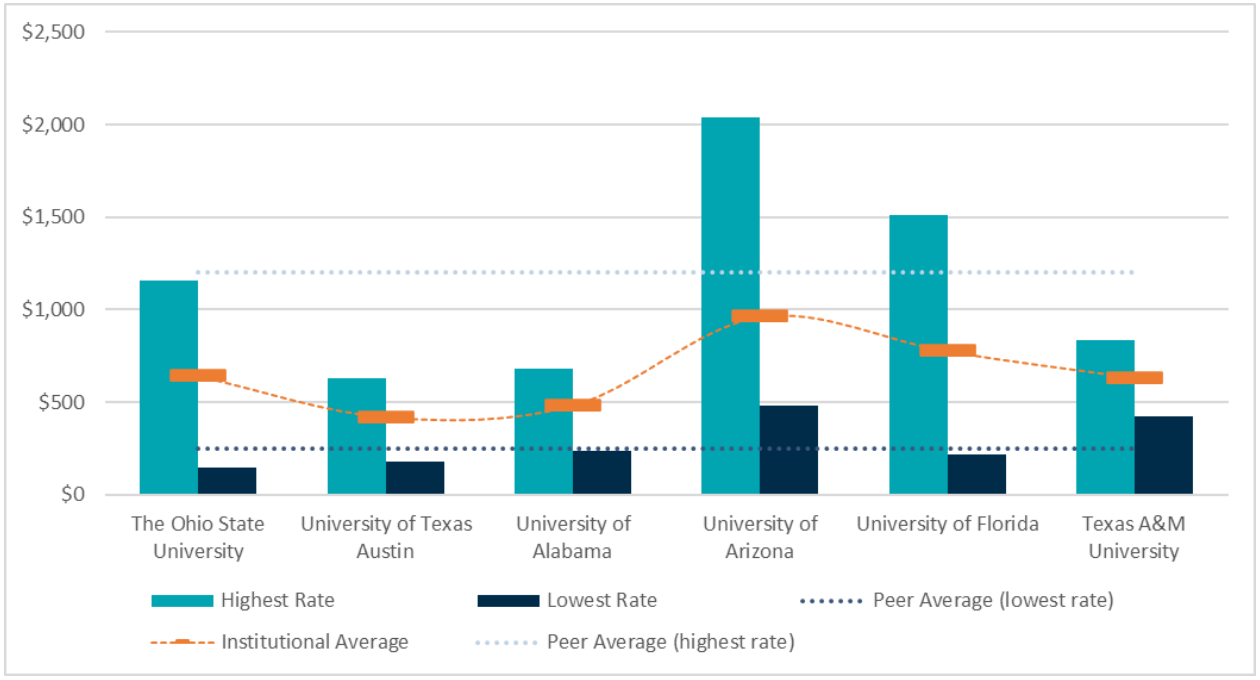


Figure 63 Resident Student Parking Fees Across Peer Institutions

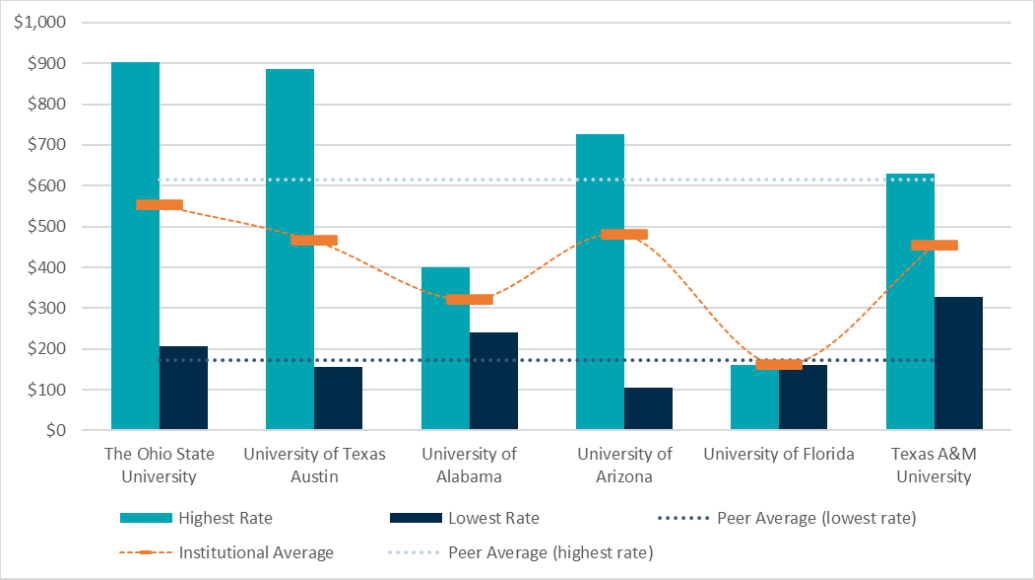


Figure 64 Commuter Student Parking Fees Across Peer Institutions

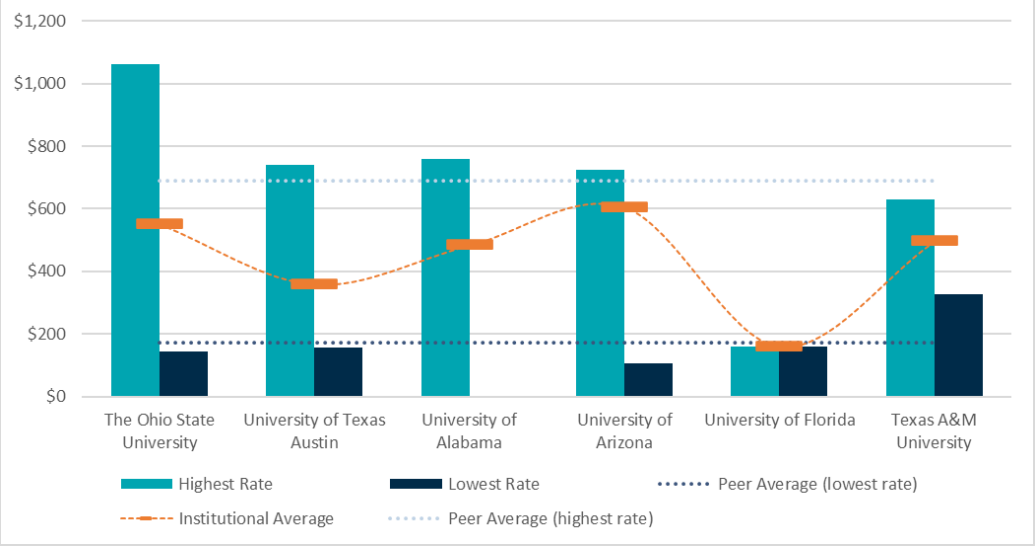


Figure 65 Daily/Visitor Parking Fees Across Peer Institutions

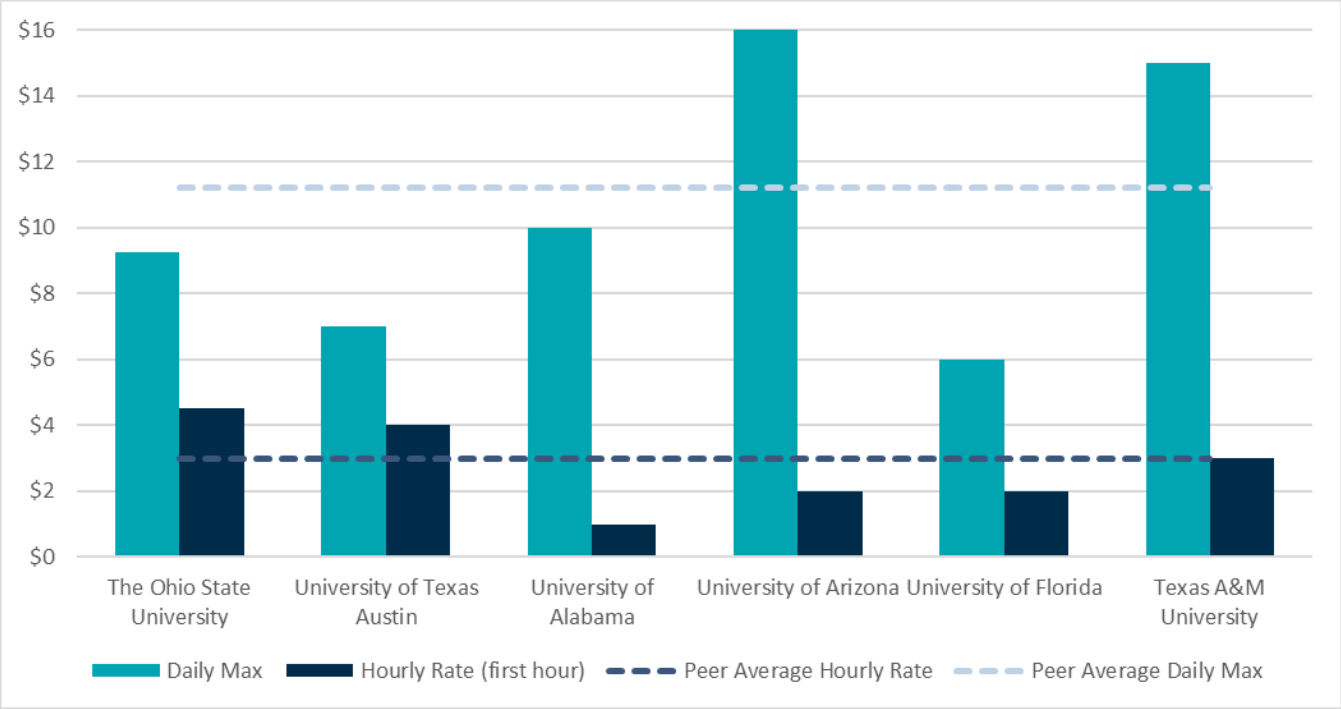


Figure 66 Institutional Average Fee by User Group

	The Ohio State University	University of Texas Austin	University of Alabama	University of Arizona	University of Florida	Average of Peers	Texas A&M University
Faculty/Staff	$642	$418	$481	$963	$776	$656	$631
Resident Student	$552	$464	$320	$480	$160	$395	$454
Commuter Student	$551	$359	$483	$605	$160	$432	$496
Hourly Rate (first hour)	$4.50	$4.00	$1.00	$2.00	$2.00	$2.70	$3.00
Daily Max	$9.25	$7.00	$10.00	$16.00	$6.00	$9.65	$15.00

While Texas A&M's commuter student lowest fee options are above the peer-average lowest fee and faculty/staff lowest rates are about at the average, resident student lowest fees are significantly lower than peer average lowest fee options. Regarding the highest rates, the comparisons are quite different: all user groups are charged rates that are below the peer-average highest fees.

Walker encourages Texas A&M not to overstate the importance of benchmarked fees; it is vital that decision makers are aware that each university's parking and transportation system has its own set of assets, commuting trends and policies, and is subject to the effects of the infrastructure for which they are responsible; the magnitude of debt, the services and programs offered, and their maintenance responsibilities. This does not, however, invalidate the benchmarking process—peer fees provide insights into how each institution's parking system functions and can effectively communicate to what extent each user group is contributing to the system.

TDM Programs

In addition to parking fees, Walker surveyed institutions for the availability of transportation demand management (TDM) offerings. These offerings are formalized, university-affiliated, programs advertised on the university website. For more details related to Texas A&M's TDM offerings see the "Transportation Demand Management Existing Conditions" chapter of this report.

Figure 67 TDM Programs Across Peer Institutions

	The Ohio State University	University of Texas Austin	University of Alabama	University of Arizona	University of Florida	Texas A&M University
Driving/Parking						
Carshare (e.g., Zipcar)	Yes	Yes	No	Yes	Yes	Yes
Rideshare (e.g., Zimride)	No	Suspended	Yes	Suspended	Suspended	Yes
Vanpooling	No	No	No	Yes	No	No
Ridematching	No	No	Yes	Yes	No	No
Carpool Discount Offered	No	Suspended	No	No	Yes	No
Ride-Hailing (e.g., Uber/Lyft)	Yes	Yes	Yes	Yes	Yes	No
Transit/Microtransit						
Number of Shuttle Routes	5	9	22	5	2	19
Electric Scooters Allowed	Yes	Yes	Yes	No	No	Yes
Cycling						
Bicycle Registration	Yes	Yes	Yes	Yes	Yes	Yes
Bike Lockers Offered	Yes	Yes	No	Yes	Yes	No
Bike Showers Offered	No	Yes	No	Yes	No	No
Daily/Hourly Bike Share Options	Yes	Yes	Yes	Yes	Yes	Yes
Semester/Annual Bike Rental Options	Yes	Yes	Yes	Yes	Yes	Yes
League of American Bicyclists Bicycle Friendly University (BFU) Awards Level	Silver	Bronze	n/a	Gold	Gold	Silver

At most peer institutions, rideshare programs have been suspended due to Enterprise discontinuing its program, Zimride, in the wake of the COVID-19 pandemic. However, at Texas A&M, Texas A&M Transportation Services switched from Zimride to an in-house rideshare program when Enterprise suspended activities.[3] In more recent activity, Texas A&M has awarded a five-year contract to Veo, a micro-mobility provider, to bring throttle e-bikes to campus. In total, the company will have 2,500 pedal and e-throttle bicycles for rent to Texas A&M's campus community members.[4] This partnership ticks two "yes" boxes in the TDM program comparison table above. Even with both of these categories checked, there are still areas in which Texas A&M's peer institutions offer more TDM options.

CONCLUSIONS

Texas A&M's highest parking fees are lower than peer average highest fees for faculty, staff, and commuter students; while, at the same time, the lowest parking fees are higher than peer average lowest fees for all users. This compression of rates may provide some insight into the imbalances of parking demand between the most- and least-desirable parking areas. Texas A&M has many opportunities to bolster and promote new transportation demand management programs and strategies, and has taken steps to incentivize alternative modes as most peers currently do.

[3] https://transport.tamu.edu/Alternative/rideshare.aspx

[4] https://www.prnewswire.com/news-releases/texas-am-micro-mobility-program-is-electrifying-your-ride-with-veo-301240726.html

SUMMARY & CONCLUSIONS

SUMMARY

In the *Stakeholder Input* section of this report, Walker noted the preferences and concerns of stakeholders. Many users suggested that bike lanes are frequently blocked by other vehicles, making cycling more dangerous, cumbersome, and frustrating. Others noted their concern with change, stating concerns of an unwillingness to embrace changes. To combat this, many suggested that flexibility is key, and they would like options to choose different modes of transit depending upon their circumstances for that particular day. Others suggested that while offering commuting options is important, it is also important to not "shame" people who drive and park daily.

Many strengths of the existing transit operation were noted by Walker Consultants during our site visit and in discussions with Texas A&M Transportation Services staff; these are noted within the *Transit* section of the Phase 1 report. The transit system is a comprehensive service to almost all desired locations both on- and off-campus. The Texas A&M mobile app that was developed in-house provides an excellent service to users with real-time bus arrival info and other features. Texas A&M Transportation Services self-identified their successes with teamwork and communication within their department. The section also notes that the fleet is being updated and renewed, including the addition of battery-electric buses.

The *Mobility & Urban Design* section of this report compared and contrasted several long-range campus plans and deliberated the current conditions of the built environment and how they relate to a users' mobility to, from, in, and around campus. Walker noted the core campus can be thought of as "15-minute city" for pedestrians and cyclists. In any walkable environment where the climate is that of College Station, the sun and heat make shade an omnipresent issue. The newest parts of campus have the least shade, due to the immature vegetation. Crash map analysis suggests the campus is generally safe, while the perimeter roads are less so. Upon review of the Campus Master Plan, Walker notes that the quads proposed (West Campus, Reed Arena, and Research Park) offer opportunities to enhance transit-oriented development. And, finally, University Drive near College Main is a prime location to (re)connect the campus to the city.

Walker noted in the *Transportation Demand Management* section that Texas A&M Transportation Services offers a comprehensive set of infrastructure, services, policies, and programs to support transportation demand management (TDM). However, Transportation Services does not fully leverage pricing, flex commuting, or other incentive-based policies to support and encourage non-single occupant vehicle commuting. Moreover, survey results indicated a significant lack of familiarity among campus users with TDM offerings that are present, such as the bike lease program and Zipcar. In spite of this, Walker found, from an analysis of home addresses, that there is significant potential to encourage more students, faculty, and staff to walk, bike, and take transit to campus.

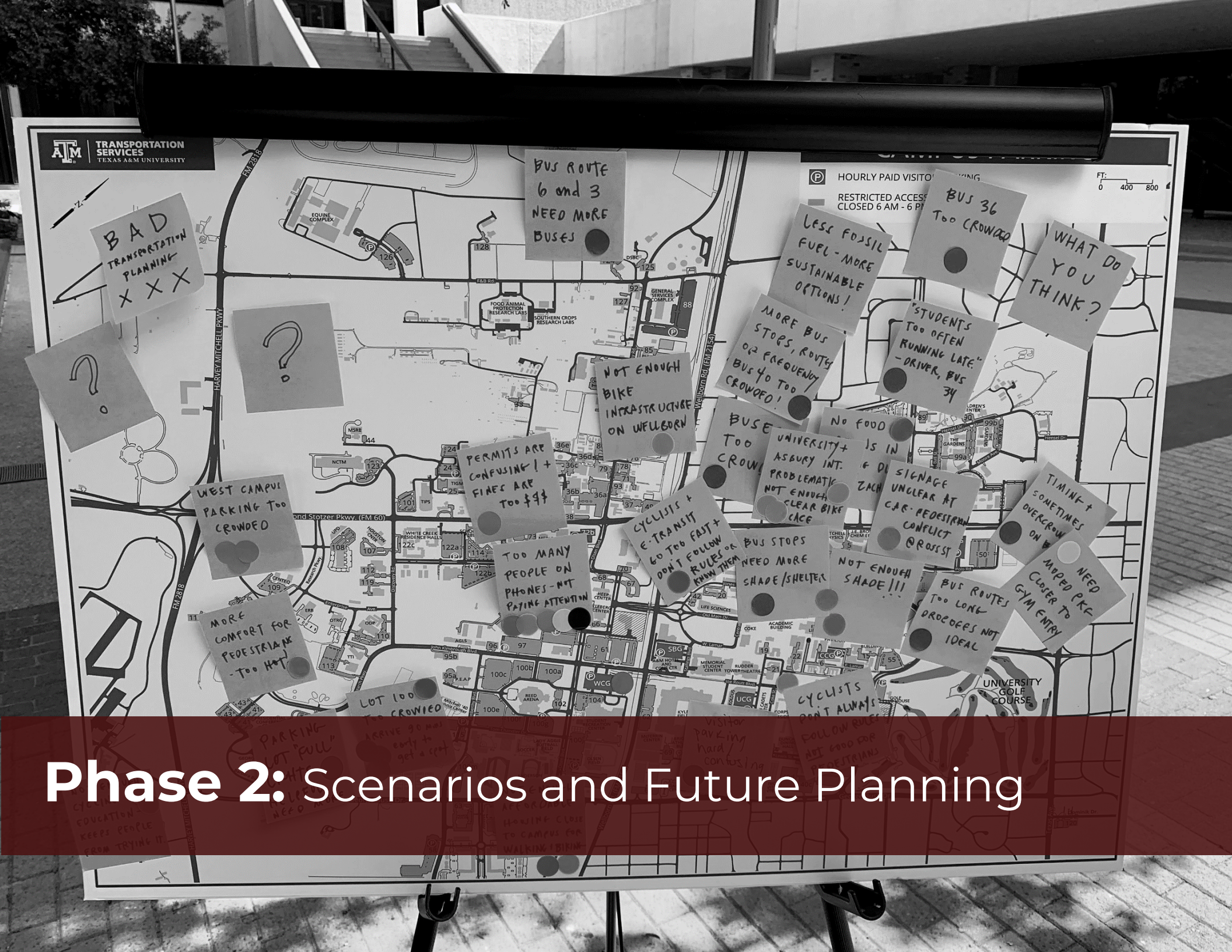
The *Parking Management* section of this report described the quantitative analysis of parking supply and demand as well as reviewing qualitative management practices and also includes a website critique. Of 38,451 parking spaces, 84% (32,180) are dedicated to permit holders that include faculty, staff, and students. The remaining 16% (6,271 spaces) are for all other uses such as ADA, metered, loading, and service vehicles. Walker analyzed and projected the use of permit-controlled spaces; at the University's request, the non-permit-controlled spaces were not analyzed and are considered to be set aside for their current uses now and into the future. During a typical peak-demand period, approximately 70% of all permit parking spaces are occupied. The least-occupied parking facilities represent nearly 17% of the entire permit parking capacity but only account for approximately 4% of the parking occupancy. The most-occupied parking facilities represent just over 50% of the total capacity but account for nearly 70% of the total demand for parking. There are thousands of available parking spaces on the periphery of campus, and more specifically in the southwestern quadrant, that go underutilized during busy periods—there are opportunities to spread demand throughout campus more evenly.

In the *Peer Review* section of this report, Walker compared quantifiable Texas A&M Transportation Services provided data points (e.g., number of transit routes, parking fees, etc.) to peer institution services. Walker found that Texas A&M's highest parking fees are lower than peer average highest fees for faculty, staff, and commuter students; while, at the same time, the lowest parking fees are higher than peer average lowest fees for all users. This is the smallest variance of fees of all institutions. The implications of this suggest there is potential for a greater difference in rates that may act as financial "carrots" and "sticks" to better spread demand throughout campus. Texas A&M has many opportunities to bolster and promote new transportation demand management programs and strategies, and consistently takes steps to incentivize alternative modes as most peers currently do. This study is an example of this on-going aspiration to improve.

NEXT STEPS

Following Phase 1, Walker presents its Phase 2 work, which includes scenario-building and future planning. In this next phase, Walker will incorporate findings from Phase 1 to produce alternative scenarios. These scenarios build upon the work that is described within this report. Additional on-site visits are planned that will include reconnecting with stakeholders to vet the scenarios proposed as well as observations of user behaviors in a post-pandemic environment.

After the Phase 2 analysis and report are completed, Walker will work on Phase 3, which includes plan development and a path forward. In this phase recommendations will be provided. These recommendations will be the culmination of the work in Phases 1 and 2 and will include an implementation plan for Texas A&M.



Phase 2: Scenarios and Future Planning

INTRODUCTION

The second phase of our work with Texas A&M University drew upon the data received and analyzed during Phase 1, and upon the feedback received from University stakeholders. Some of the key messages that we heard were:

- **Allow for choice—rather than building a "one-size-fits-all" solution.** The recommended solutions should not push a single mode, but rather must allow the campus community to make choices that work best for them.
- **Set realistic and responsive goals.** Recommendations should respond to the realities of a growing and changing campus.
- **Implementation is everything.** Ensure that scenarios reflect an understanding of implementation considerations, such as timeline and cost.

With these touchstones in mind, Walker built three sample frameworks of parking and transportation demand management (TDM) solutions. These weren't designed to be "cast in stone," but rather they represented points on a continuum. These frameworks were illustrated in chart, matrix, and map forms and were shared through a campus community engagement process. Through this process of stakeholder input, including focus groups, a mobility booth, a mobility workshop, an interactive project website, and a second round of focus group conversations, Walker gathered feedback on the sample frameworks that informed our process of moving into Phase 3. In this next phase, we recommend a comprehensive approach that is sensitive to the data collected, the projections assumed, and input from the community.

The objectives remain to make sure that transportation options are right-sized based on anticipated and projected demand; to allow for a variety of feasible mobility options for all users; to encourage faculty and staff to use modes other than the single-occupancy vehicle; to improve access and safety and decrease congestion; and, to support the viability of the Transportation Services auxiliary.

These objectives are to be achieved by a framework that:

- **Addresses and anticipates** Campus Master Plan activities
- **Recognizes** continued population growth and campus development
- **Supports** context of a shift in the location of campus parking
- **Respects** the ways in which the campus and its host cities are interwoven
- **Understands** that not everyone can or wants to use alternatives to cars
- **Understands** that not everyone has access to a vehicle
- **Strives** to offer options that provide access and mobility equitably

PLANNING FRAMEWORKS

Walker built three mobility frameworks as concepts to be tested during campus engagement opportunities. It is important to note, and participants were reminded, that these three frameworks are not absolutes—they represent points along a wide range of options and alternatives. On one extreme all future additional growth in demand is addressed by adding parking infrastructure (More Parking); on the other end of the spectrum, no new parking is added, instead additional demand is all accommodated by improving transit, pedestrian, and bicycle/e-bike policies, TDM programs, and infrastructure (Less Parking – More Mobility). The final framework lies between these two and suggests a scenario in which these approaches are balanced (Balanced Parking and Mobility).

The illustrations of the frameworks (matrix, chart, and map) were intended to convey the benefits and liabilities of each, from the perspectives of land-use, financial impact (to both the University and to end users), and environmental implications.

Figure 68: Framework Matrix

Mode & Strategy	More Parking	Less Parking – More Mobility	Balanced Parking and Mobility
Parking	• 10,500 net new spaces (would build 15,700 spaces to replace parking losses). • Maintains 69% occupancy ratio, as current. • Accommodates growth by continuing existing parking ratio per person (0.43 spaces/person). • New parking garages in West Campus, Research Park, University & Agronomy, Athletic & Recreation, Southside, and Northside districts.	• No net new spaces (would build up to 900 spaces to replace parking losses). • Increases parking occupancy to 90%. • This would require aggressive implementation of Automated Parking Guidance Systems, to guide users to available capacity throughout campus. • Intends to reduce the parking ratio per person to about 0.30 spaces per person. • New parking in the Northside district to replace Lot 30.	• 2,800 net new spaces (would build 6,000 spaces to replace parking losses). • Increases parking occupancy to 80%. • Continues progressive reduction in parking ratio per person (in effect since 2008). • New parking garages in West Campus, Northside, and Southside districts.
Transit	• 15% increase in service hours. • Increase frequency and seat capacity per hour on internal routes (to reduce overcrowding and pass-ups). • Serve outlying parking garages on West Campus, Research Park and Athletic & Recreation districts. • New transit hub on West Campus. • Circulation and distribution around Historic Core district to connect with parking resources in West Campus, Athletic & Recreation, and Research Park districts.	• 50% increase in service. • New commuter service routes to/from College Station and Bryan. • New transit hub on Northside district. • Eliminate circulation and distribution around Historic Core and rely on network of protected ped/bike facilities to access transit hubs. • Concentrate transit access on three hubs – north, south, and west of historic district.	• 30% increase in service. • Increase frequency and seat capacity per hour on internal routes. • Circulation and distribution on the periphery of East Campus. • New commuter service routes to/from College Station. • New transit hub on Northside district. • Connect with new parking resources in West Campus and Southside districts. • Concentrate transit access on three hubs – north, south, and west of Historic Core district.

Urban Design & Mobility	• 10 miles of protected facilities on campus. • Design a shared transit/bike corridor along John Kimbrough to connect Research Park, West Campus, and East Campus. • Build north-south protected bike facilities on Olsen, College Main, Houston, and New Main to connect campus with the community. • Facilitate commuting by bike and electric mobility vehicles.	• 10 miles of protected facilities on campus. • 30 miles of protected facilities off campus*. • Rely on protected ped, bike and electric mobility facilities to connect West and East Campus across John Kimbrough and Old Main. • Build north-south protected bike corridors on Agronomy/Olsen, College Main/Houston, and College/Bizzell to connect campus with the community. • Provide bike parking and changing rooms infrastructure to facilitate alternative commute modes.	• 10 miles of protected facilities on campus. • 15 miles of protected facilities off campus*. • Emphasize bike and electric mobility along John Kimbrough to connect West and East Campus. • Design a shared bike/ped corridor along Old Main and New Main to facilitate east-west travel across campus and to/from the community. • Build a north-south bike corridor on College Main/Houston.
Transportation Demand Management	• Launch branded University TDM program. • Active promotion of alternative transportation and commuting modes, and personalized commute plans. • Rely on marketing and communication of options through social media channels and digital hub or dedicated website. • Encourage voluntarily use of non-single occupant vehicle (SOV) modes for commuting and campus circulation.	• 10% increase in non-SOV mode share by 2031. • Implement all strategies listed in “More Parking” and “Balance Parking and Mobility.” • Deliberate and proactive commute management with dedicated TDM manager and commute management staff. • Move to daily choice parking/mobility options with financial rewards for those that choose to forego purchasing a long-term permit.	• 5% increase in non-SOV mode share by 2031. • All strategies listed in “More Parking”. • Increase price of long-term parking permits to distribute demand. • Launch incentive program for those that opt out of parking permits. • Introduce pay-as-you-go only parking facilities in the campus core. • Launch mobility concierge and Guaranteed Ride Home.
Additional Cost (10-Year Projection)	• $370 million in capital** • $17 million in operations (transit only) • $387 million total	• $145-168 million in capital** • $56 million in operations (transit only) • $201-224 million total	• $222 million in capital** • $34 million in operations (transit only) • $256 million total

* Assumes matching funds form state or local jurisdictions to develop ped/bike infrastructure projects.
** Include capital costs of building new parking garages, new transit depot to accommodate fleet, battery-electric buses for all new vehicles, and improved transit hub facilities.

Figure 69: Framework Chart

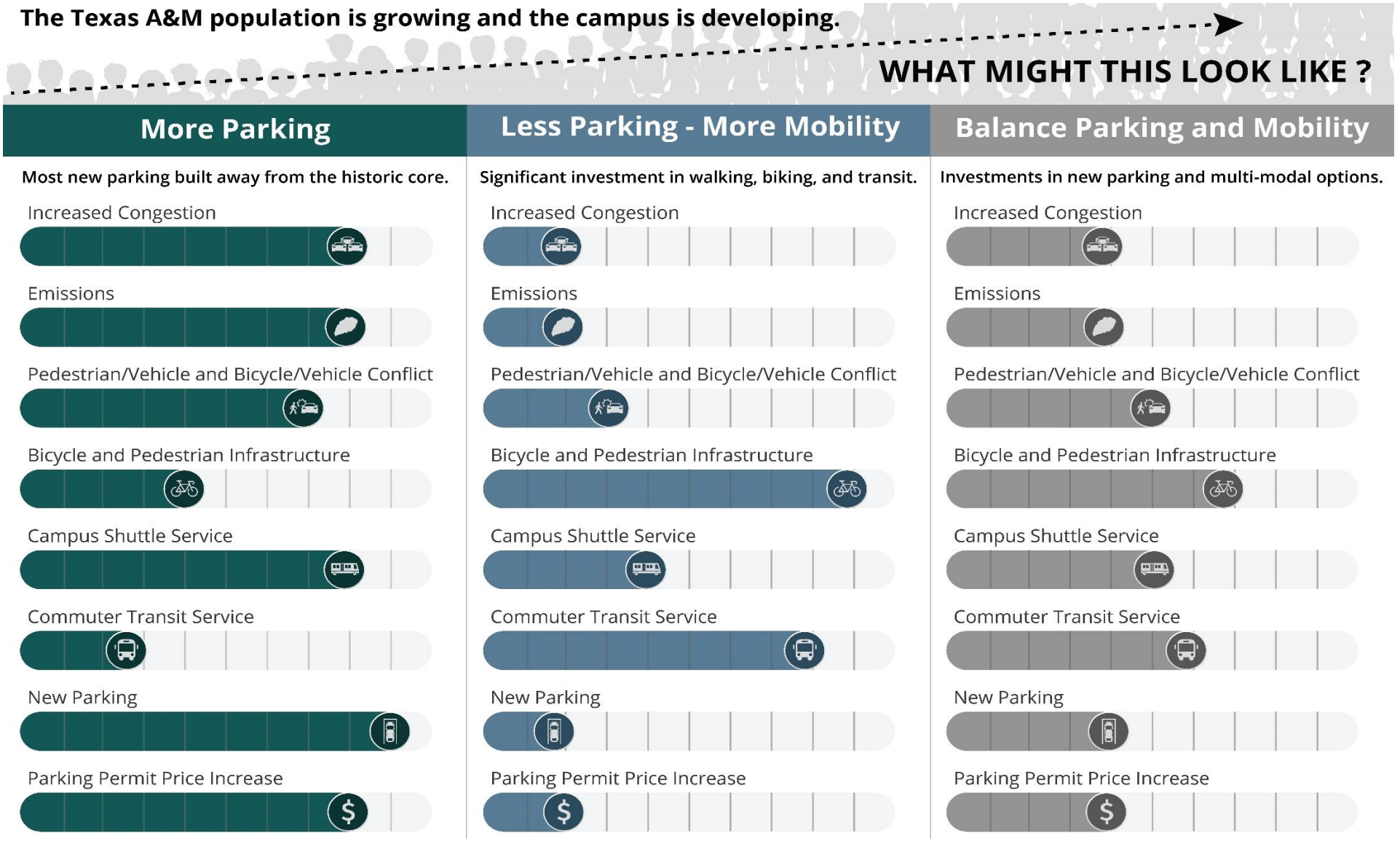


Figure 70: Framework Maps – More Parking

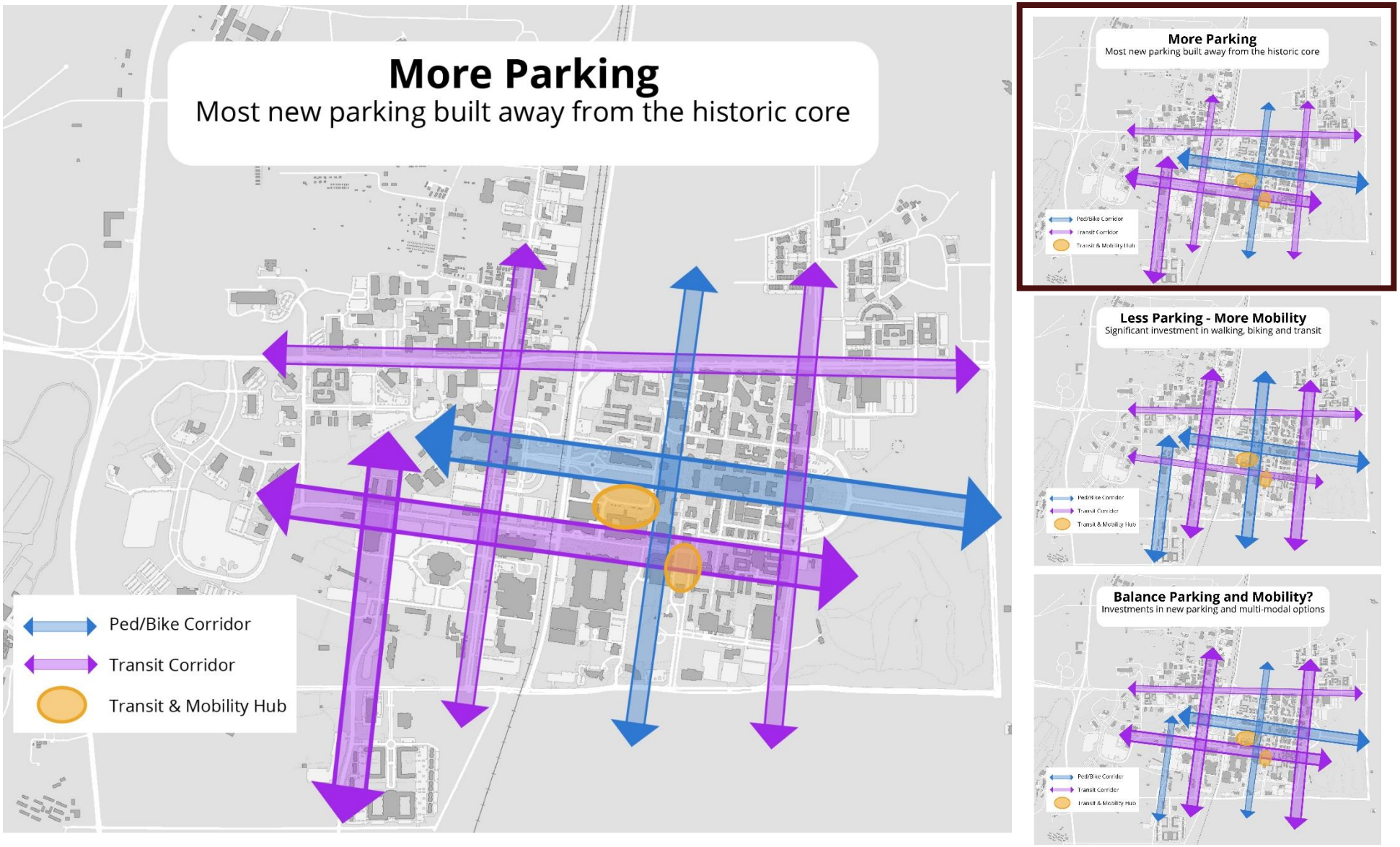


Figure 71: Framework Maps – Less Parking – More Mobility

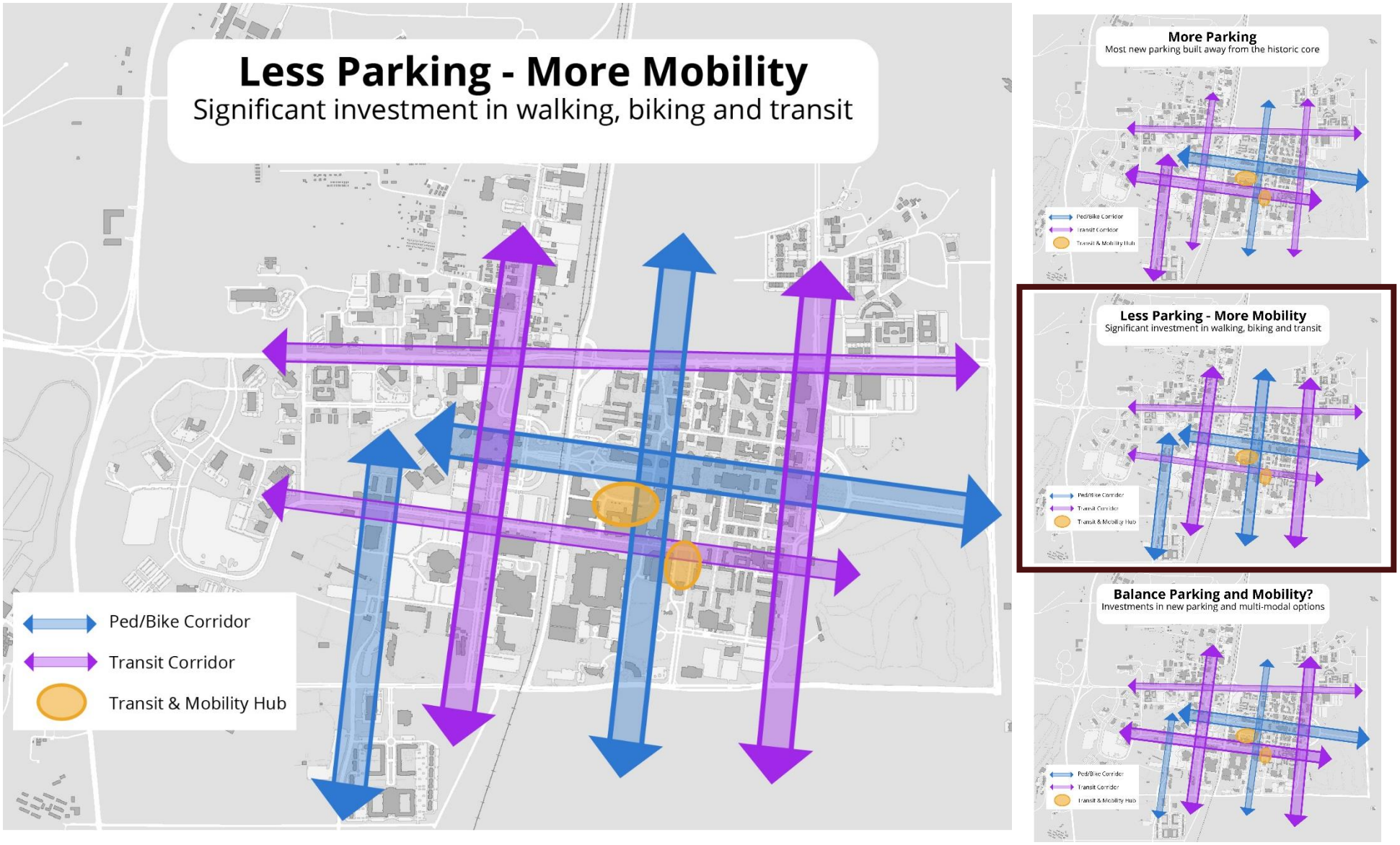
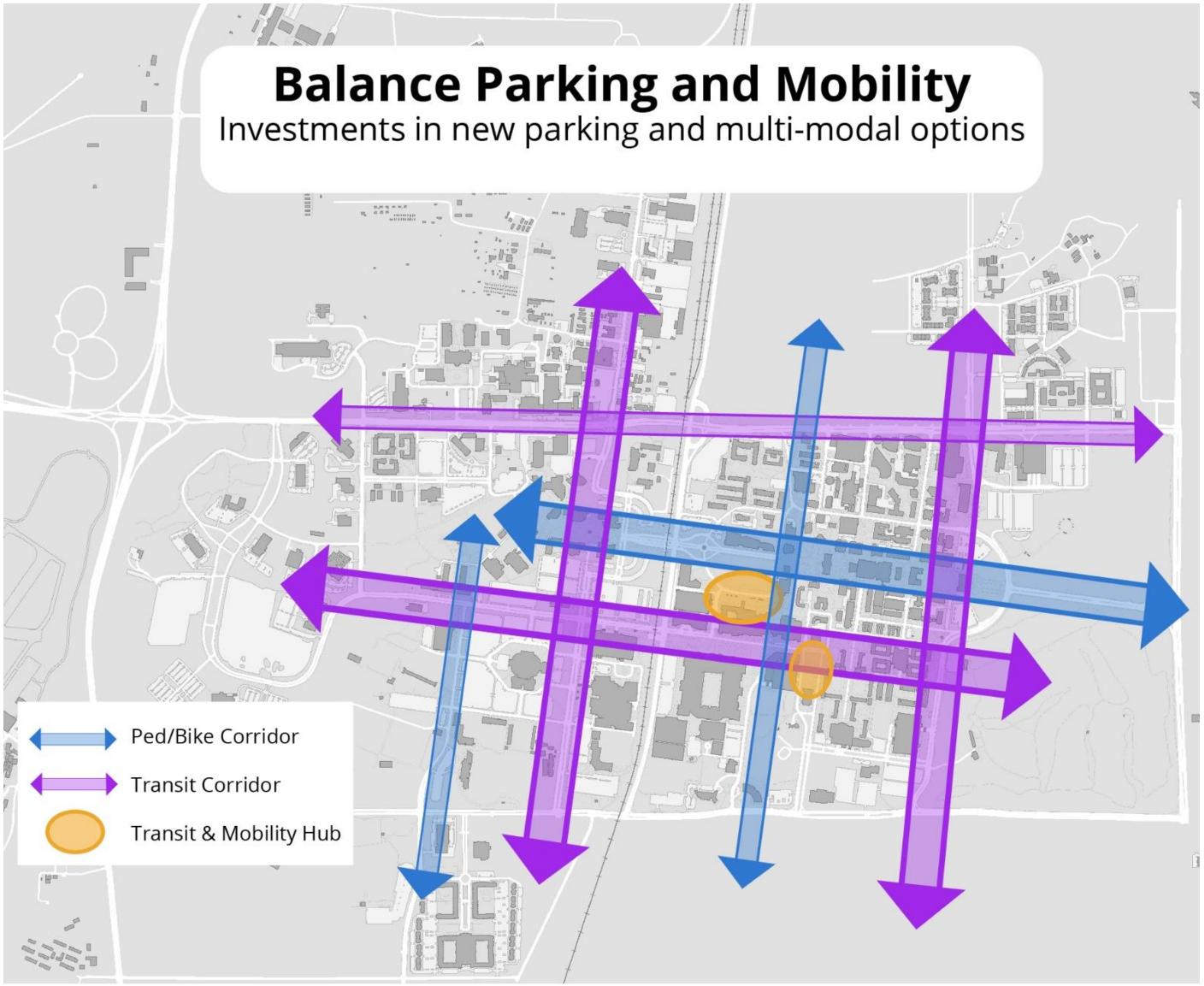
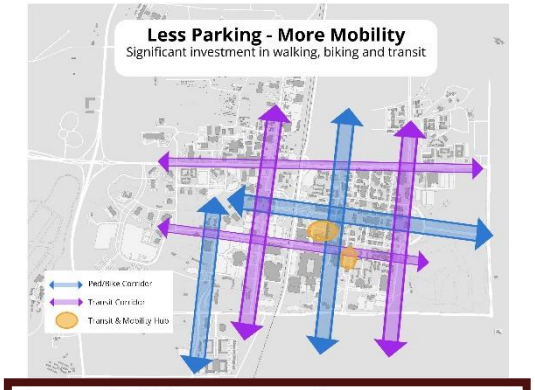
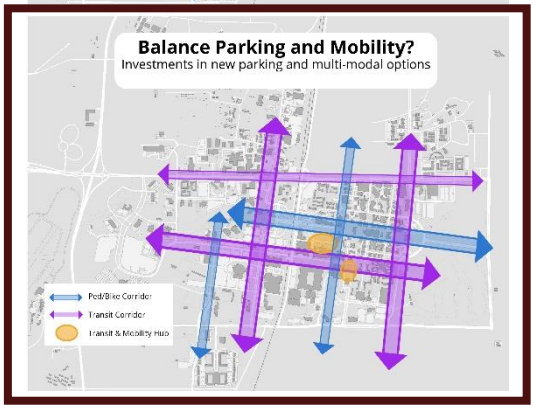


Figure 72: Framework Maps – Balance Parking and Mobility







ENGAGEMENT

During the week of September 27, 2021, the Walker team, including representatives from Walker Consultants, Traffic Calmer (Michael King), Design Workshop, and Gram Traffic came to the campus of Texas A&M University for a site visit. The purpose of the visit was manifold: to take a guided campus tour; to observe pedestrian, bicycle, transit, and automobile traffic and interactions; to plan traffic data collection efforts; and, to conduct the next phase of campus engagement. In addition, based on initial field observations, some traffic/intersection improvements were tested using traffic cones.

Due to the pandemic the Phase 1 campus engagement activities were restricted to online interactions, including Zoom focus groups and the project digital hub website. It was with this in mind that a very robust on-campus suite of engagement activities was planned for Phase 2 to include as many campus community members as possible in the conversation. Online opportunities were maintained, so that people with all degrees of comfort with social interaction (or distancing) could find a way to participate. To this end, the digital hub remained an alternative, with the addition of a mobility booth tabling exercise, an in-person mobility workshop (with an online component), and focus groups.

Mobility Booth

The mobility booth tabling exercise had multiple objectives: to raise awareness of the Transportation Mobility Master Plan project, to offer an opportunity to comment on transportation “hot spots” using a mapping exercise, and to drive traffic to the Mobility Workshop. The booth was set up sometimes outside on Rudder Plaza and sometimes inside the ground floor of the Memorial Student Center, and was staffed by members of the Transportation Services and consultant teams. The booth operated all day Monday, September 27 through Wednesday, September 29, 2021. Business cards were handed out advertising the Mobility Workshop all three days; on Wednesday (the day of the workshop), campus community members were directed up to the Mobility Workshop. The booth was visited by hundreds of faculty, staff, and students over the course of three days—many of whom participated in the mapping exercise.

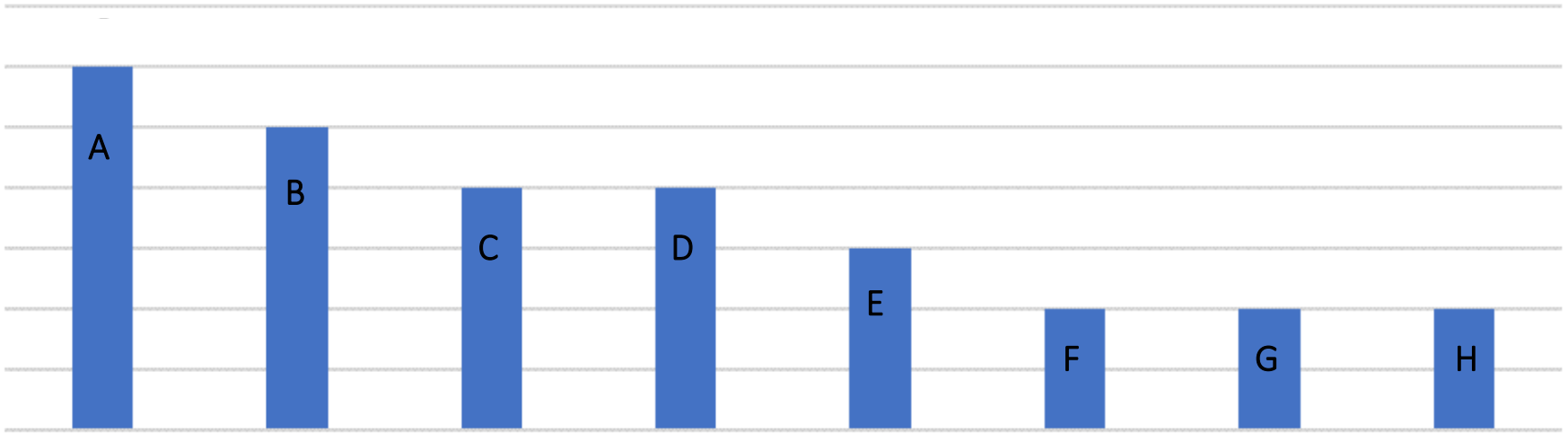
The questions were relatively simple:

1. What on campus IS working?
2. What on campus could be better?

What on campus is working?

For this question, participants were asked to share opinions, and circular dots were then affixed to those ideas by other participants who echoed or agreed with the sentiment provided. The chart below shows opinions that received at least two dots, meaning they were echoed by at least one other participant.

Figure 73: Dot Exercise 1

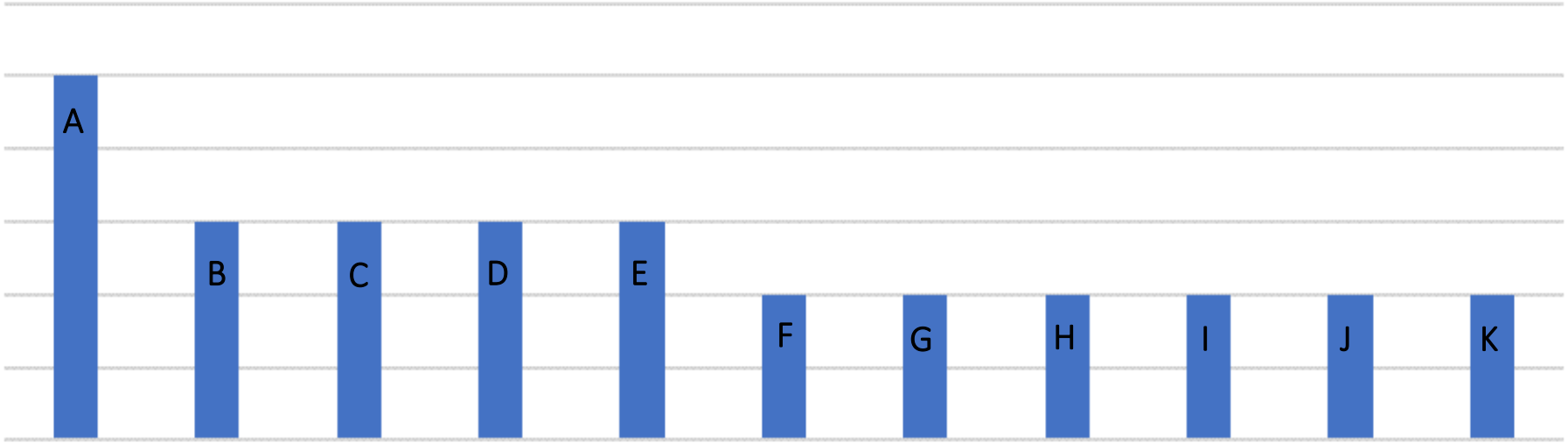


A. Living across the street from campus and walking is easy
B. Traffic guards on north side of campus have been helpful
C. Biking is great but beware of Peds!
D. University police do bike education through Tex. Visit Tex.org
E. Working at MSC and parking at garage works well
F. I live across University and work on campus, so I don't need a car
G. I work on campus, but it's easy for my dad to drop me off early, so I don't need a car
H. Veo works well for getting around campus

What on campus could be better?

For this question, as with the previous one, participants were asked to share opinions, and circular dots were then affixed to those ideas by other participants who echoed or agreed with the sentiment provided. The chart below shows opinions that received at least two dots, meaning they were echoed by at least one other participant.

Figure 74: Dot Exercise 2



A. More trees and shade. Parking and walking from Lot 100 is NOT nice
B. Too many cyclists and drivers don't understand rules of the road – education!
C. Let cadets ride bikes, scooters, and skateboards on campus
D. Make a 1-way drive/parking/sidewalk loop between south KGS Halls and SSG. Too congested
E. Need better wayfinding signage for pedestrians
F. I moved closer to campus where I could bike, so I no longer needed to depend on Bus 35
G. I hope campus can improve stormwater management while improving streets. More natural areas too
H. I wish other pedestrians would stop looking at their phones and pay attention!
I. Wayfinding to help people get quickly to popular destinations
J. Need clear bike zones on campus. Look at Stanford as model
K. Bricks make skateboarding difficult. We would like a smooth lane for bikes and skates

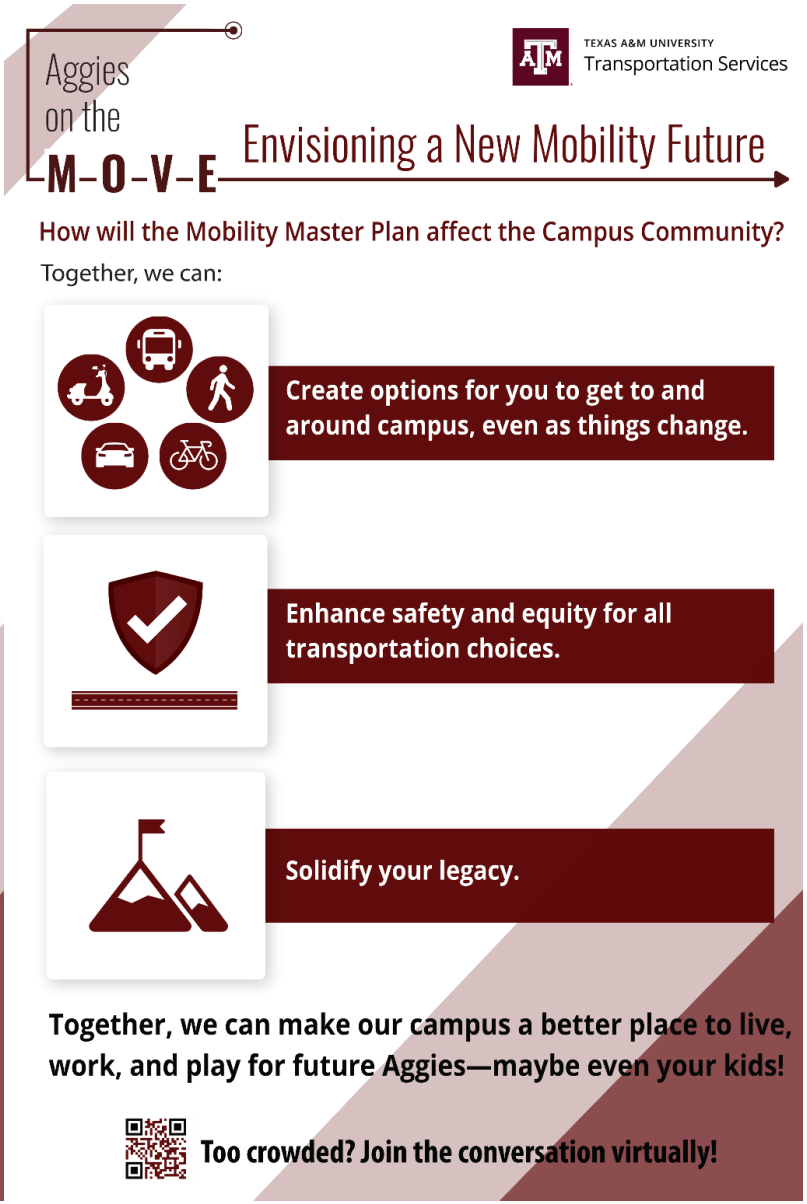
Mobility Workshop

The Mobility Workshop was held all day on Wednesday, September 29, 2021, in the Memorial Student Center. The workshop was organized into a registration table and four "stations." Registration was immediately outside the door, at which participants would sign in and get a "passport." Participants would take their passport to each of the four stations, at which their passports were "stamped." Everyone who returned a passport with all four stations marked was entered into a drawing for prizes. Over 150 members of the Texas A&M community participated in the event. The four stations were 1) Orientation 2) Vision Sessions 3) Future Planning and 4) Interactive polling. All the stations are summarized in detailed in the following sections.

Orientation

This welcome station was an opportunity to get oriented to the project and the workshop. In broad-brush strokes participants were informed about the Transportation Mobility Master Plan project generally, along with its goals and to the workshop itself and a description of the activities at the remaining three stations. Generally, the person who greeted and oriented a visitor at this first station accompanied that individual through the whole event. The following two boards were displayed at the orientation station, each had a QR code at the bottom, in case the individual had second thoughts, possibly from a public health perspective.

Figure 75: Orientation Station Boards



Vision Sessions

The vision sessions were much like the mapping exercise at the Mobility Booth. However, rather than a "good map" and a "bad map", participants were asked two questions (one for each of two maps).

1. What current issues and challenges would you like to see addressed
2. Think of the future! What do you envision on campus in 10 + years?

There were three pairs of maps, all asking the same pair of questions. Comments were hand-written and provided on sticky notes that were affixed to a board during the sessions. Walker staff reviewed photos of the boards taken after the sessions had concluded and transcribed the comments electronically for further analysis. After analysis and review of all the comments left on the boards, some key themes and patterns began to emerge for each of the two questions. They are summarized below and represent input from three different visioning sessions.

For each area of focus, the most popular themes and patterns are described in detail, and the remaining comments are summarized in a list. Note that for purposes of summarization, Walker attempted to group and paraphrase like comments together, and the language used in the summaries below does not constitute a verbatim transcription of language used in comments.

"What current issues and challenges would you like to see addressed?"

Safety. 20 comments were provided that cited challenges around safety. Most discussed dangerous interactions amongst vehicles, bicycles, and pedestrians, bikes using sidewalks instead of the roadway, and high traffic volumes in general leading to congestion and large numbers of potential conflict points.

Transit. 11 comments were provided that cited challenges around transit. Specifically, an inadequate number of transit or busses, service that is too infrequent, not enough routes, poor maintenance, not enough capacity on popular routes with full busses, etc.

Stallings Garage. 6 comments cited the Stallings Garage specifically regarding high traffic and congestion for that garage.

Infrastructure. 3 comments cited inadequate or unmaintained infrastructure, such as road, path, and sidewalk surface conditions, lack of signalized intersections, and inadequate bike/ped crossing controls, particularly across University Dr.

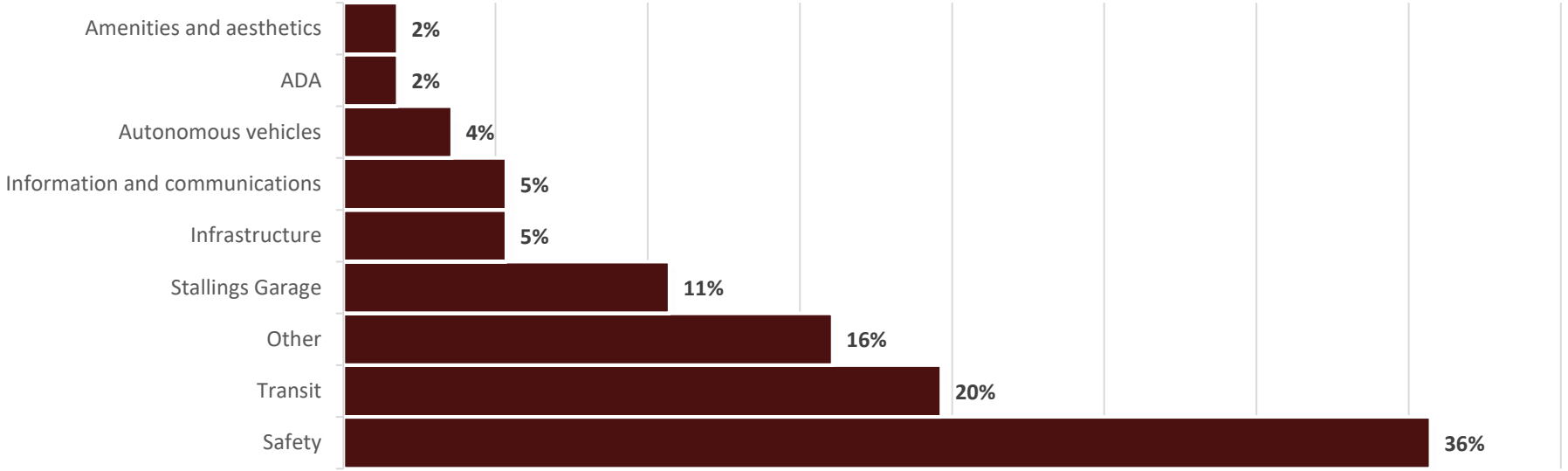
Other topics of note regarding challenges or issued cited included:

Information and communications. Inadequate smartphone app, signage, etc. (3 comments)

Autonomous vehicles. Not fast or reliable enough. (2 comments)

ADA/Accessibility. Not enough ADA parking, restricted access to ADA parking, inadequate accessible infrastructure such as ramps. (2 comments)

Figure 76: Current Issues and Challenges Percentage Summary



The following are other unique ideas or suggestions that were provided:

- Veo bikes are difficult to dock
- Move-in day is a struggle
- Inadequate housing supply for students

Bus Stops

A few bus routes were identified multiple times across the visioning sessions as challenging, mostly due to overcrowding or service that is not frequent enough. These routes are:

- Bus 1
- Bus 12
- Bus 35
- Bus 40
- Bus 47

"Think of the future! What do you envision on campus in 10 + years?"

Transit infrastructure investments/improvements. 21 comments related to traditional infrastructure improvements. These included more light rail, more buses, more shuttles, better driver pay, park 'n' rides, transit hubs, dedicated bus lanes, more/increased subsidies for transit, and better bus stops.

More/improved general bike and ped infrastructure. 14 comments touched on this topic in general. These included comments on improved amenities and landscaping to make being a pedestrian or cyclist more comfortable and convenient.

More/improved car infrastructure and parking. 12 comments touched on the need to make improvements that would benefit the automobile, including providing more and cheaper parking, road expansion, dedicated turn lanes, etc.

Reduction in parking and de-prioritization of the car. 12 comments touched on the need to reduce or eliminate parking. This included moving some existing parking to remote or peripheral sites, as well as transitioning some or all core campus parking to non-vehicle areas or uses.

Separate modes. 8 comments specifically related to the desire to see more modal separation amongst vehicles, bicycles, pedestrians, and other micromobility. This includes more dedicated lanes for buses or bikes, more striping and fewer sharrows, and the construction of more underpasses or overpasses across busy roads.

Other envisioned areas of focus for improvements in the future included:

Better transit information. Improved and more dynamic signage and wayfinding, dynamic/live bus and shuttle location, more reliable app, more accurate messaging. (7 comments)

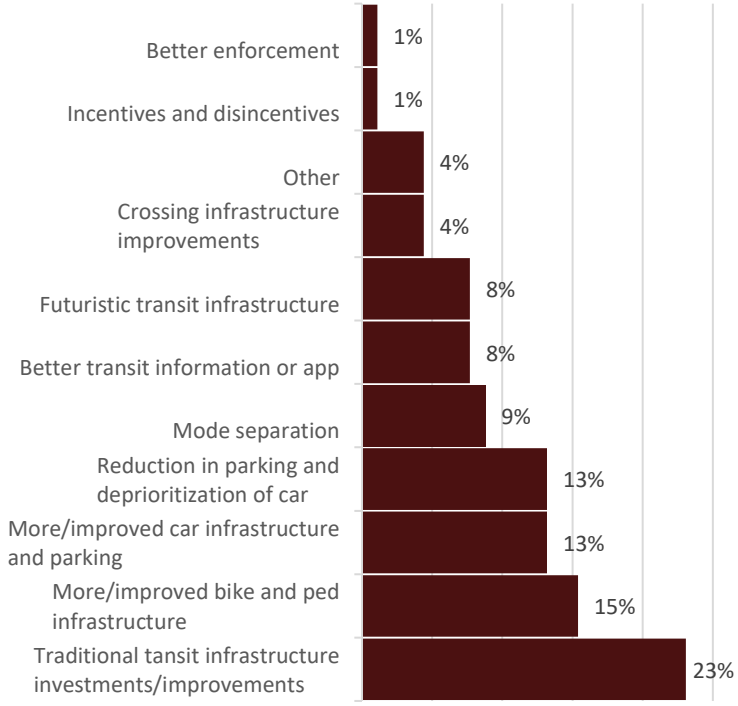
Futuristic transit infrastructure. SkyTran, monorail, etc. (7 comments)

More improved crossing infrastructure. Marked crossings, signalized crossings, better lighting at crossings. (4 comments)

The following are other unique ideas or suggestions that were provided:

- Better enforcement
- Incentives and disincentives
- Uber/Lyft partnership
- Education
- Land use repurposing
- Staggered class schedules to reduce level out peaks in activity across the day
- "Pub peddlers"

Figure 77: Future Envision Percentage Summary



Future Planning

At the Future Planning station, people were asked to place sticky notes on flip charts that asked the following questions. **The individual comments do not necessarily represent trends. They may help to inform Walker's recommendations, but are not recommendations as presented in this section.** The questions and their responses are as follows:

If helping people make the best transportation choice for them were our primary mission, what innovations and initiatives could we pursue?

- Communications, marketing, and education improvements. 26 comments suggested innovations related to this area of focus. Specific suggestions included demonstration of travel times using various modes and cost/benefit analysis for students, staff, and faculty, making everyone aware of all the options they had available, education about ADA laws and regulations, as well as providing informational kiosks at key locations and encouraging staff and faculty to act as "role models" for students in terms of using alternative modes of transportation.

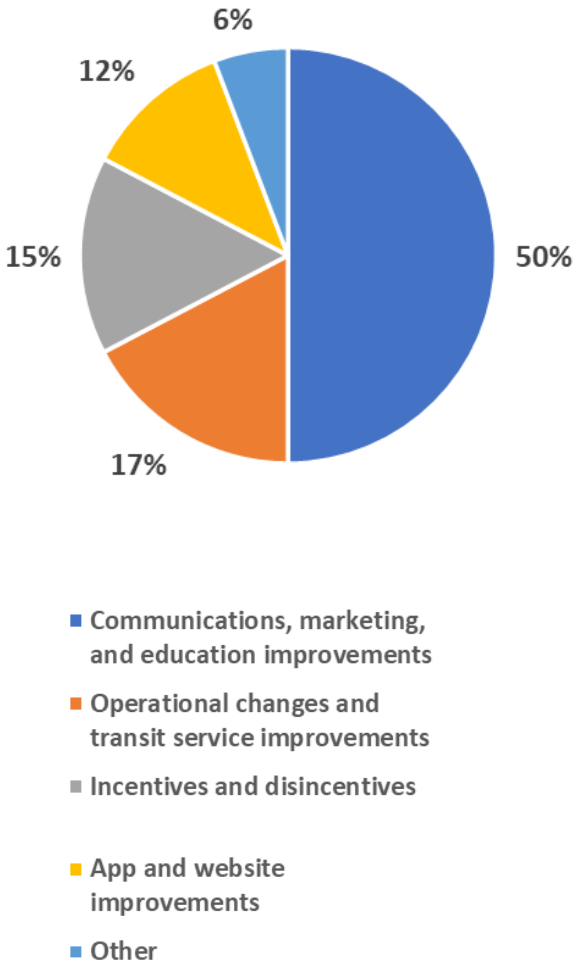
- Operational changes and transit service improvements. 9 comments touched on operational and transit service improvements that could be made. Mostly, comments involved the desire for more routes and extended service hours.

- Incentives and disincentives. 8 comments related to incentives and disincentives. Specifically, ideas provided included establishing loyalty or rewards programs for using transit, raising parking rates and other costs associated with driving, or eliminating parking supply and/or restricting it to make other modes more appealing.

- App and website improvements. 6 comments related to the need for app and/or website improvements to be made.

3 other suggestions related to infrastructure improvements or better amenities.

Figure 78: Future Planning Question 1 Percentage Summary



If getting people to use transportation choices other than their personal vehicle were our primary mission, what innovations and initiatives could we pursue?

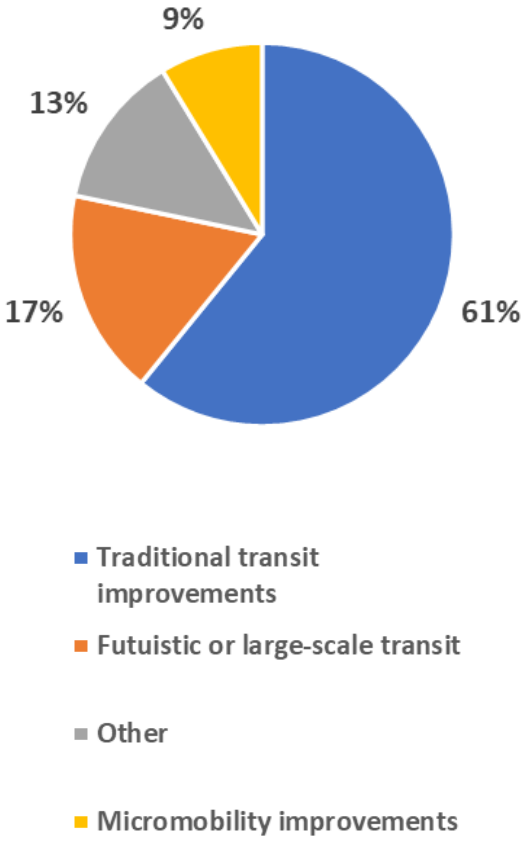
- Traditional transit improvements. 14 comments suggested innovations related to this area of focus. Specific suggestions included establishing or constructing transit hubs, park 'n' rides, providing more bus routes, increased bus and shuttle frequency, express routes, more stops, and better/more transit signage.

- Futuristic or large-scale transit. 4 comments touched on futuristic transit ideas as the preferred area of focus for pursuing. These ideas included everything from a SkyTran and monorail to a subway and people mover, such as the one at Disneyland.

- Micromobility. 2 comments related to micromobility. Specifically, expanding Veo scooters and providing Zipcars and Zipcar parking on campus were suggested.

3 other suggestions related to education, aesthetic improvements to paths, and providing more housing options.

Figure 79: Future Planning Question 2 Percentage Summary



If maximizing safety when using transportation were our primary mission, what innovations and initiatives could we pursue?

- **Separation of modes.** (8 comments)
- **Better enforcement.** (8 comments)
- **Traditional infrastructure improvements.** (5 comments)
- **Better training for transit drivers.** (2 comments)

7 other suggestions related to items such as monorail, staggered class schedules, and constructing catwalks for students between buildings.

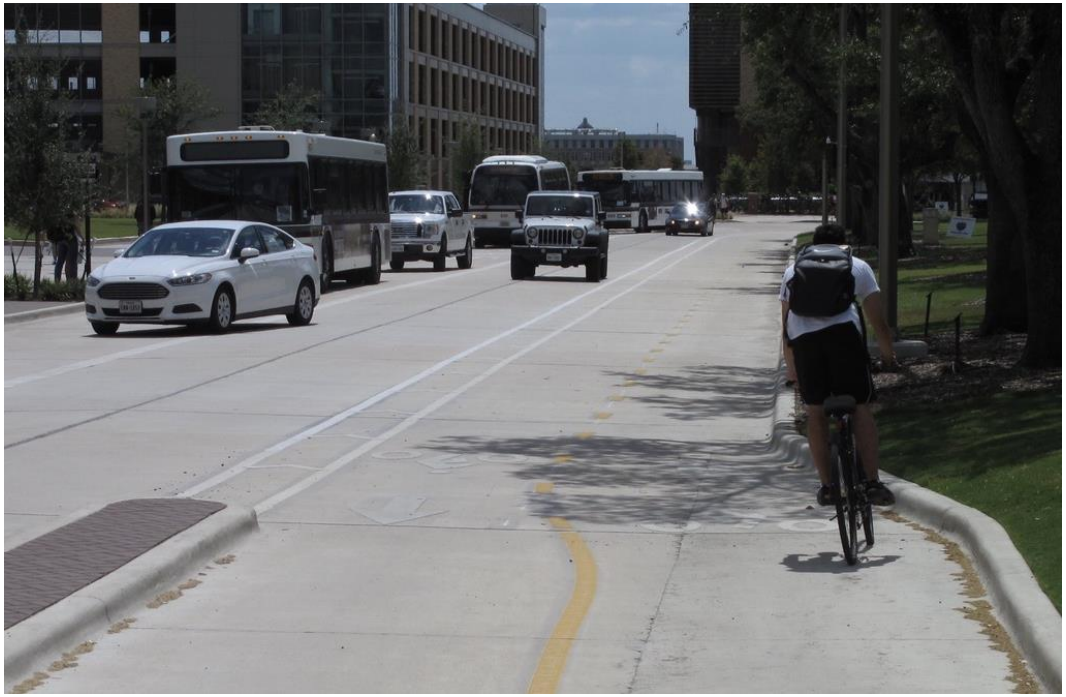
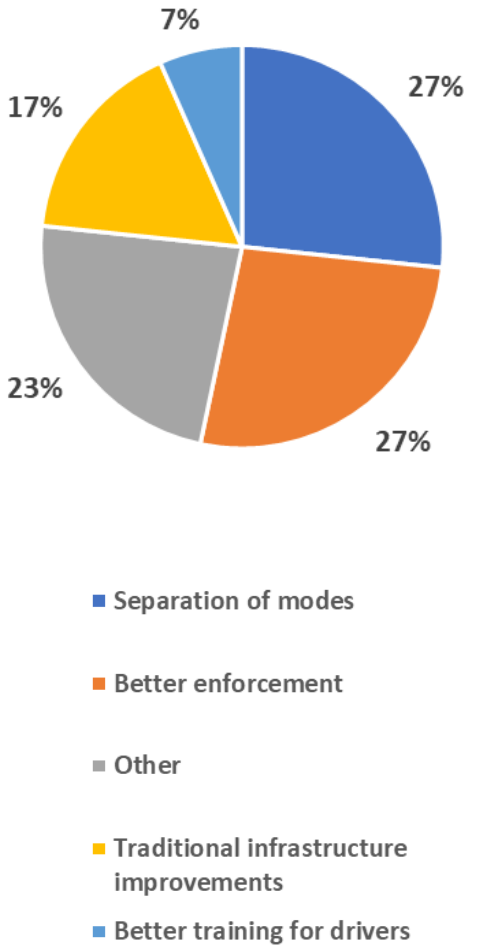


Figure 80: Future Planning Question 3 Percentage Summary

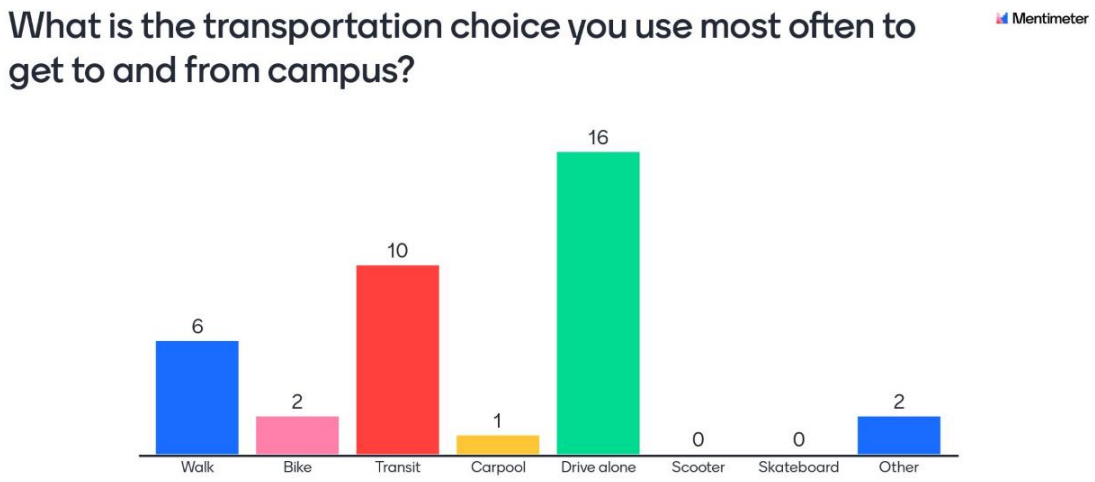


Mentimeter Exercise

At this station, participants were asked to access Mentimeter, an online, real-time survey tool, by entering a code. This would present them with several questions about their current and potential transportation choices, attitudes, and behaviors. Participants were able to do this survey in the room while at this final station of the Mobility Workshop or they were free to participate in the survey at a later time, as it was online being performed on their phones.

Participants were asked for feedback on 12 questions relating to demographics, parking, transit habits, and multi-modality at Texas A&M. In addition, there were 6 open-ended questions asked, including about likes and dislikes with regard to access and mobility.

It should be noted that 21 out of 38, or nearly 6 in 10 participants, were students., while 14, or 37%, were staff.



Example Mentimeter Question

Some key survey results that emerged during the Mentimeter portion of the workshop are the following:

- Nearly half (43%) said their transportation mode **most often used to get around within the campus is walking,** while driving alone was 37%.
- **Fewer than half (43%)** said that they **drive alone** to get to and from campus, with 27% saying they used transit and 16% saying they walked.
- **Participants were creatures of habit**, with habit being cited as the most common method for which trips are planned.
- **4 in 10** participants said that they would **choose to walk or bike** instead of driving or taking transit to campus even if they were more than 1 mile away on a typical day
- Aggies feel **most comfortable walking** on campus and **least comfortable biking** on campus, with better signal trimming and more protected bike lanes cited as the two biggest changes that could be made to improve biking comfort
- **More frequent transit service** was cited as the biggest change that could be made for Aggies to want to use transit more often, with different routes and faster moving buses as a close second and third respectively.
- Out of those who drive to and from campus, about **64%** said that **parking prices have an effect** on their decision to drive on a typical day.
- **MSC** was the **most travelled to** building on campus.
- While Aggies cited many items that are working great, the most often expressed sentiment was that the **bus system works great** overall, and staff are knowledgeable and friendly
- **Congestion and traffic** (all modes) were the most common items **disliked**

A full account of all Mentimeter survey results and responses to open-ended questions is provided at the end of this document. Note that responses to open-ended survey questions mirrored and echoed the core themes discussed below.

Focus Groups

In addition to the Mobility Workshop, focus group meetings were held in person and virtually during (and shortly after) the week of September 27, 2021 on the Texas A&M campus as part of the engagement site visit. Nine focus groups were held with most of the groups and individuals with whom the project team met virtually during Phase 1. The intent of these conversations was to let participants know how their previous feedback had been used, to date; some learnings from the Mobility Booth, Mobility Workshop, and field testing (see next section); and, project next steps. The big picture takeaways from the Mobility Workshop that were shared within these focus groups were summarized as follows:

- **Remove parking from core campus** and consider creative circulation options
- Seek comfort for all, **on all modes**—delineation, urban design and shade, expanded accessibility, etc.
- Create better options for **connectivity** to surrounding communities
- Don't lose sight of **quick fixes**—like more stops and better headways on transit routes

Remove parking from core campus and consider creative circulation options

- Texas A&M is a spread-out campus with lots of space – this can be a good or a bad thing. Growth should happen sustainably, and multi-modality can be at the forefront of new development
- Choice and options are important.
- Vehicle access and circulation in the central campus should be reduced, not eliminated.
- Autonomous vehicles will likely be an important transportation mode in the future.
- Behavior incentives matter; parking is a resource and making it more scarce will discourage car use.
- Conversion of small pocket lots around campus to flex zone areas to allow for loading, unloading, and delivery activity has been popular and reduced traffic, as well as given service vehicles a place to park other than in bike lanes.
- More park 'n' ride locations would encourage more regular usage and could potentially be set up easily with existing off-campus lots.

Seek comfort for all, on all modes – delineation, urban design and shade, expanded accessibility, and more

- Design treatments to reduce access should be more permanent; they should be more than just signage and flexible delineators and temporary bollards and cones.
- Hot weather is an important factor in making transit decisions. If use of alternative modes or transit is going to increase, it must consider the comfort of users. This is also true for remote parking facilities.
- Active transportation is healthy and can be more social.
- More mode separation is essential for promoting safety.
- Reduced vehicle circulation in the campus core will reduce conflicts.
- Remote parking cannot come at the cost of convenience and comfort.
- Not enough attention is paid to bike infrastructure. Poorly maintained roads and paths, debris, lack of covered/enclosed bike parking, and lack of landscaping and shade make cycling unappealing in some areas within and around campus.
- Urban design is just as essential as anything else in encouraging or discouraging vehicle use versus using other modes. Such solutions can be as simple as planters to discourage mid-block crossings.

Create better options for connectivity to surrounding communities

- Partnerships with and coordination amongst the City of Bryan, College Station, TxDOT and other governmental agencies are essential to ensuring a complete and continuous menu of transportation solutions as well as harmonious development outside of Texas A&M's boundaries.
- Having one unified transit solution across jurisdictions would significantly improve transit in the city by increasing the number, capacity, frequency, and range of transit routes and minimize transfers and redundancy. Improved transit service to areas where faculty live may encourage more faculty use of alternative modes.
- Multi-modality cannot exist and work well in a bubble, and Texas A&M alone can't change the car-centric culture of the city.
- Bus stops are too far apart, and some buses try to serve as a local and express bus at the same time, doing neither well.
- Living close enough to not need a car can be expensive. Oftentimes one is forced to own a car because they live too far away, which is a social equity issue that better transit connectivity between the campus and surrounding cities can address.

Don't lose sight of quick fixes-like more stops and better headways on transit routes, signal timing, and more

- Safe and well-controlled crossings are essential, which may involve more no right turns on red and/or all-pedestrian crossing phases.
- Flex schedules allow for easier travel.
- More education is needed, especially in light of the car-centric culture in the community. For instance, dismount zones and knowing the dismount rules can improve interactions between bikes and other modes.
- Enforcement can be lax with no agreement on which department is responsible for enforcing the rules and regulations.
- Easy wins will promote buy-in from community for bigger and harder-to-win solutions later on.
- Operational and service activities should always be scheduled during low activity times.
- Better signage, such as dynamic APGS informational signs for drivers and bikes/peds, as well as real-time location display for buses and shuttles will make transit easier to use and to understand.
- Disabled/ADA infrastructure improvements are needed, such as auditory crosswalks, truncated domes, and accessible bus stops.
- Student organizations are valuable ally in changing habits and travel behaviors.
- Better coordination and communication amongst school departments is essential for improved education and understanding of changes relating to transportation in and around campus.
- Crossing guards at some of the highest activity crossing areas helped.

Participants were shown the three frameworks that were tested at the Mobility Workshops and discussion followed. During conversations, there were several "hot spots" identified by focus group participants. These are illustrated in the table below, including some of the most frequent feedback from the Mentimeter survey conducted at the Mobility workshop and noted on the maps at the Mobility Booth and Mobility Workshop.

Figure 81: Identified "Hot Spots"

Source	Location	Problem
Session 1	University near Bizzell and Engineering Complex	Dangerous crossing
Session 2	Middle lane of University	Scooters ride down middle lane
	Ireland and Asbury near Zachry and the engineering buildings	Intersection issues, people going wrong way down one-ways
Session 3	George Bush	Dangerous, bike lanes don't continue past
	Wellborn, Texas Ave., University	High number of vehicle/ped/cyclist interactions
Session 4	Northgate side of campus	Ped signal crossing signals "take forever"
	Coke St. past George Bush	Bike lane ends abruptly
	Main Rec Center south side entrance	Not enough bike parking
Session 5	Circle in front of Admin Building	Bike lane that continues into Old Main, but discontinuous coming from other direction
	Street across from Rudder (Bizzell)	Bike lane in poor condition
	Rudder Hall area	People don't pay attention; lack of enforcement
	Asbury St.	Busses sit in bike lane
	Hensel Road	Surface condition poor
	Trigon area	High volume of alighting bus passengers conflict with peds and cyclists
	Stone's Garage area	High conflict area, potentially requiring more traffic control
	Richardson intersection (Ross St. and Spence St.)	Sidewalk ramps are diagonally orientated, which may cause issues with the blind trying to cross
	Agronomy Rd.	Bus stops are not accessible (stops let out onto grass or gravel)
Session 6	Finfeather Rd.	Bike lane isn't maintained
Session 7	Ross St.	High number of peds who cross mid-street
	Ross St.	High volume of deliveries cause congestion
Session 8	Rudder circle (Mosher Ln.)	High loading and food delivery activity cause congestion/conflicts
	Olson and Kimbrough near West Campus Garage	4-way stops are dangerous and inadequate for vehicle/ped/cyclist traffic volumes and crossings
	Outside Gene Stallings Garage	People don't know when to cross
Session 9	Agronomy Rd.	High traffic volumes and high cyclist activity, many cyclists use sidewalks. Needs dedicated bike lanes
Mentimeter	Foster Ave. and Walton Dr.	Should be a bus stop here
	Hullabaloo/North Side	Should be more bus stops here
Mobility Workshop In-Person Feedback	Lot 100	Need more shade
	West side of campus	Need more bike lanes
	Walk from Park West	No shade, feels unsafe because sidewalk is too close to road
	Route between South KGS Halls and SSG	Too congested
	Ross St.	High volumes of pedestrian traffic
	Agronomy Rd.	Poor maintenance
	Bizzell St. at University	"Very bad"
	West side of campus	Traffic congestion
	Harvey Mitchell and Holleman	Very long signals
	George Bush and Wellborn	Long delays during daylight hours
	Pickard Pass	High pedestrian and cyclist traffic creates dangerous situation sometimes
	Wellborn Road	Congestion

Key challenge areas or corridors mentioned or identified multiple times:

Ross St. high pedestrian volumes, congestion, and bike/ped/vehicle/delivery/loading conflicts

Bike lanes on Coke and Blizzell abruptly at George Bush Dr.

Inadequate bus stops and no bike lanes on Agronomy Rd.

Streets around engineering complex are congested and dangerous (Asbury, Blizzell, Ireland, University Dr.)

Area around Rudder Hall sees high volumes of congestion and bike/ped/vehicle/delivery/loading conflicts

Area around Lot 100 needs more shade

Field Testing

While the Walker team was on the campus of Texas A&M University during the week of September 27, 2021, observing vehicle, pedestrian, and cyclist traffic and behavior. The team saw some opportunities for "quick wins" at a few key intersections. In order to test some hypotheses under real world conditions, they coordinated with the Transportation Services team to undertake some experiments with traffic cones, in which pedestrian and vehicular traffic patterns were adjusted. These proved an easy and effective way to adjust traffic flows, movements, speeds, and behaviors. The following three experiments were undertaken.

- Utilized curb bump outs to shorten crossing distances and enhance refuges to increase pedestrian safety and slow down traffic at the intersection of Bizzell Street and Polo Road.
- Traffic flows at the entrance to parking Lot 51 from Polo Road. This included the elimination of a turn lane on Polo Road (to minimize pedestrian-vehicular conflicts) and the elimination of a drive aisle within Lot 51.
- Diversion to separate pedestrian and cyclist traffic at the blind turn from West Campus onto Pickard Pass at the west end of underpass beneath Wellborn Road.

The results of these experiments, which had varying levels of success, inform the recommendations that follow in the Phase 3 report.

Temporary Curb Bump Outs - Bizzell Street and Polo Road

Newly Created Pedestrian Refuge – Street Crossing Lot 51

Modified Vehicular Entrance– Parking Lot 51

Enhanced Pedestrian Crossing–Parking Lot 51

Proposed Enhanced Bike Lane – Pickard Pass

Phase 3: Plan Development and Path Forward

PLAN DEVELOPMENT HIGHLIGHTS

For the development of the plan, we considered the key themes that were heard during engagement in relation to accommodating alternative modes, connecting and completing the bicycle network, and quick fixes that would provide relief to conflict zones and improvements in accessibility. Conceptually, the approach was categorized in four areas of intervention:

1. Creating multifunctional **plazas** to sort out conflicts
2. Solving design **details** to make it easier to walk
3. Connecting and continuing bike **routes**
4. Creating respite spaces for re-charge or **microclimates**

Plazas

We use multifunctional plazas, or public spaces, to solve pinch and conflict points that occur in areas that get high traffic volumes of pedestrians and bicycles. Three primary examples of these conflict areas are the southern end of Military Walk, where it meets the walkway between the Memorial Student Center (MSC) and the Military Sciences Building ("Trigon"), the entrance to Lot 19 which breaks the diagonal route between Rudder and the Evans Library, and Ross Street, where the daily traffic of pedestrians, cyclists, and other personal mobility devices is ten (10) times the volume of commercial vehicles and Texas A&M service vehicles, including buses.

The design changes that are proposed to solve these conflict points seek to create more space for both pedestrians and bicycles and to better delineate their routes to reduce conflict points. In the case of Lot 19, this is accomplished by raising the street, eliminating the curb, and creating a free flow plaza where the few vehicles that use Lot 19 during the day are invited to share the space that is designed primarily for pedestrian and bicycle traffic. A similar approach is proposed for Spence Street south of Ross Street.

The proposal for Ross Street involves reducing the width for vehicle traffic to one lane and increasing the space for pedestrians through addition of tactical urbanism elements such as planters and bollards.

Details

A complementary approach is making design changes at specific points to solve isolated problems that will resolve conflicts or complete routes that will make it easier to walk and bike. A good example of this is the pedestrian crossing and bus stop at the Physical Education Activity Program (PEAP) building on Penberthy Boulevard, across from Lot 100C, which needs to be demarcated as a place to cross the street, as an access point to both PEAP and Lot 100C and the Aggie Spirit bus service, and to provide guidance and order to both pedestrians and drivers along Penberthy Boulevard.
Other locations that can be improved and completed with specific interventions are the pedestrian connection between Reed Arena and the Student Recreation Center, and a direct and contiguous pedestrian and bicycle connection among the White Creek Community Center and the White Creek Apartment complex on one side, and the Leach Teaching Gardens on the other. These isolated interventions provide destinations with more direct connections to the walking and bicycle networks and increase access to them for pedestrians and cyclists.

Routes

Another layer on the approach is to continue and connect routes, and more specifically bike routes. Although most major roads entering campus include a bike lane facility, the condition of these facilities is not the best in terms of both surface condition (pavement and paint) and safety conditions (lack of separation and protection from traffic). But in addition to the physical condition of bike lanes entering campus, there are gaps and missing links in the core of campus.

The main recommendation of this plan is to designate and complete the internal bike network, making sure there are connections/joints between bicycle facilities to travel around campus.

The proposed strategy is simple, create a dedicated bike network on the periphery of the historic campus core to provide fast routes to cross campus, and designate a few internal bike corridors inside the core that would work as slow routes in mixed traffic with pedestrians (i.e., Spence Street), and finally, connect the bike network around the core with West Campus and the major roads entering campus.

New slow bike routes are proposed between Lot 10 and Lot 19 as an alternative to Military Walk, between MSC and Trigon Drive in front of Rudder Tower, and through the West Quad to connect Old Main Dr with the White Creek Greenway. Conversely, Gene Stallings Boulevard provides an important fast connection between the northeast and southwest sides of campus, to connect the engineering complex with the sports fields and Lot 100.

Gene Stallings Boulevard was frequently mentioned during the engagement phase as having conflicts between vehicles and pedestrians. At the same time, this street is an important connection between the two-way bike lane in Lamar Street and Pickard Pass. A comprehensive design of the street and its intersections is proposed to resolve conflicts and provide continuity to the bicycle network.

Micro-Climates

Small spaces for rest, study, and socializing provide a respite to the daily movements of campus community members. Texas A&M has been creating outdoor spots with shade and landscaping that provide a break from the weather or a micro-climate. Several additional opportunities exist on campus to create more of these spaces, especially along pedestrian and bicycle routes to provide a pause and accentuate the placemaking characteristics of these internal routes. A specific example is provided for Spence Street, which is currently designed as a vehicular street, but it is mostly used by pedestrians and cyclists. A shared street environment and small plaza are proposed to create connections with the Langford Architecture building and build a pause on the route.

Transportation Demand Management

The importance of the changes proposed in this plan is that they help connect parking resources around Reed Arena with the historic campus core. Currently, the connection is provided mostly with buses. The growth strategy delineated in the campus master plan is to reclaim space from parking in the historic core for people and academic activities, and to provide any new or reallocated parking capacity in the periphery of campus. Lot 30 is one location that could be redeveloped to house a parking garage and replace parking losses. The projection, however, is that much of the parking capacity will be provided in the southwest of campus, around Reed Arena. Making this strategy viable will require improving conditions for all modes to connect with all areas of campus.

In addition to completing the bike network, Walker recommends the Aggie Spirit bus service is upgraded with a few improvements. Three major changes are recommended:

- A realignment of Route 01 Bonfire to operate along Jones Street, on its way to West Campus, to serve a future Lot 30.
- An extension and realignment of Route 04 Gig Em to follow the alignment of Route 01 Bonfire and add passenger capacity to cross campus service from Lot 100.
- Consolidation of a third bus hub in the northside of campus, around Ireland, Ross, and Asbury Streets. An approach that mimics the Trigon bus hub.

The goal of these changes is to realign routes operating along Ross Street to provide access to the northside of campus only through this proposed hub, to consolidate alignment of cross-campus routes to provide service to Lots 30 and 100, and to allow additional passenger carrying capacity at peak times.

The design concepts and specific recommendations provided in the plan are provided as design guidance only. They are based on a set of examples that were collected during field observations and the engagement phase. They do not intend to be a comprehensive list of changes. However, the hope is that design concepts and recommendations will be used to continue improvement of campus through a set of documented best practices.

INTRODUCTION

Stakeholder Engagement Highlights

Recurrent issues that were cited during the stakeholder engagement process included safety, infrastructure, capacity of transit service, and specific conflict points among users.

- Safety — most comments discussed dangerous interactions amongst vehicles, buses, bicycles, and pedestrians. Many commenters mentioned bikes using sidewalks instead of the roadway, and high traffic volumes on perimeter roads and through traffic connections that lead to congestion and a large number of conflict points with pedestrians and bicyclists.

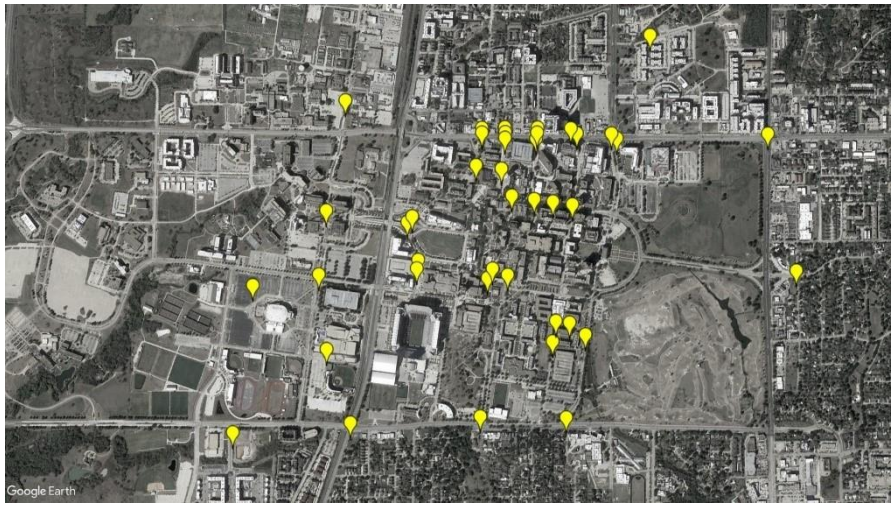
- Infrastructure — most comments relating to the built environment cited inadequate design and maintenance of facilities, including roads, pathways, and sidewalk surface conditions, lack of signalized intersections, and inadequate bicycle/pedestrian crossing controls, particularly across University Drive.

- Many commenters cited the Stallings Garage, and Gene Stallings Boulevard specifically, as a conflict point due to large traffic volumes of vehicles, pedestrians, and bicycles.

- Transit – commenters complained about overcrowding and wait time for buses, specifically, mentioning an inadequate number of buses on routes, providing service that is too infrequent, poor maintenance of buses, and overcrowding on popular routes with crushing loads on buses.

- On the version online map (Figure 82), which is linked below, each pin can be clicked and the associated user-generated comment can be viewed.

Figure 82: Frequently Mentioned Challenge Areas



You can access a digital version of this map here.

Key problem areas or corridors that were mentioned multiple times, include:

- Ross Street – high pedestrian volumes, congestion, and conflicts among bicycles, pedestrians, buses, and service and delivery vehicles.
- Coke Street and Bizzell Street – bike lanes (at their south entrances to campus) end abruptly at George Bush Drive, and do not provide continuity and protection across intersections.
- Agronomy Road – inadequate bus stop stops, where not all the stops have shelter/covering and seating; no bike lanes; and poor maintenance of the road.
- Asbury, Ireland, and Bizzell Streets – intersections with University Drive, around the engineering complex, are wide, congested, and dangerous to cross.
- Mosher Lane – area between Commons and Rudder Hall experiences high traffic volumes and conflicts among pedestrians, bikes, and service delivery vehicles.
- Wellborn Road – corridor is especially congested with long delays, especially at the intersection with George Bush Drive.

Field Visit and Observations Highlights

Campus Network

The Texas A&M University core campus is defined and contained by wide perimeter roads– University Drive, Texas Avenue, George Bush Drive, and Wellborn Road, which carry high traffic volumes. These roads serve to clearly define the boundaries of campus. The Union Pacific Railroad line, running north-south through the middle of campus, divides it into two halves. Wellborn Road runs along the railroad line providing vehicle access to campus, but also reinforces the dividing line.

Connections between the east and west sides of campus are restricted to two locations—Old Main Drive and John Kimbrough Boulevard. Old Main Drive provides the main transit connection between the halves of campus.

Kimbrough Boulevard provides the main vehicular access point to parking facilities on both sides of campus. Walking and biking routes run parallel to both Old Main Drive and Kimbrough Boulevard, through underpasses that have been physically separated from the roadways. This treatment reveals the importance of these two connections to provide multimodal access and connections across campus areas.

On the north side, University Drive is both the dividing line and connector of campus with the City of College Station. Recent design improvements to signal timing, pedestrian crossings, and median islands, have provided safer conditions for pedestrians and cyclists to cross the street. But the street remains wide and dangerous with vehicle traffic operating at high speeds (it was repeatedly cited as a conflict point during the engagement of this plan).

College Main, Tauber, and Nagle Streets are the main access points to campus for pedestrians, bicycles, and buses. The intersection of College Avenue and Bizzell Street is the main access point for vehicles and is also a through traffic route for the City that adds considerable congestion and pressure to the intersection of Bizzell Street and Polo Road. While these are the main access points to/from the north, there are others elsewhere on campus.

On the south side of the core campus, Coke/Throckmorton Streets are a major access point for buses, while Bizzell Street is the main access point for personally-operated vehicles. Both continue south into the neighborhood (Coke/Throckmorton combining into Dexter Drive and Bizzell turning into Timber Street), but do not provide adequate facilities for biking.

On West Campus (i.e., west of Wellborn Road), the main east-west route is John Kimbrough Boulevard. Transit service is routed from there to Old Main Drive. However, the corridor provides a direct connection for pedestrians and bicycles that needs strengthening.

Agronomy Road provides the main access to west campus from the north for vehicles and transit. Facilities for pedestrians and cyclists are discontinuous and incomplete.

Penberthy Boulevard provides the main access to West Campus from the south for all vehicles, including transit, pedestrians, and cyclists. Olsen Boulevard provides vehicular access to campus, but is also used as a through traffic route for the city, adding congestion and pressure to its intersection with Old Main Drive.

We understand Penberthy Boulevard may be widened in the future. If so, we recommend adding the crossing at the Physical Education Activity Program building (Figure 93) and the cycle track alongside it (Figure 98) to the project. However, before beginning, we suggest piloting the traffic loop around Reed Arena (as displayed in Figure 120), specifically the traffic diverter at Kimbrough and Olsen Boulevards (as displayed in Figure 121, Figure 122). This could be during the low-traffic summer months, and/or during events similar to Game Day. The idea behind the traffic loop is to reduce traffic through campus. Should the pilot prove successful, Penberthy may not need to be widened.

Conflicts and Pinch Points

There are many points of conflict among users throughout campus. Generally, these are the product of inadequate design solutions, lack of dedicated facilities, or disconnections between facilities, and not necessarily the product of particularly bad behaviors. For instance:

- Pedestrian and bicycle conflicts occur at the end of Military Walk, between MSC and Rudder. This area is a crossroads between MSC and Trigon for both pedestrians and cyclists, but the area has been mostly designed for pedestrians. There is no space for cyclists and no connection between two important east-west bicycle routes.

- Pedestrian and vehicle conflicts occur at Gene Stallings Boulevard and Lamar Street, and at the entrance to the Stallings Garage. Sidewalks along Lamar Street are major pedestrian routes connecting the Innovative Learning Classroom Building with MSC, Rudder, and Trigon. Lamar Street is also a principal route for buses and bicycles. Vehicle and pedestrian entrances to the Stalling Garage are conflated. Conflicts are occurring because of a lack of channelization, order, and prioritization of users and flows.

- Bike and transit/vehicle conflicts occur at Lubbock and Bizzell Streets. Here the problem is again lack of dedicated facilities for bicycles that need to operate in mixed flow alongside vehicular traffic and high volume of turning movements from Bizzell Street to Lubbock Street.

Elements that Need Improvement

Based on input from stakeholders, field observations, and analysis of data, areas of focus for the mobility plan are improvements to:

- Walking space along Ross Street, especially between Ireland and Spence Streets, which experiences a high volume of people on foot.
- Access points to the Polo Road Garage and Lots 47/51 along Polo Road that experience many conflicts between vehicles and pedestrians.
- Key intersections that connect and divide campus areas such as Olsen Boulevard at Old Main Drive and Bizzell Street at Polo Road that get a high volume of pedestrian and bicycle crossings and vehicular traffic.
- Pedestrian routes and corridors inside campus such those connecting the Innovative Learning Classroom Building (ILCB) to MSC and between the MSC/Rudder area and Chemistry Plaza.
- Bicycle routes and corridors inside campus such as The Commons to Zachry Engineering Complex via Spence Street (north-south), and Commons to West Campus via Trigon/MSC and Old Main Drive (east-west).
- Transit routes and corridors across campus, most specifically, consolidating service and strengthening the connection between Lot 100/Reed Arena and the northside of campus (e.g., Zachry and Polo Road).

Existing Best Practices

Field observations also showed that there are many solutions around campus that have worked well and are worth repeating or using as guidance to continue improvement of mobility solutions. For instance:

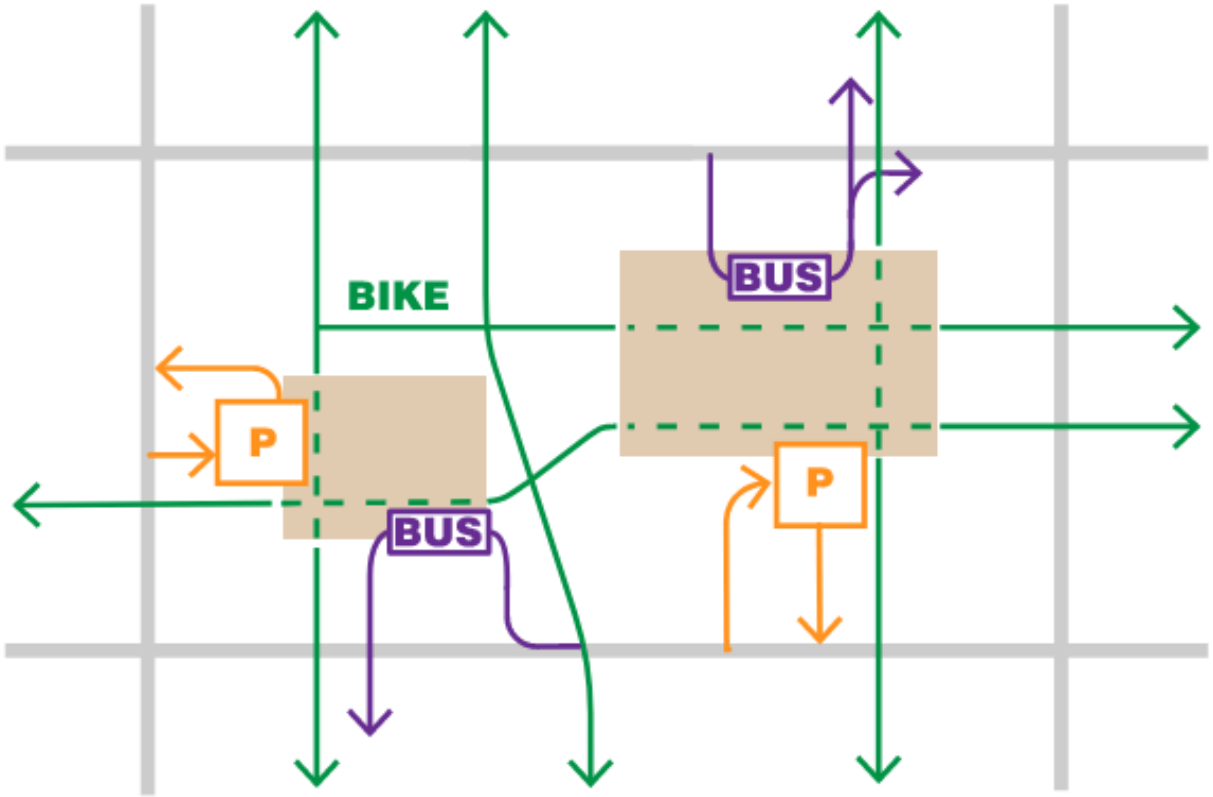
- Joe Routt Boulevard—provides clean and generous pathways for walking and biking. Restricted vehicle access and reduced traffic from buses generate a shared-street design condition that integrates Kyle Field with campus and provides a primary east-west route for pedestrians and cyclists.
- Garage access limited to sides furthest from interiors of campus—provides separate vehicle and pedestrian access/exit points that avoid mixing of flows and minimize conflicts.
- West Campus quad pathways—wide pathways provide adequate dimensions to mix pedestrian and bicycle flows. They create a slow bicycle route that connects west campus with the Old Main Drive and Lamar Street two-way bike paths.
- Shaded pedestrian paths—Military Walk, Ross Street, and both sides of Evans Library, provide shaded paths that connect important sections of campus such as MSC/Rudder, the engineering Quad, and the East Quad.
- Trigon Transit Plaza—counter-clockwise operation of buses and left turns around the loop allow transit service to place vehicle doors on the campus side, avoid crossing streets, and allow vehicles to operate through narrow streets and tight corners, that reduce speed and increase safety for all users, especially cyclists.

DESIGN PRINCIPLES AND CONCEPTS

Principles of Success

Existing best practices provide examples of successful design solutions and principles of success. Following these principles of success, the recommendations in this plan focus on restricting vehicle through traffic, concentrating bus service at key access points or hubs and developing continuous and connected bicycle facilities throughout campus.

Figure 83: Mobility Network Design Principles

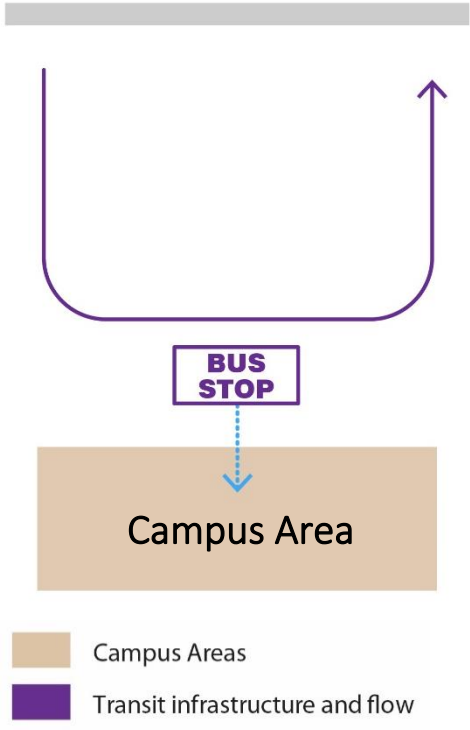


- Prohibit through traffic on campus. Allow vehicle traffic from outside roads to access specific sections of campus. Traffic loops (indicated in orange) provide direct access to parking garages and lots.
- Organize bus service (indicated in purple) to provide access to transit hubs in core areas of campus—northside, Trigon, MSC, and West Campus.
- Bike routes across campus need continuity and prioritization. Complete a network of fast routes (green lines) connecting campus areas (tan boxes), and slow routes (dashed green lines) to traverse through core areas.

Counter-Clockwise Bus Routes

Counter-clockwise bus loops provide better service; bus stops will be on the right, or campus side, and riders do not have to cross the street. This removes conflicts with passengers and vehicles.

Figure 84: Schematic Operation of Transit Hubs



Counter-clockwise loops require left turns, which are easier to make than right turns on streets with smaller corner radii such as on Ross Street. Smaller corner radii make intersections safer for pedestrians.

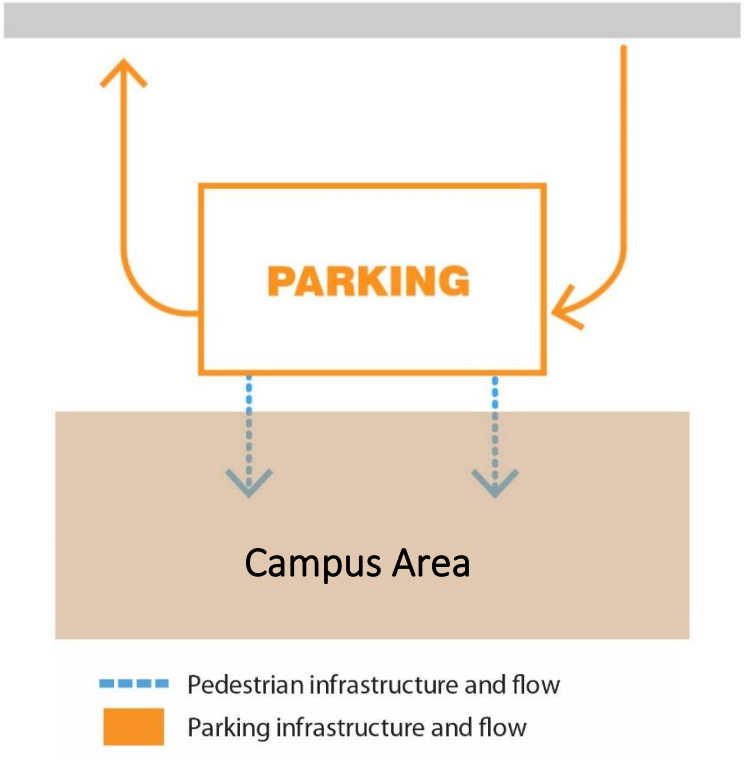
Bus routes at MSC (Lamar and Houston Streets) and Trigon (Coke and Throckmorton Streets) adhere to this principle. Bus routes along Ross Street do not. See page 188 for recommendations for re-routing buses along Ross Street.

Trigon and MSC Transit Hubs

Far-side Parking Garage Driveways

When vehicle access to a parking garage is on the "far side," meaning closer to external roads, then conflicts between people walking/cycling and driving will be fewer. Drivers turn into the garage on one side, park, then walk out of the garage on the other side (toward desired destinations).

Figure 85: Schematic Operation of Parking Garages



The Northside Garage adheres to this principle wonderfully. People drive in from the north and walk out to the south (see top right image). Entry to the Polo Road Garage from the east is largely conflict-free, but drivers exiting to the west encounter people walking to campus.

If more drivers entered and exited the West Campus Garage from the south, there would be fewer conflicts to the north—the main route to Pickard Pass. If drivers exiting the Stallings Garage had a more direct connection to Wellborn Road, there would be fewer conflicts along Gene Stallings Boulevard and Lamar Street. See page 194 for recommendations to alter parking garage access.

Northside Garage Vehicle Access and Pedestrian Exit

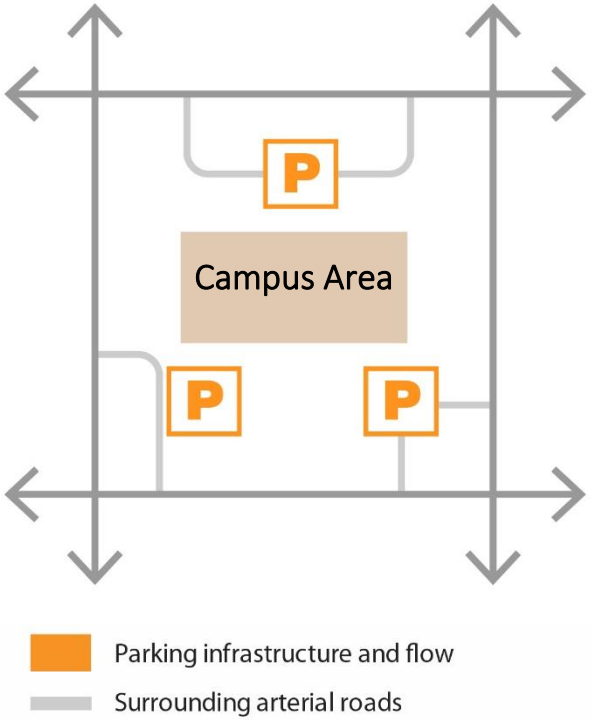
Stallings Garage Mixes Vehicle and Pedestrian Flows

Traffic Loops

Consistent with the Campus Master Plan, a main priority of this work is to eliminate through-traffic from campus. This will lower the overall volume of vehicles, which will in turn decrease conflicts with buses, people walking, and cyclists.

Nevertheless, there is a need to access parking lots and garages. This can be accomplished via a series of traffic loops which allow access then return drivers from where they came. A version of this operation already occurs on game days. The recommendation is to make that permanent. See page 198 for recommendations to minimize through traffic.

Figure 86: Schematic Operation of Traffic Loops



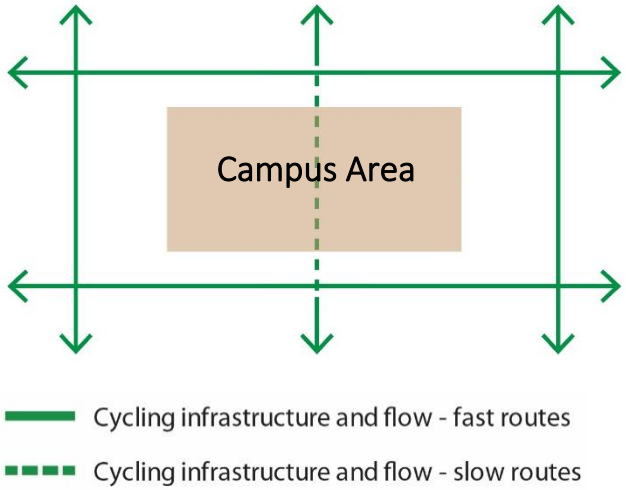
Core Campus Bike Network

When bike routes are continuous and connected cyclists are more likely use them. Cyclists need routes that are easy to follow and safe. There are several routes inside campus that end abruptly at intersections or at high pedestrian traffic areas creating conflicts between users.

Cyclists are often blamed for trying to make connections through direct routes across pedestrian areas. Rather than faulting cyclists, the plan needs to provide the facilities and connections cyclists need. This will reduce conflicts and increase bicycle use on campus for both internal mobility and commute trips.

As a general strategy, the bicycle network on campus needs to create continuities across boundary roads and between campus areas. Additionally, the network needs to provide a fast route to navigate around core campus areas and a slow route to traverse core campus areas and reach destinations. See page 181 for recommendations to complete the campus bicycle network.

Figure 87: Bicycle Network Concept for Campus



The images below provide an examples of cyclists navigating a fast route—Gene Stallings Boulevard at Lamar Street and a slow route—at the intersection of Ross and Spence Streets.

Cyclist navigating campus on Lamar Street

Cyclists navigating Spence Street

CAMPUS MOBILITY FRAMEWORK

Design Approach

Conceptually, the design approach was categorized in four areas of intervention:

1. Creating multifunctional plazas to sort conflicts out
2. Solving design details to make it easier to walk
3. Connecting and continuing bike routes
4. Creating respite spaces for re-charge or microclimates

From general to particular, the example project interventions included in this plan seek to:

- Develop a clear structure and function for modal networks
- Identify key locations and hot spots (low-hanging fruit)
- Develop design typologies and approaches that can be replicated
- Create design tests or experiments to explore a range of solutions

Plazas

Solving pinch and conflict points with plazas. Multifunctional-use plazas and shared-street environments provide the space to sort out conflicts. Key locations include:

- Spence Street (driveway to Lot 23) and the driveway to Lot 19
- Military Walk at MSC and Rudder Tower
- Ross Street from Houston to Bizzell Street, and John Kimbrough Boulevard west of Penberthy Boulevard

Details

Isolated interventions that make it easier to walk. Resolving details (e.g., adding missing connections and design treatments) make a difference in the walking and cycling experience. Key locations include:

- Military Walk at Sbisa Dining Hall—missing ramp for "wheels route"
- Pickard Pass—blind spot channelization
- Pickard Pass/Joe Routt Boulevard—bike lane transition
- Gene Stallings Boulevard/Lamar Street—bike lane continuity
- Evans Library north walkway to Spence Street—pavement cross slopes, rainwater collection, tree pits, and catch basins.

Routes

Continuous and connected bike routes. Minimize through traffic and reduce vehicle/bus traffic conflicts with pedestrians and cyclists; give priority to pedestrians and bikes. Key interventions include:

- Complete east-west bike route along Ross Street, Jones Street, Old Main Drive, West Quad, White Creek Greenway, and Enterprise Avenue
- Complete east-west bike route along John Kimbrough Boulevard, Pickard Pass, Joe Routt Boulevard, and Lubbock Street
- Fill the missing link between MSC and Trigon—slow bike route to connect with Lamar Street, and slow bike route to Ross Street via Lot 19 and Lot 10.
- Consolidate transit access points on the periphery of Core Campus—MSC, Trigon, and Northeast (Asbury and Ireland Streets).
- Add shade to transit plazas, follow the example of Trigon at MSC, on West Campus, and at Lot 100.
- Restrict vehicle access to campus via traffic loops. Add traffic diverter at Olsen and Kimbrough Boulevards to limit circulation through campus.

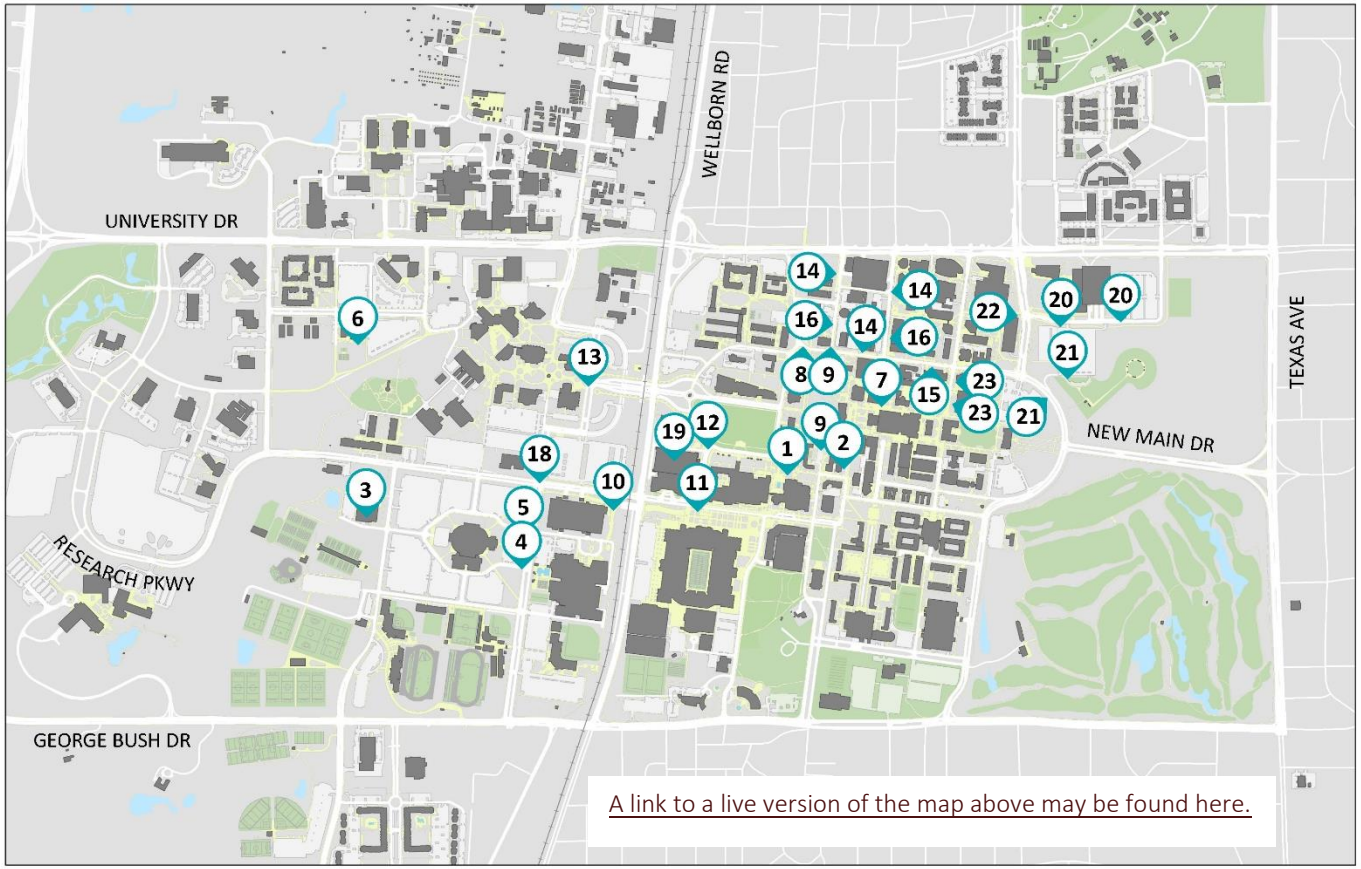
Microclimates

Create respite places and microclimates through shade, sheltering, landscaping, and scale. Key locations include:

- Walkways on both sides of Evans Library
- Spence Street alley to Architecture Building

The key map below identifies the project interventions proposed in this plan. They range from specific locations to campus-wide efforts.

Figure 88: Design Interventions Key Map



TEXAS A&M
DESIGN CONCEPTS & INTERVENTIONS

1) Pedestrian and bike paths at Military Walk & Rudder Plaza
2) Lot 19 Pedestrian Plaza
3) Lot 100 Bus Stop and Crossing at Physical Education Building
4) Reed Arena to Student Recreation Center Path and Crossing
5) Olsen Blvd Two-Way Bike Path
6) Ped and Bike Path to White Creek Community Center
7) Evans Library and Anthropology Building walkway
8) Raised Pedestrian and Bike Crossing at Military Walk at Fish Pond
9) Lot 10 to Lot 19 Bikeway – alternative to Military Walk
10) Pickard Pass Blind Spot Channelization
11) Gene Stallings and Joe Routt Bl Bike Route Connection
12) Gene Stallings and Lamar Bike Route Connection
13) Olsen Bl and Old Main Dr Bike Crossings
14) Ireland St and Asbury St Bus Lane
15) Ross Street Pedestrianization (between Sbisa and Ireland)
16) Ross/Asbury and Ross/Ireland gate relocations
17) Ross Street sidewalk extension (between Spence and Ireland)
18) Olsen and Kimbrough Bl Traffic Diverter
19) New Stallings Garage exit to Wellborn Rd
20) Lot 47/51 Entry & Exit – short term solution
21) Lot 47/51 Entry & Exit – long term
22) solution
    Bizzell St and Polo Rd intersection
23) reduction
    Spence St pedestrianization and plaza

Solving Pinch and Conflict Points with Plazas

A main issue faced by people walking on campus, especially during class change, relates to pinch points. Some of these are caused by building placement, some by geography, and some by walkway design. This section offers recommendations for three such locations.

Area bounded by MSC, Rudder, Hart, and SSB

A prime pinch point occurs in the area between the MSC, Rudder Tower, Hart Residence Hall, and the Student Services Building.

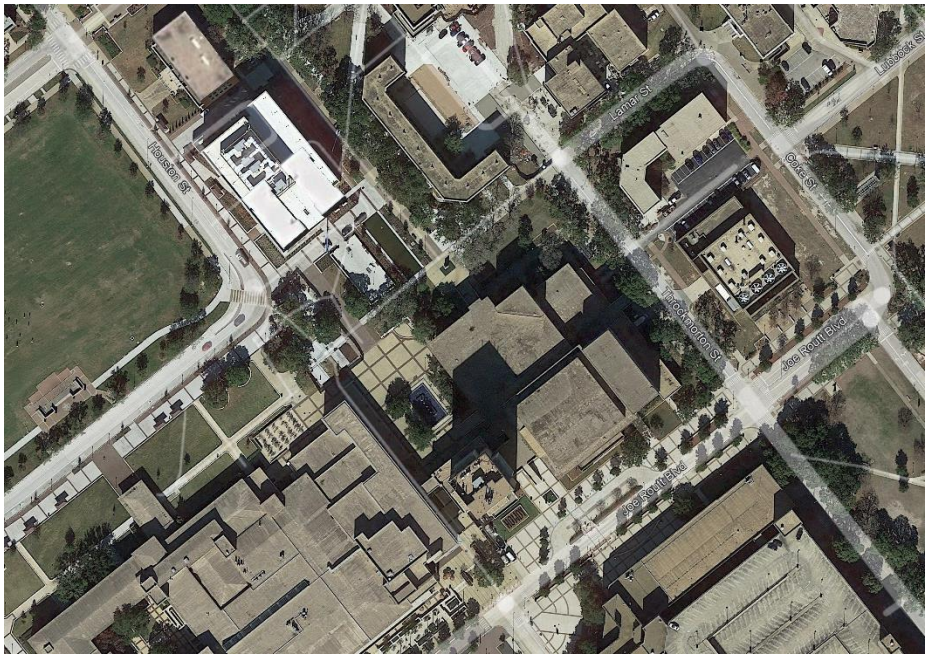
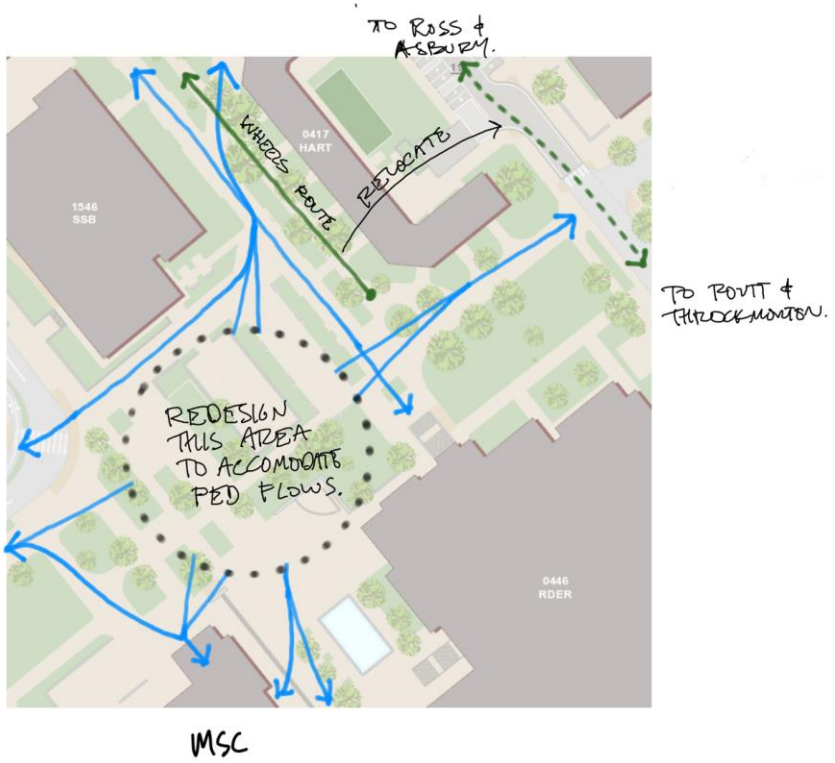


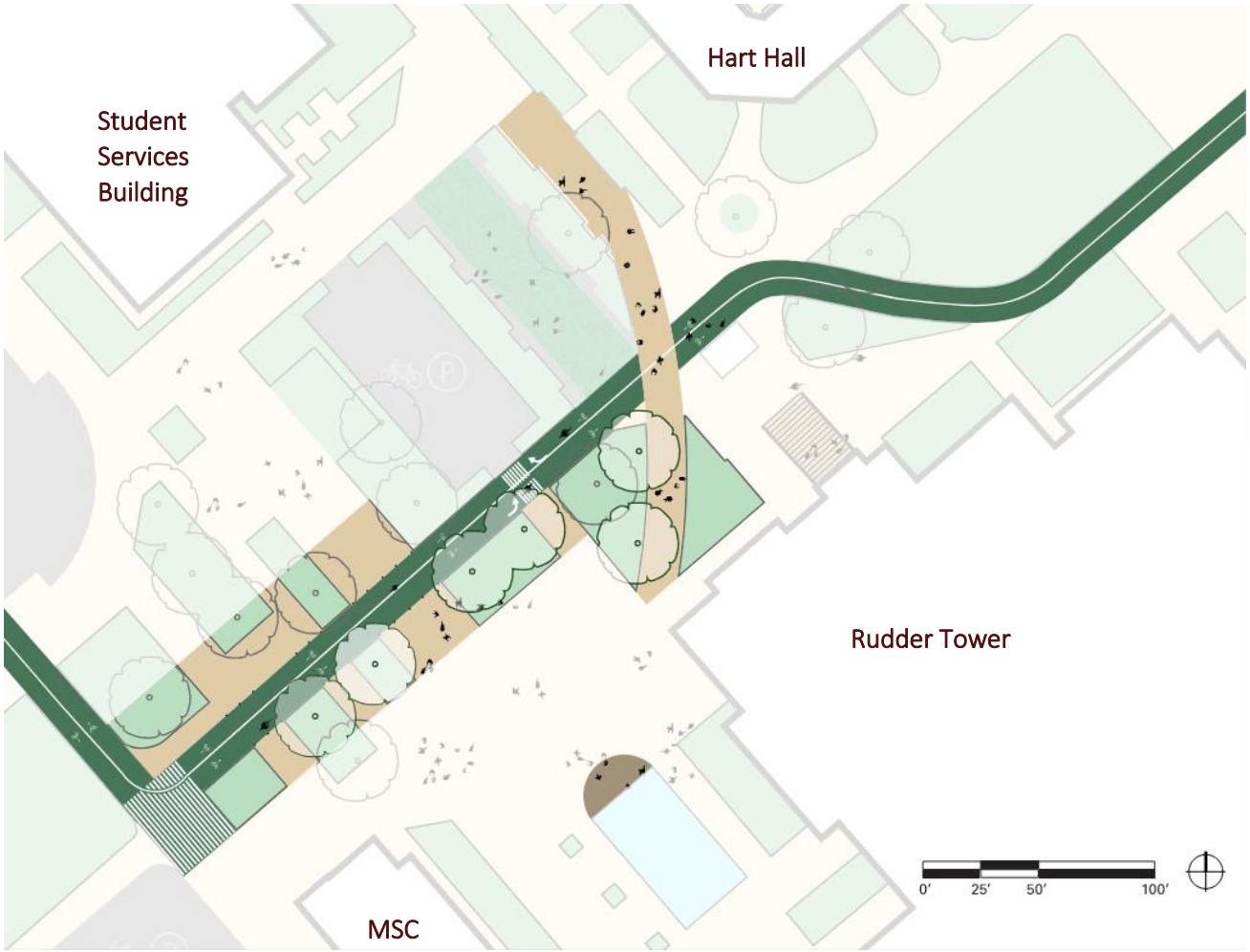
Figure 89: End of Military Walk at Rudder Tower

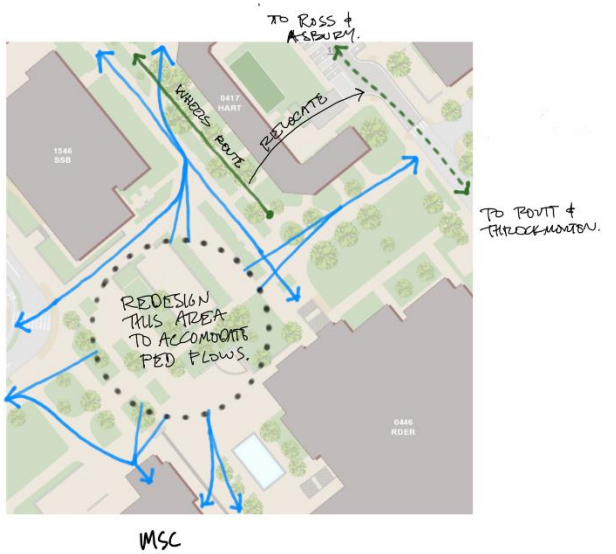


This is a convergence point for people walking to the MSC from the Academic quad, from the bus stops along Lamar Street to points east, and from the Trigon bus stops to points west. In addition, the “wheels route” adjacent to Military Walk simply ends—funneling cyclists into a narrow walkway crowded with people.

Converting this area into a plaza would provide more space for people to perambulate. The Military Walk wheels route can be relocated to Lot 19, see Figure 91 175. Pedestrian and bike paths can be marked to direct traffic and resolve conflicts. This will reduce traffic conflicts with east-west movements of pedestrians and cyclists.

Figure 90: Conceptual Redesign of Area between MSC and Trigon





Lot 19 Driveway

Parking lot 19 largely serves the Department of Disability Resources in the Student Services Building. The entry drive conflicts with a primary diagonal walking route across campus, such as walking between the MSC and Evans Library. It also interrupts pedestrian flows to/from the bus stops on Coke and Throckmorton Streets.

Converting the driveway into a plaza would signal that people walking have priority over people driving. The very few vehicles (there are only 19 parking spaces in Lot 19, plus a number of motorcycle spaces and a loading dock) would still be allowed through passage, albeit slowly. Bollards would replace the curbs, reducing trip hazards, while increasing ADA accessibility.

A slow bicycle route would be marked through the parking lot and plaza. This alternative bike route would provide a direct connection between Coke Street and Ross Street at Lot 10, bypassing Military Walk and MSC/Rudder Tower.

Driver Navigating Pedestrian Flow at Lot 19

Figure 91: Conceptual Redesign of Lot 19 Entrance as Pedestrian Plaza

Isolated Interventions That Make It Easier to Walk

It is often the little things that make the difference. The following ideas are intended to illustrate the power of isolated interventions to improve walking through campus.

Walkway from Physical Education Activity Program (PEAP) to Lot 100C

Figure 92: Walkway at PEAP across Penberthy Boulevard

The Physical Education Activity Program building is on Penberthy Boulevard opposite to Lot 100C. The walkway at the main entrance leads directly to the street. There is a bus stop and crosswalk. This is all well-organized but lacks shade, demarcation, and protection. Extending the walkway to the parking lot would create a direct, complete connection. Planting trees and providing shade would demarcate the access point and direct people. The shade would make the bus stop a more pleasant area to wait for buses going to east campus.

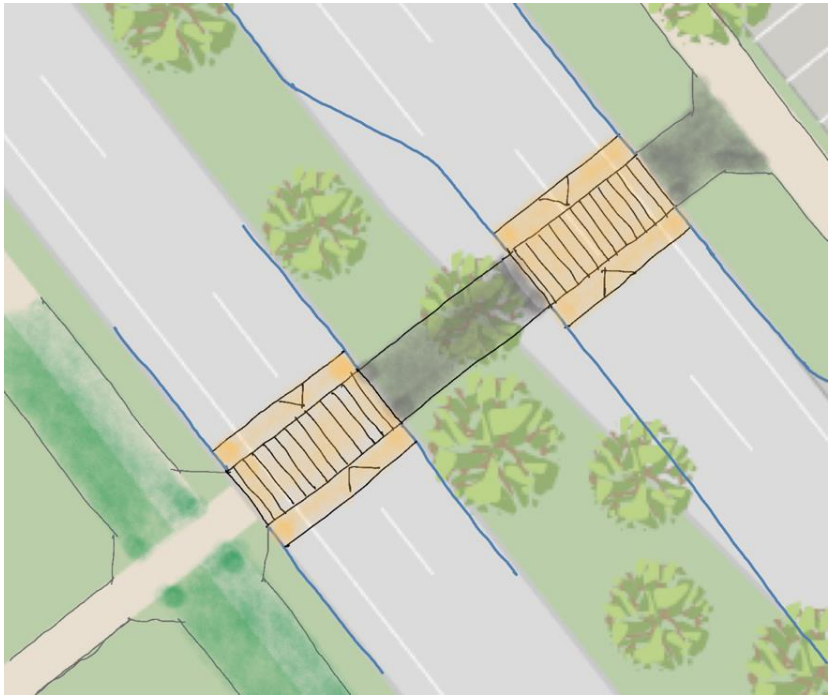
Figure 93: Conceptual Redesign of Crosswalk and Bus Stop at PEAP

1. Raised crossing for pedestrians
2. Extension of sidewalk from PEAP building entrance to Lot 100
3. Add shade and demarcate place with trees
4. Bus shelter and benches to mark access, add comfort and wayfinding

Reed Arena walkway at Olsen Boulevard

The walkway from the east (main) entrance of Reed Arena leads through Lot 102 directly to Olsen Boulevard. This walkway could be continued across Olsen Boulevard via raised crosswalks to Lot 104. This would accentuate the main entrance to the arena.

Figure 94: Raised Crosswalk Across Olsen Boulevard to Connect with Student Recreation Center



A new crosswalk on Olsen Boulevard would reinforce safety, comfort, and wayfinding by aligning with main entrance to Reed Arena. New raised crosswalks through the Reed Arena parking lot would provide a direct connection between the arena and the Student Recreation Center across Olsen Boulevard. Raised crosswalks, such as the ones recommended through the Reed Arena parking lot, would act as speed tables, where the pedestrian pathway is level with the existing curb height. To allow vehicles to traverse the raised crossings, a modest slope is necessary. Walker also recommends the width does not extent wider than the wheelbase of typical buses used on campus. This will allow for a bus to only have two wheels on the crosswalk/speed table at a time.

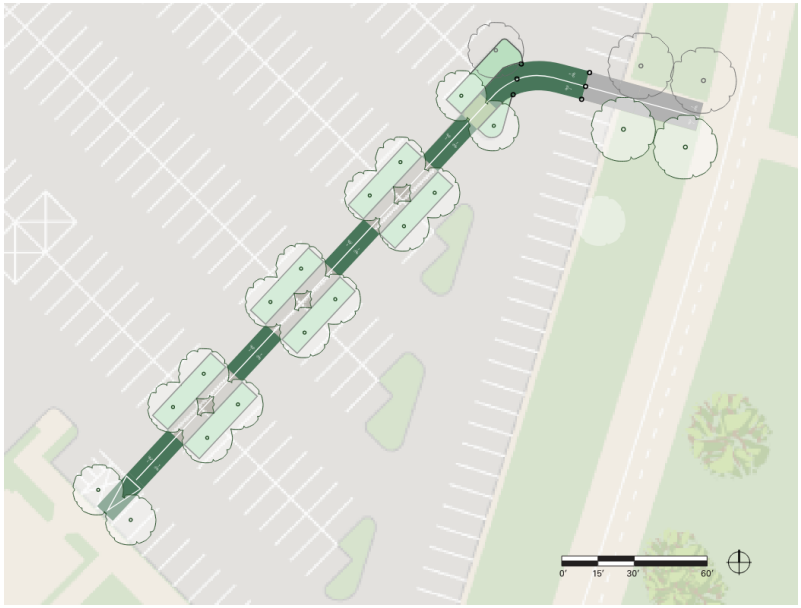
Figure 95: Walkway from Reed Arena to Olsen Boulevard.

Walkway through Lot 122B from White Creek Community Center to Leach Gardens

White Creek Community Center (WCCC) is served by Lot 122B. Adjacent to the center's south entrance there is bicycle parking and a walkway to the parking lot. On the other side of the parking lot is the White Creek Greenway and a path to the Leach Teaching Gardens.

A walkway through the parking lot would provide a connection for pedestrians and cyclists, and a more inviting and direct connection to WCCC from the White Creek Greenway and path to the Leach Teaching Gardens. Shaded tree basins along the walkway would capture and filter stormwater from the parking area.

Figure 96: Conceptual Pedestrian/Bike Path through Lot 122B to WCCC



Parking in Front of Bike Corral and Entrance to White Creek Community Center

Connection to Leach Gardens from White Creek Greenway

Pedestrian Safety

While there are legitimate concerns about pedestrians' safety while crossing through a facility intended to park vehicles, there are other items to also consider. The desire-line of pedestrian movements is currently through Lot 122B—these users are currently making this trek without the appropriate infrastructure. To ensure the safety of these individuals, creating a safe pedestrian path (as shown in Figure 96) is advisable. A raised crosswalk with different colored pavement markings (as shown below) is a proven concept. The image below shows this executed with landscaping for shading and stained concrete, to indicate the crosswalks. While there is a minor loss of parking inventory, the safety benefits can be substantive.

In addition to the actual pedestrian pathway, clear and abundant signage and striping can make these safe and functional. The signage should include stops and/or yields for motor vehicles, bold walkway striping, and signs for cyclists to share the space (yielding to pedestrians, i.e., empowering peer enforcement).

The combination of these additions would make the pathway a safe environment for pedestrians and cyclists.

Other Locations that Need Attention

There are many other locations on campus that could benefit from isolated interventions to make connections or solve details. One of these is a pedestrian/bicycle walkway directly connecting the White Creek Greenway with the West Campus quad. These images showcase a pair of locations where spot improvements to provide direct access to bike parking areas and desire lines could be accommodated.

Examples of Desire Lines Across Landscaped Areas

Continuous and Connected Bike Routes

In general, cyclists seek routes that are continuous and connected and do not require a lot of navigation or wayfinding. There are hints of this on campus, such as the Kimbrough/Pickard/Routt corridor and the Old Main Drive/Houston Street corridor.

At the same time, there are just as many routes on campus that simply end, such as the "wheels route" along Military Walk that ends abruptly at Rudder Tower or the bike paths along Old Main Street which do not continue past Olsen Boulevard. Figure 97 shows existing bike lanes and paths on campus. Gaps are clearly evident. The map also notes off-campus bike lanes.

To help make Texas A&M University a world-class cycling campus, a clear structure of primary bicycle routes is needed. It can be internalized by cyclists as a mental map (Figure 98). The routes are consistent with the 2017 Campus Master Plan, 2015 Bike Master Plan, and the *Design Principles and Concepts* section of this report (page 166).

East-West Routes

- Enterprise Avenue/White Creek Greenway—a slow route through the West Quad, and connection with Old Main Drive/Jones Street/Ross Street
- Kimbrough Boulevard/Pickard Pass/Joe Routt Boulevard/Lubbock Street.

North-South Routes

- Adriance Lab Road to Penberthy Boulevard—connecting through the path and bridge near the Leach Teaching Gardens.
- Agronomy Road to Olsen Boulevard—with a slow route through West Quad
- College Main/Houston Street—adding a slow route between Lots 10b and 19 to connect with Throckmorton Street/Coke Street, and Brison Park south of campus.
- College Ave/Bizzell Street—with a connection across George Bush Drive to Timber Street.

Figure 97: Campus Existing Bike Lanes—a disconnected network

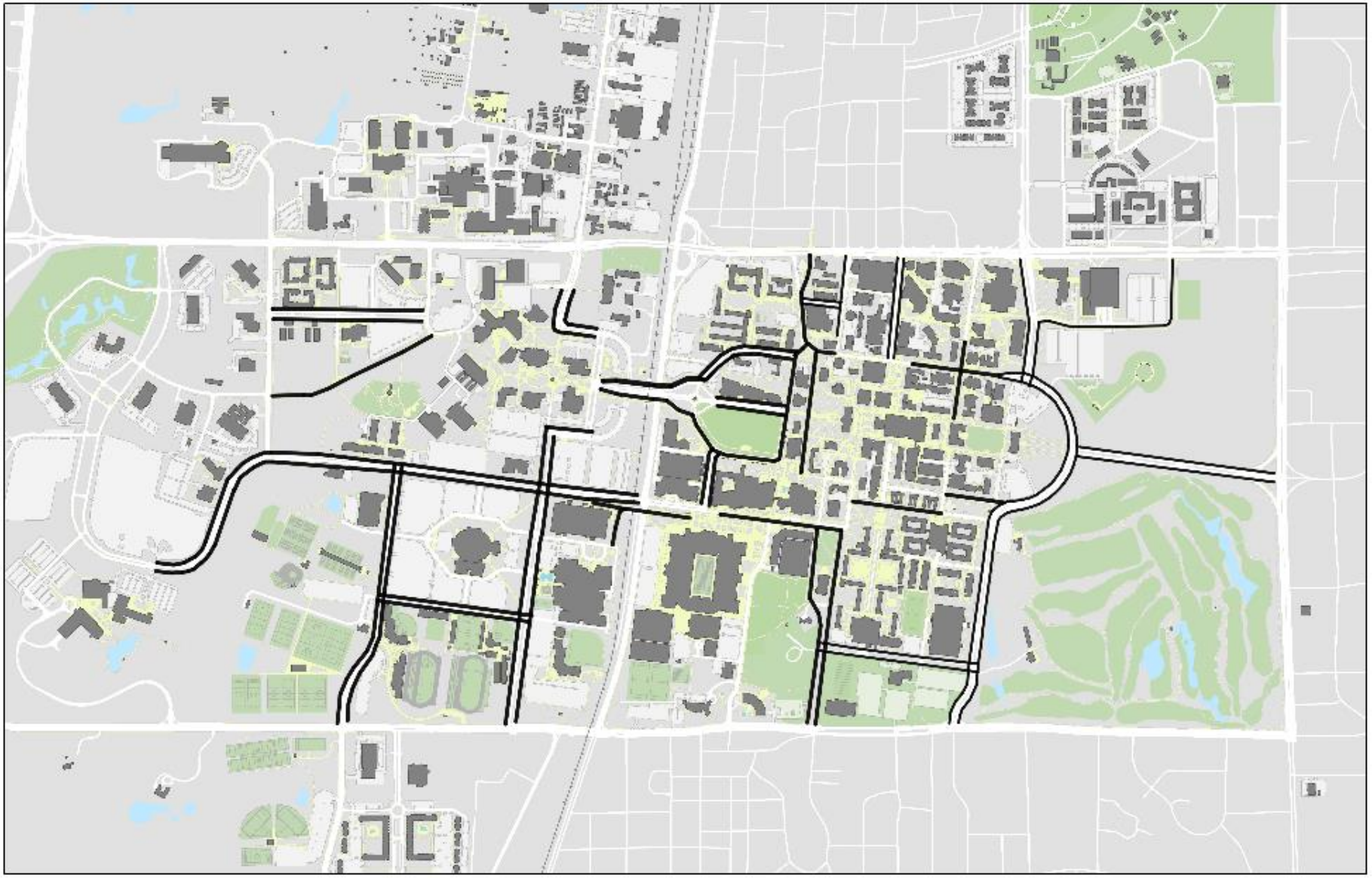
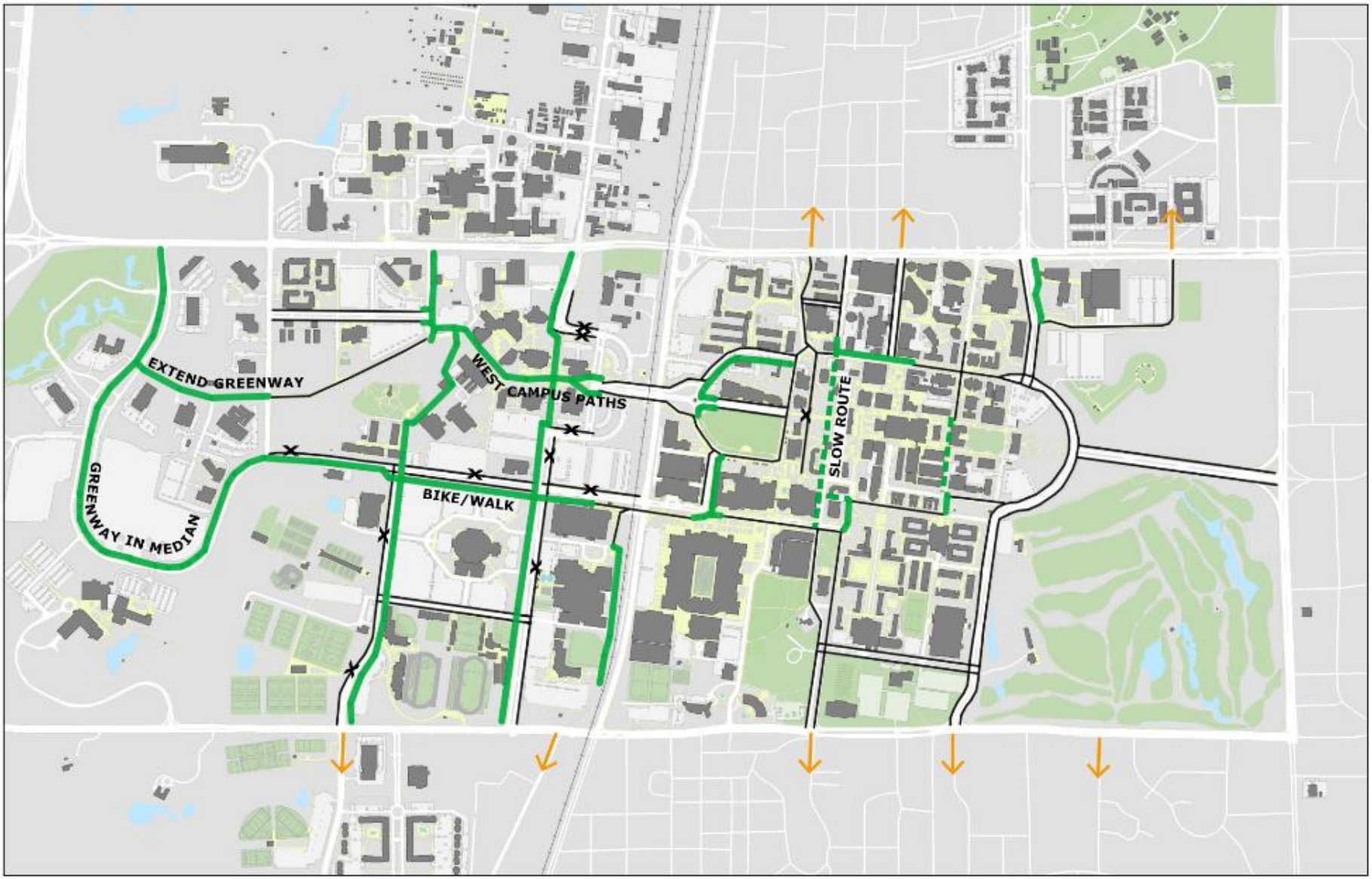


Figure 98: Connected and Continuous Bike Network—proposed links



Bike Path on College Main Street—a principal route for cyclists

Example of cyclists going slowly through crowded locations

West Campus wide paths accommodate pedestrians and cyclists

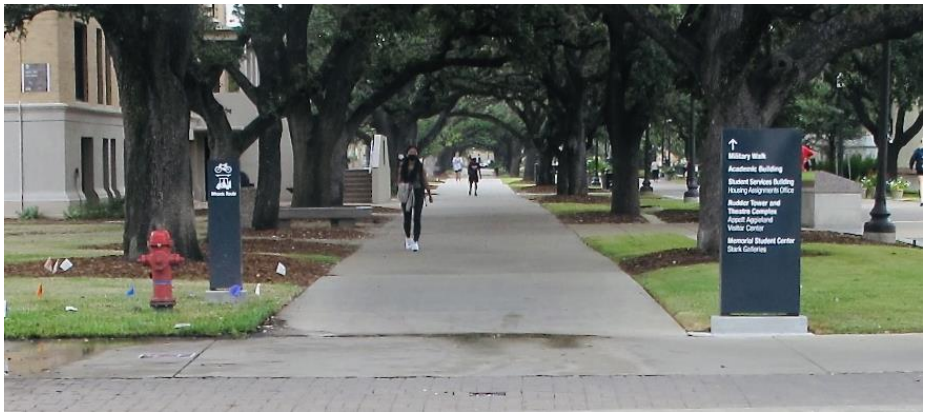
Example of cyclists going slowly through crowded locations

A slow bike route is recommended between Lot 10b and Lot 19 to connect Ross Street with Trigon and Coke Street.

The "wheels route" of Military Walk is mostly used by people walking as it is shadier than Military Walk. At Ross Street—an adjoining bicycle route, there is no curb cut for bikes.

Wheels Route adjacent to Military Walk

North end of Military Walk at Ross Street—Fish Pond

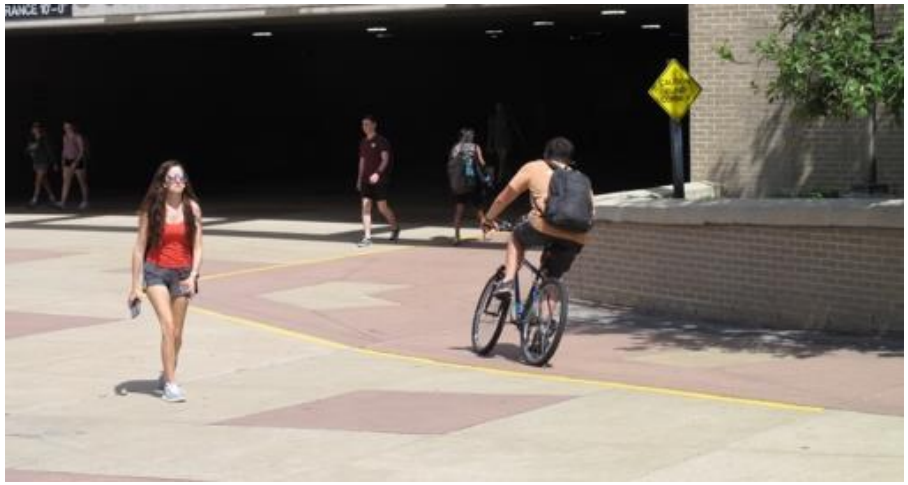


A solution is to raise the crossing, to eliminate the curb, and connect the bike route with the raised crosswalk leading to the Sbisa Dining Hall and Houston Street.

Pickard Pass Blind Corner

Pickard Pass takes walkers, cyclists, and service vehicles under Wellborn Road from Kimbrough Boulevard to Routt Boulevard. On the western side, the path splits into two: one straight along Kimbrough and one, at an almost right angle, to the south. The east bound bike lane at the junction of these two paths takes a sharp turn. Currently it is marked with a single white stripe. The wall of the underpass creates an essentially blind turn and unexpected encounters were observed between east-bound cyclists and people walking in the tunnel.

Pedestrian and bike conflicts at Pickard Pass' blind corner



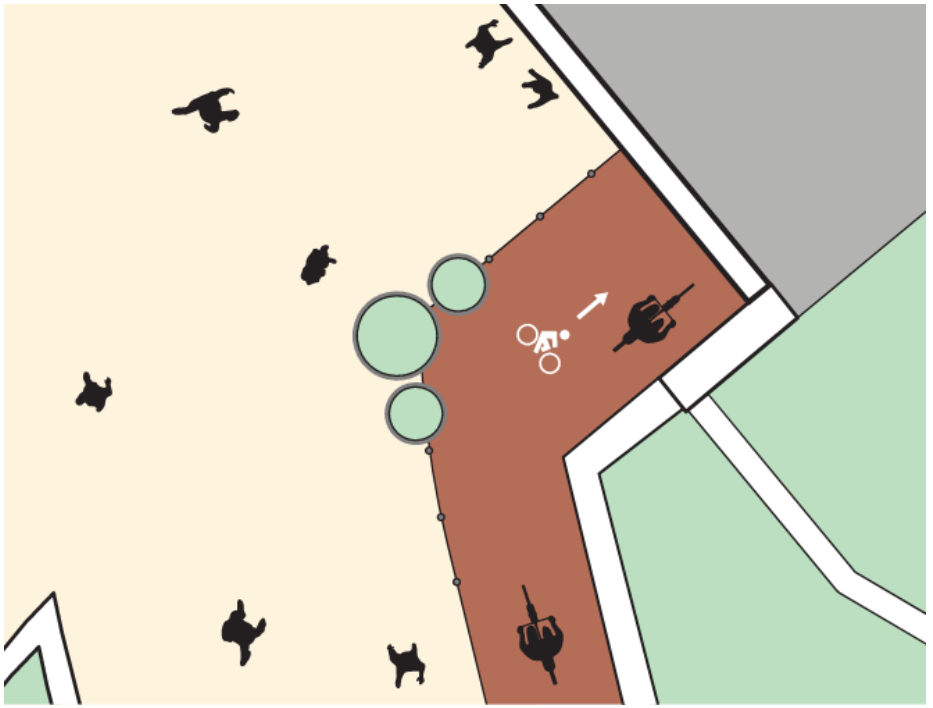
Two options to alleviate this condition were explored during a cone exercise on Sept 30, 2021. First a curb extension was created which forced both cyclists and pedestrians away from the corner. The idea was to see if increased visibility would increase safety. Results were not satisfactory and encounters still occurred.

A second test placed cones on the existing yellow line, thus creating a more obvious lane for cyclists. For the most part, cyclists used the lane and non-cyclists avoided it. This experiment is illustrated in Figure 99.

Figure 99: Demonstration cones to separate pedestrian and bike traffic

Accordingly, this treatment is recommended (Figure 100). Planters, or other path delineators, would be placed at the apex along with signage at both ends.

Figure 100: Proposed solution—adding planters, bollards and signage



Gene Stallings Boulevard and Joe Routt Boulevard

On the eastern end of Pickard Pass the bike path ends at the plaza to the north of Kyle Field. It continues 200 feet to the east on Joe Routt Boulevard. However, there is no routing information for cyclists. Similarly, the bicycle lanes on Stallings Boulevard are not connected.

A redesign of the Stallings-Routt intersection could facilitate bicycle route connectivity. A bike roundabout would manage cyclists on the three paths (Figure 101). The roundabout would be a paint-only (or paver-only) treatment that has no vertical displacement and can be crossed by buses, service vehicles, and gameday marchers. Marked paths would connect to Pickard Pass.

In this configuration all traffic except buses and service vehicles must turn from Routt to Stallings and vice-versa, the intersection could be designed more like a turn. A two-way protected bike lane on the east side of the road would separate cyclists from drivers bound for the Stallings Garage and tie nicely into the bike lane on Lamar Street, see Figure 105. A bike roundabout would manage cyclists on the three paths. Again, the bike roundabout would have no vertical displacement. Marked paths would connect to Pickard Pass.

Figure 101: Bike roundabout concept at Gene Stallings and Joe Routt Boulevard

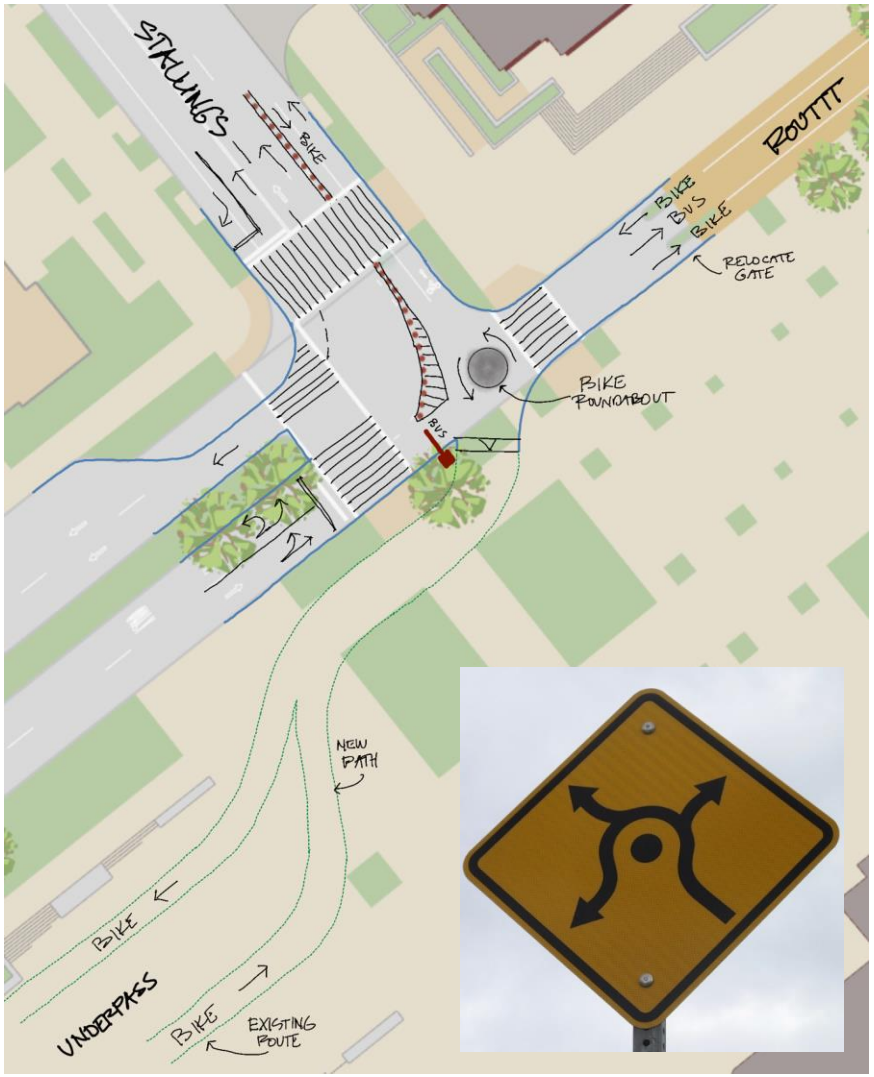
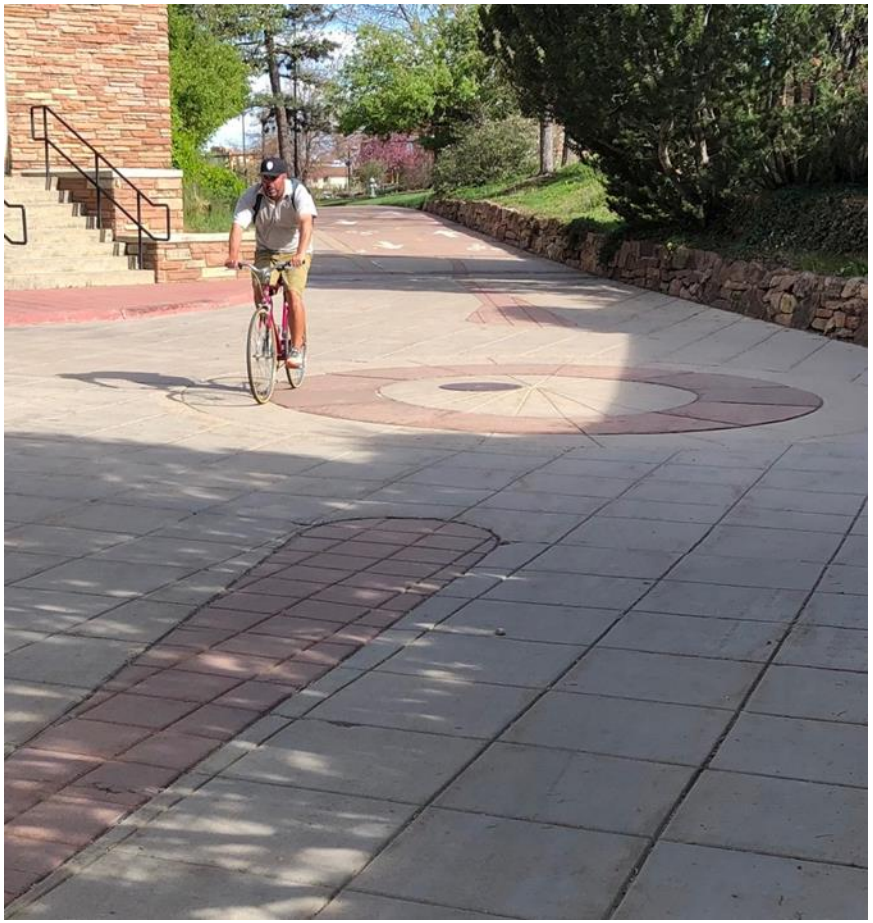
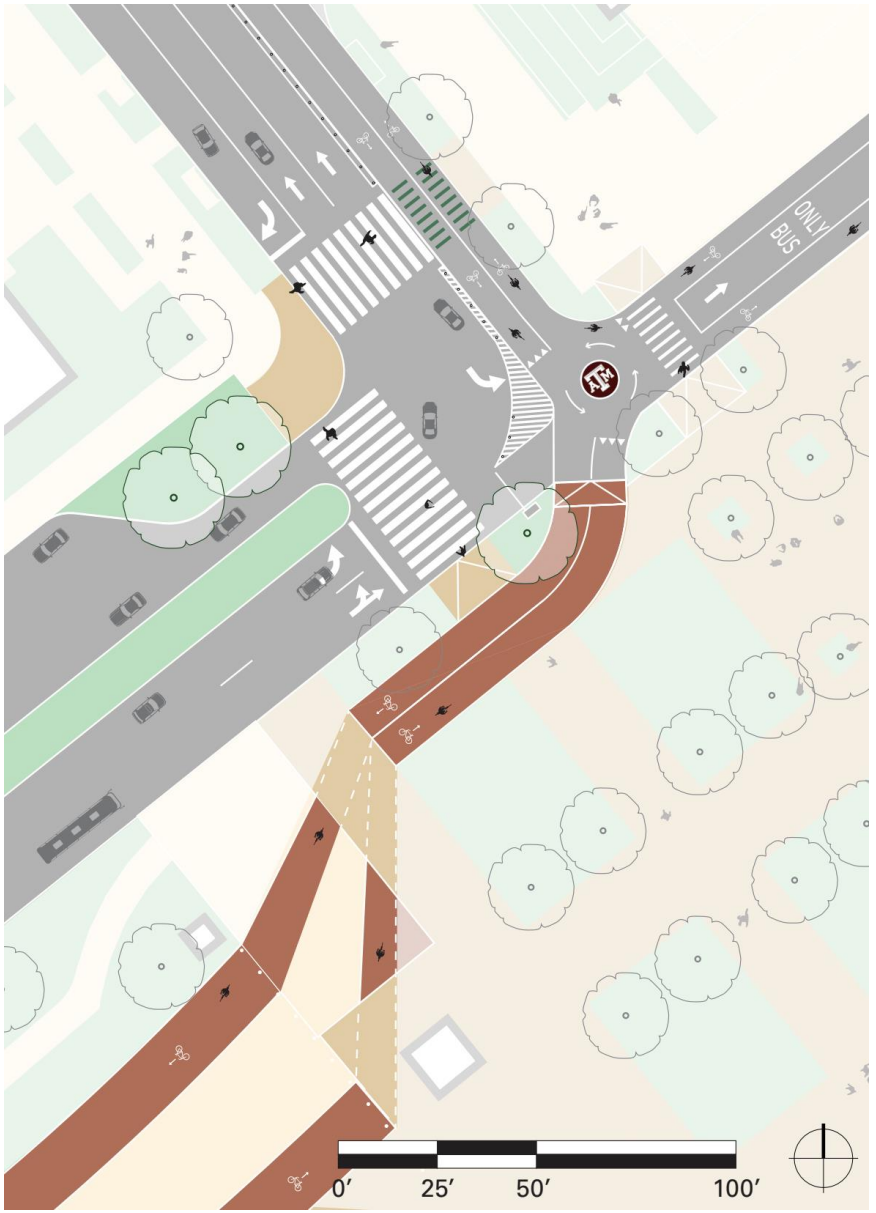


Figure 102: Bike Roundabout Implementation Example



Walker has suggested the implementation of a cycling roundabout. This could be implemented by raising the pavement, staining the pavement (as displayed in Figure 102), or with a simple graphic applied to the pavement (as shown in Figure 103). A planter or other temporary barricade may be added to the circle for daily use and removed for the Corps March, Game Days, etc.

Figure 103: Redesign of intersection to connect three key bike routes



Gene Stallings Boulevard and Lamar Street

Stallings Boulevard connects Routt Boulevard with Lamar Street. It is primarily used for access to the Stallings Garage. There are bike lanes on either side of the road. The south-bound bike lane conflicts routinely with garage-bound traffic. There is no marked connection to the bike lane on Lamar Street.

Figure 104: Pedestrian, bike, and vehicle conflicts at Stallings Garage and Lamar Street.

The changes proposed at Stallings and Lamar (Figure 105) may need to be revisited to accommodate vehicle traffic on Game Day, as traffic, turning right from Lamar onto Stallings, would interfere with bus traffic. This potential solution improves pedestrian safety and cyclist turning movements, but may further impede transit access along Lamar, by forcing buses and motorists to share a lane west of Lamar.

An alternative solution is presented in

Figure 123, and entails closing a small section of Stallings Drive just south of Lamar Street to vehicular traffic, by installing a striped or mountable area delineated on either end by removable bollards, such that opened for bus traffic on gamedays. This option would require the repurposing the alley between Stallings Garage and the Innovative Learning Classroom Building (

Figure 123). Instead of, or in addition to creating a new exit from the garage, it could become a new entrance. In doing so, drivers would no longer need to use Lamar, which would be converted into a bus mall. The crosswalk on Stallings at Lamar could be converted into a walkway.

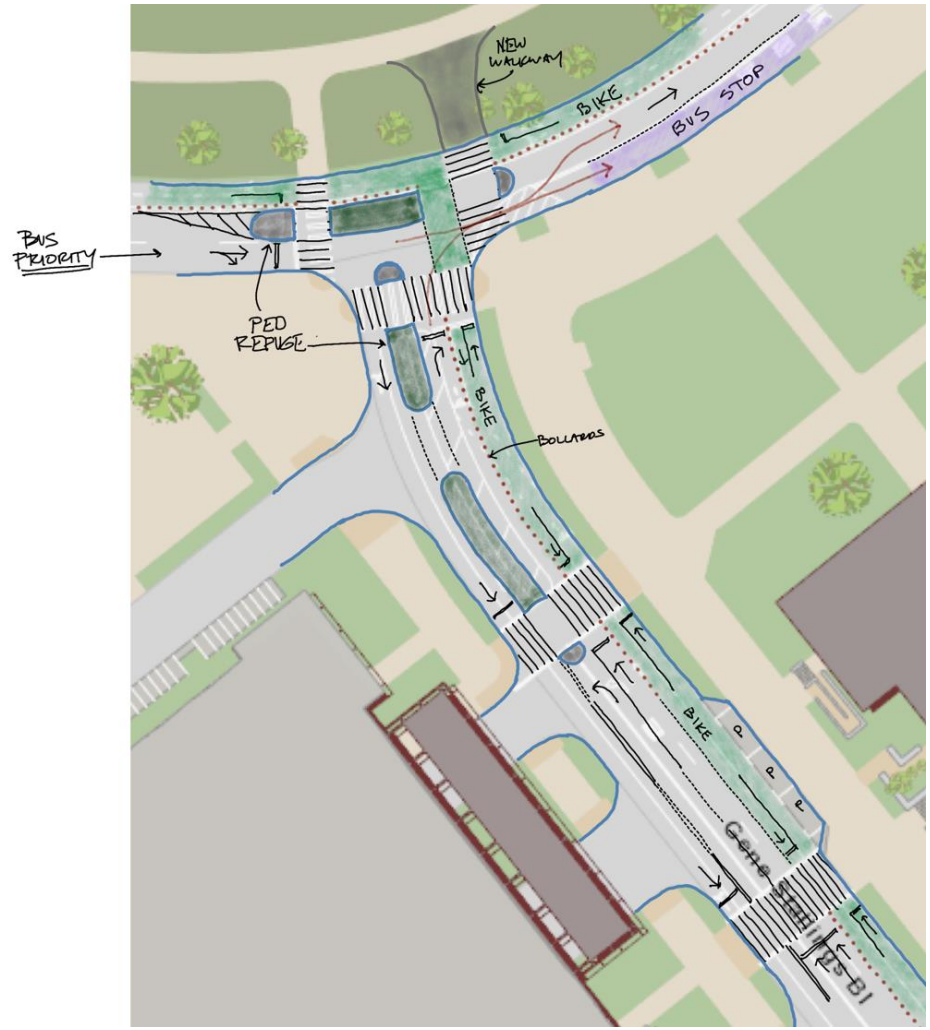
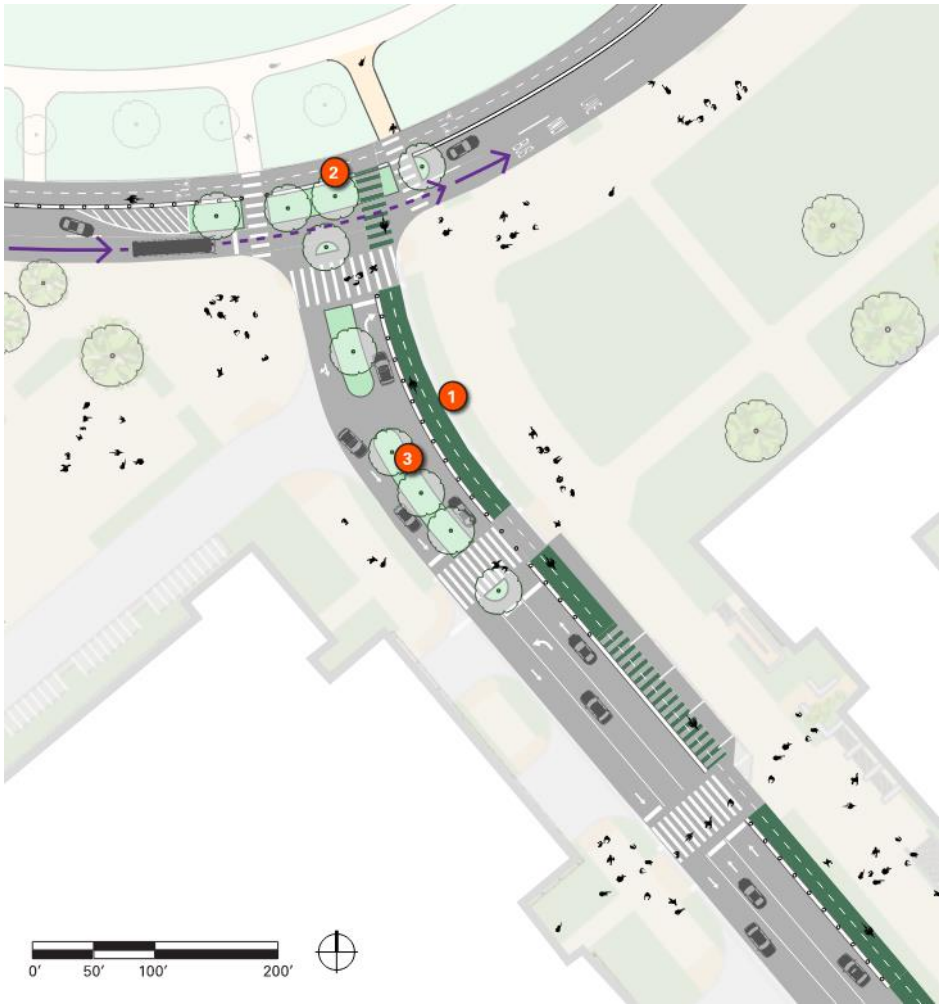


Figure 105: Lamar Street pedestrian/bike and transit protection and prioritization

Should a new connection or exit be made from the Stallings Garage to Wellborn Road, then traffic on Lamar Street could be further restricted.

Figure 106: Proposed redesign of Gene Stallings Boulevard and Lamar Street



Old Main Drive and Olsen Boulevard

There are wonderful bike paths on either side of Old Main Drive as it passes under Wellborn Road. Unfortunately, they end at Olsen Boulevard. There are no bike lanes on Olsen Boulevard, nor is there a path to the west. As mentioned before, a series of slow paths would route cyclists through the West Quad—as they already do. These would connect to the paths on Old Main Drive. Bicycle crossings would be needed at the intersection with Olsen Boulevard to complete the network.

Figure 107: Cyclists crossing Olsen Boulevard at pedestrian crosswalk of Old Main Drive

Figure 108: Concept design of separate bike crossing at Olsen Boulevard

Giving more room for walking on Ross Street

Ross Street has a high traffic volume of pedestrians, bicycles, and personal mobility devices such as conventional and electric skateboards and scooters. Traffic of pedestrians, bicycles, and personal vehicles was measured at ten times the traffic of other vehicles (buses, commercial vehicles, and Texas A&M service vehicles), between 6:00 a.m. and 6:00 p.m.

For the most part, pedestrian traffic is contained within sidewalks and bicycles and personal mobility vehicles share the roadway with other vehicles. The south sidewalk is generally narrower than the north sidewalk and can barely accommodate the volume of foot traffic. The north sidewalk has varying widths with streetlights and other obstacles creating pinch points along the walkway.

Figure 109: Varying sidewalk widths along Ross Street

Figure 110: Crowds along Ross Street during class change

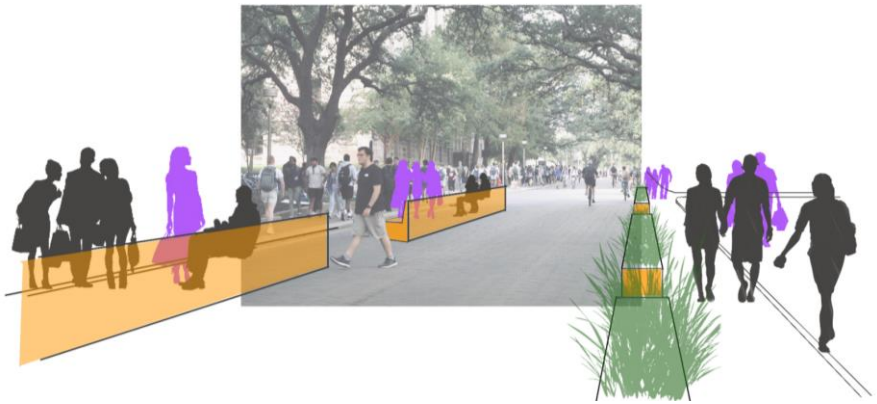


Figure 111: Proposed experiment to increase pedestrian traffic area on Ross Street

Figure 112: Traffic volumes on Ross Street between Ireland and Spence Streets

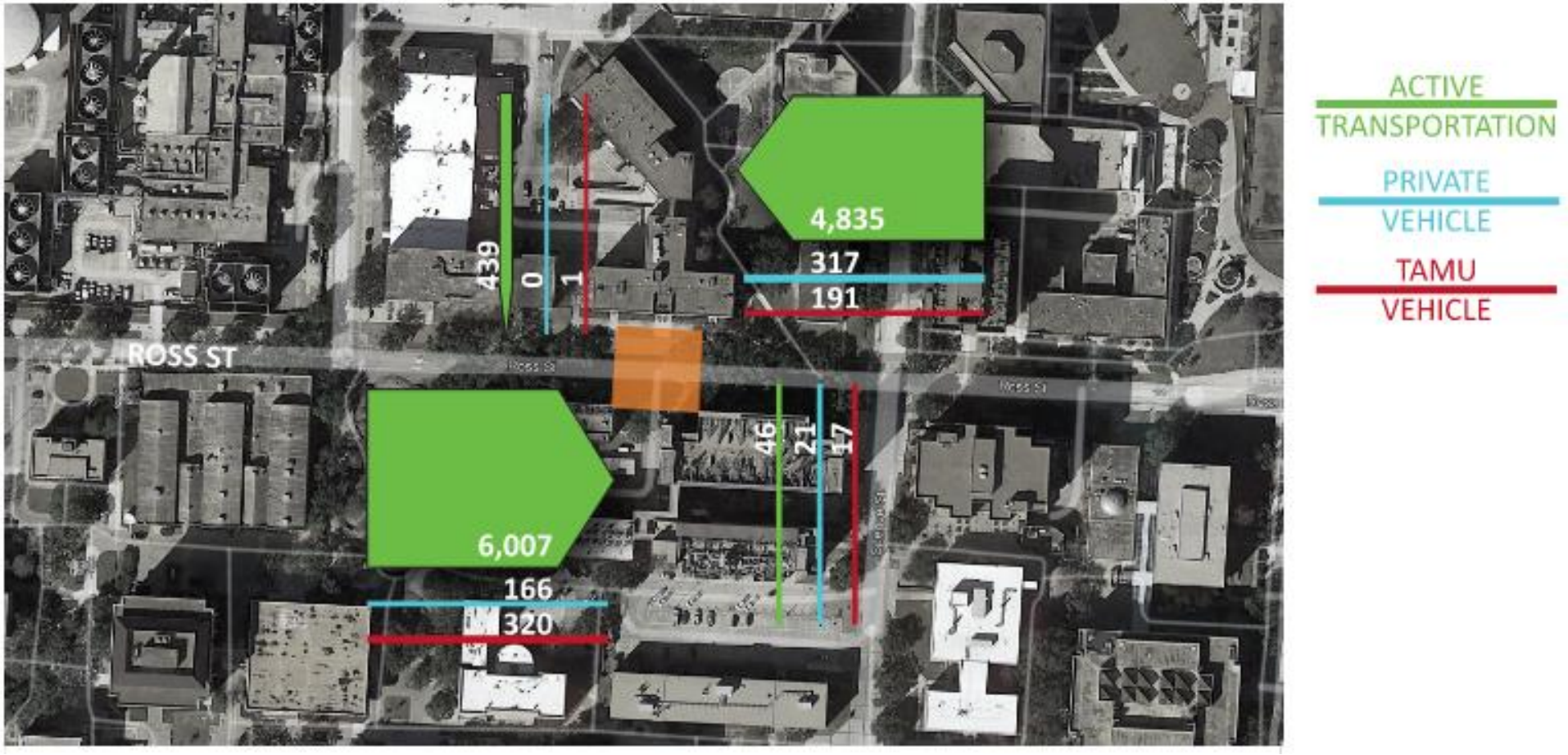
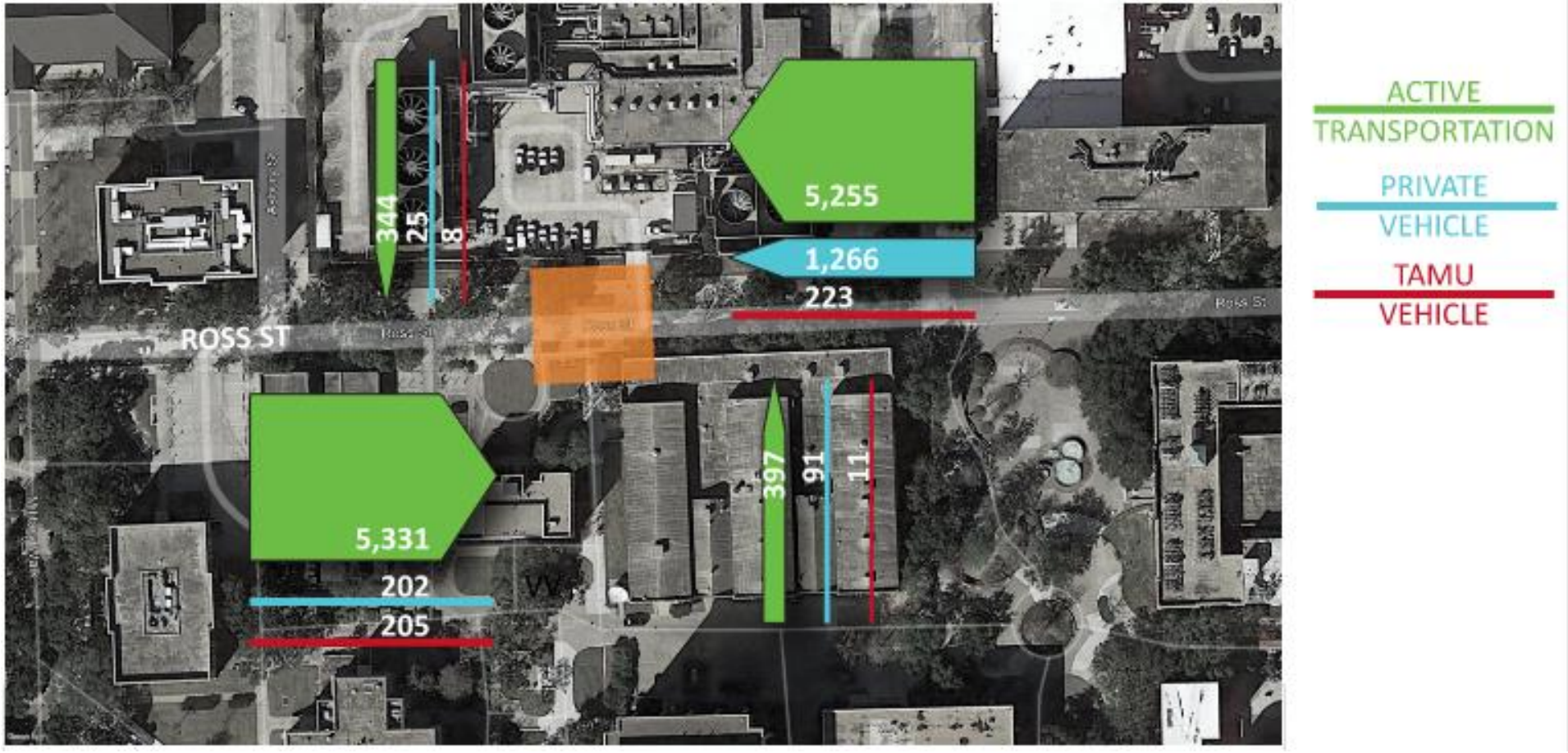


Figure 113: Traffic volumes on Ross Street between Asbury and Ireland Streets



Given the differences in traffic volume, we recommend allocating more space to pedestrians on both sides of the street. A tactical urbanism experiment is proposed that does not require major construction, but reduction of the roadway to one lane with planters and further reductions in access to buses and other vehicles.

Re-routing campus bus routes away from Ross Street

Altering bus routes on Ross Street will allow for more efficient and safer operations. The proposed reorganization of buses along Ross Street are illustrated in

Figure 114 below. Operations on Asbury and Ireland Streets are reversed to operate counterclockwise, and there would be no buses on Ross Street east of Ireland Street. Route 01 Bonfire (Figure 116) would continue from MSC and Houston Street but would exit to University Drive via Ireland Street and enter back to campus on Bizzell Street. On the way back it would enter campus from Asbury and continue to Houston. Route 04 Gig 'Em is proposed to be extended to Lot 100 and follow the same alignment as Route 01. It would also enter campus from Asbury Street and continue to Houston Street.

Removing bus traffic from most of Ross Street allows it to be redesigned to manage the heavy pedestrian and cycling flows (

Figure 112). It will operate more like Joe Routt Boulevard, with fewer buses in only one direction. Cyclists may use the entire street east of Ireland Street and share the road to the west. Access to the street otherwise will remain limited to service vehicles and the few drivers destined for Lots 4 and 10. Specific changes include:

- Ross Street becomes one-way eastbound between Houston and Ireland Streets.
    - Non-service vehicles and buses turn left at Ireland Street.
    - Access to Lot 10b is permitted via Houston and Ross Streets.
    - Access to Lot 23 will be via Spence Street only.
- Ireland and Asbury Streets become two-way between Ross and New Streets.
- There will be a southbound bus-only lane on Asbury Street between University Drive and New Street.
- There will be a northbound bus-only lane on Ireland Street between University Drive and New Street.
- The existing bike lanes on Ireland Street will be combined into a two-way cycle track.

Figure 114. Current gates on Ross Street at Ireland and Asbury Streets are relocated to Asbury and Ireland Streets. Same position as in Houston and Spence Streets. The goal is to extend the restricted traffic area to all of Ross Street and provide a better environment for high volumes of pedestrian traffic from Houston to Bizzell Streets.

Utilizing the design principles outlined earlier in this report, a schematic concept of bus and bike flows are illustrated in

Figure 115 shows the bus network that results from reorganizing bus traffic on Ross Street. It consolidates bus access to three transit hubs around the historic core of campus. Bizzell Street and Olsen Boulevard would concentrate a north-south cross campus transit service. The connection of the MSC with north campus will continue via Houston and Ross Streets on Routes 01 and 04.

Solving the issues related to access in these restricted parts of campus are related to the technology and the marketing of these access controls. Managing deliveries during the restricted times, in both the current restrictions and the proposed changes, would entail communicating with delivery companies/organizations and/or working with them to potentially adjust the restricted hours. It is possible 6:00 a.m. – 6:00 p.m. restrictions are unnecessary and could be tightened, especially in the morning. This could allow delivery drivers more leeway to enter the restricted areas prior to peak times.

Figure 114: Ross Street bus service reroute and gate relocation concept

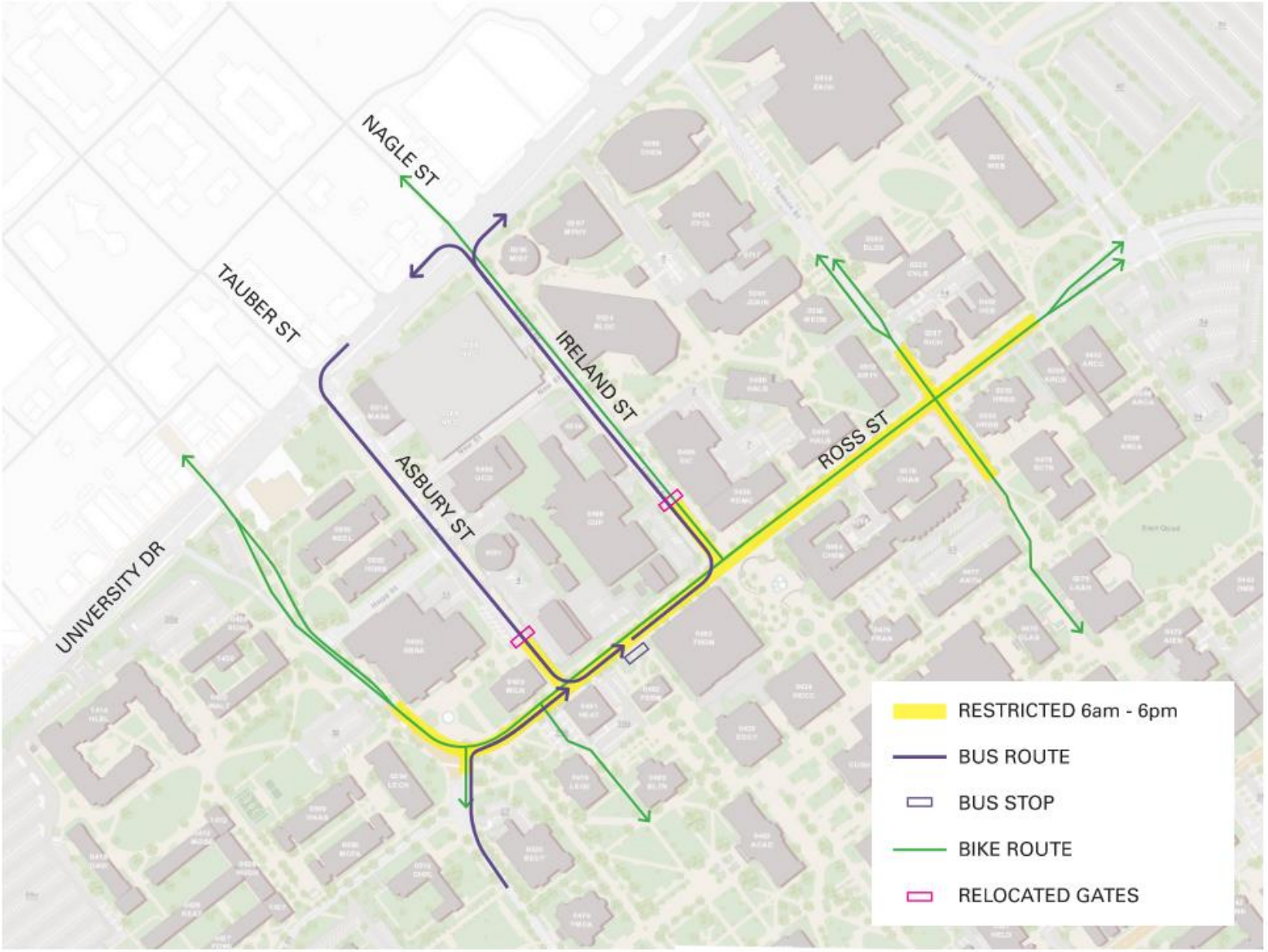


Figure 115: Proposed Aggie Spirit bus service footprint

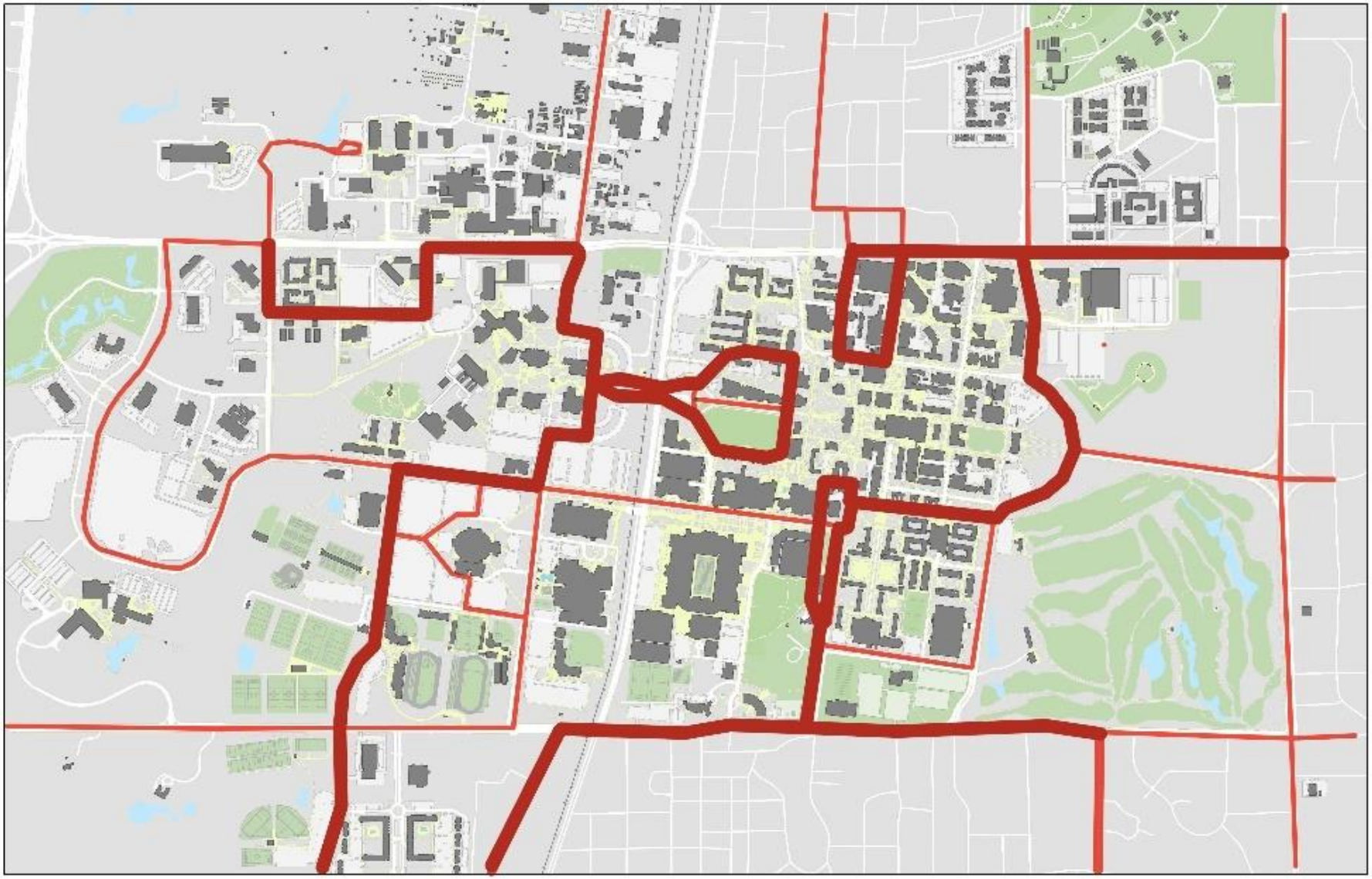


Figure 116 analyzes the passenger load profile of Route 01 for a typical day in the fall of 2019. The peak passenger load occurred between the MSC and Ross Street, with most passenger activity along Ross occurring at both ends of the street—Ireland and Bizzell Streets. It shows that a re-route is possible and would not create a significant impact to ridership patterns.

Figure 118 shows the passenger load profile of Route 04 also in the fall of 2019. It is a shorter route designed to provide a connection between Hensel Drive and Ross Street. The data analyzed indicates this route transports more passengers into campus than out of campus. The changes recommended for this route are to extend it and provide cross-campus access to off-campus housing along Hensel Drive, and to follow the alignment of Route 01 on campus to provide additional capacity and alleviate crushing bus loads.

Figure 116: Proposed realignment of Route 01 Bonfire

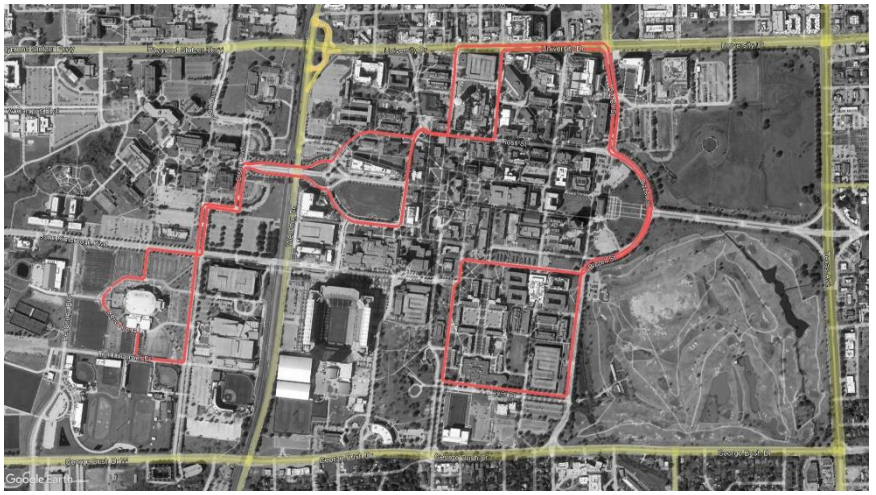


Figure 117: Passenger load profile of Route 01 Bonfire

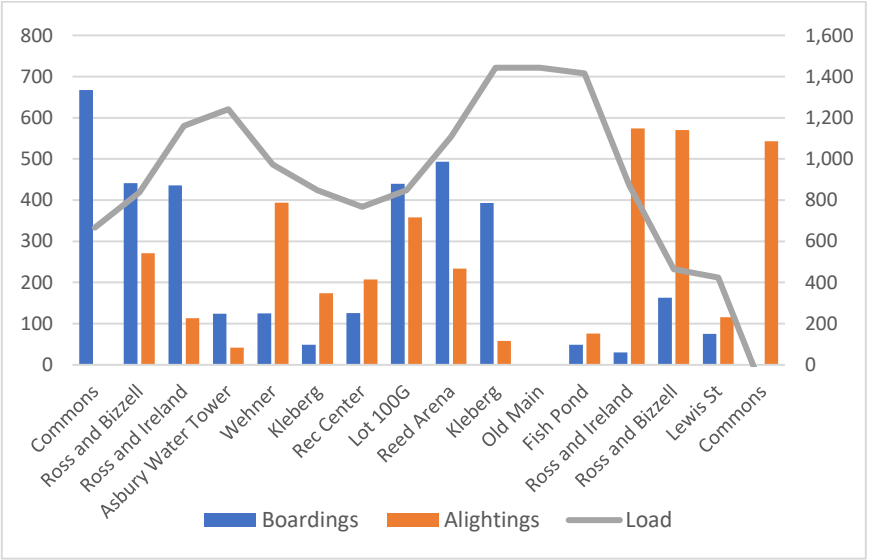
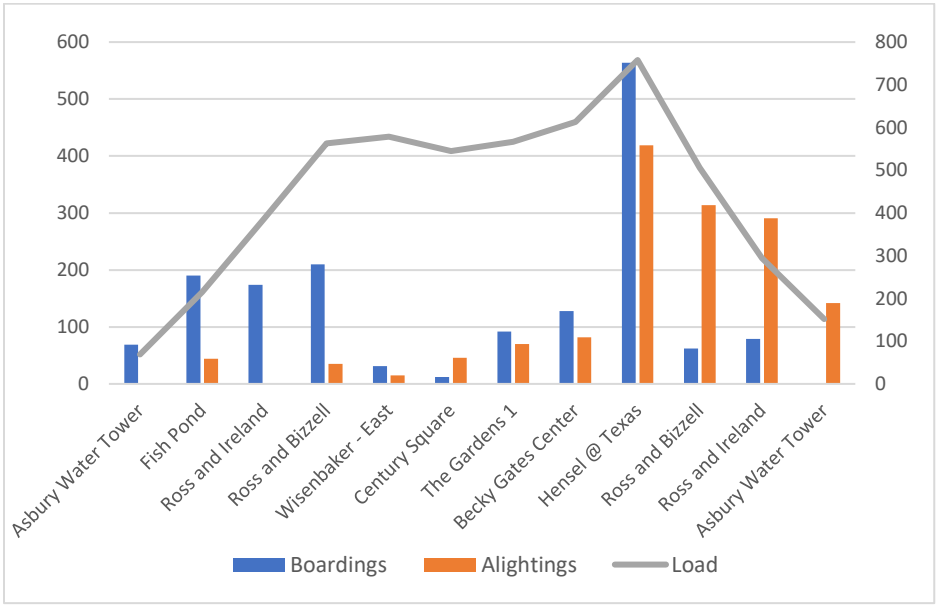


Figure 118: Proposed realignment of Route 04 Gig Em

Figure 119: Passenger load profile of Route 04 Gig Em



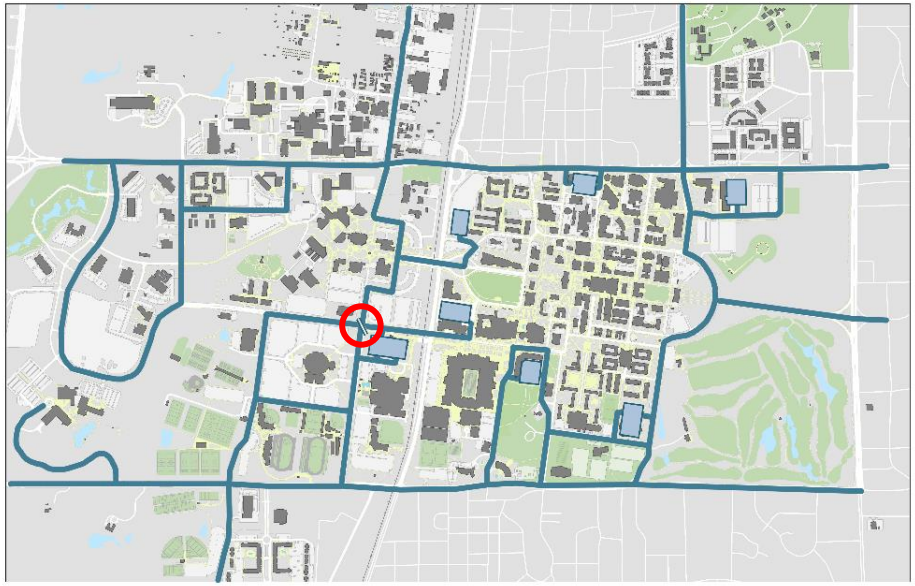
Minimizing through traffic and traffic conflicts

As indicated earlier, one design principle of this plan is to reduce vehicle traffic inside campus, prohibiting through-traffic movements, and limiting access to campus via traffic loops.

Figure 120 below shows the road network that is available to vehicles and the system of traffic loops that provide access to parking garages and lots.

A traffic diverter is proposed at Olsen and John Kimbrough Boulevards to eliminate through-traffic movements and reduce congestion on West Campus.

Figure 120: Proposed vehicle access to campus and traffic loops



John Kimbrough Boulevard

The intersection of Kimbrough and Olsen Boulevards has repeatedly been cited as a challenge area. Fortunately, there is an opportunity, with a few surgical interventions, to address its shortcomings, better organize garage access, and minimize through traffic. These interventions are described in the bullets below and are illustrated in Figure 121.

- Similar to a game-day scenario, Kimbrough Boulevard can be converted into a greenway between Discovery Drive and Penberthy Boulevard. This will create a traffic loop for the Research Park area.
- The intersection of Kimbrough and Olsen Boulevards is large enough for a “diagonal diverter” that will route traffic away from it by forcing turns. This will create a traffic loop around Reed Arena, and another to the northeast section of West Campus.
- It will also encourage access to the West Campus Garage via Corrington Drive, which will decrease conflicts with cyclists on the north side of the garage.
- Bus access through the intersection can remain.
    - The diagonal diverter can initially be installed with approximately 12 planters, striping and signage. Ultimately, it would be curbed and landscaped.
    - Over time, fewer drivers will use Kimbrough or Olsen Boulevards, so these roads could be made smaller (a road diet).
- A large two-way bicycle path is proposed on the south side of Kimbrough Boulevard, and west side of Olsen Boulevard to connect West Campus, see Figure 121.

Figure 121: Traffic diverter concept at Olsen and John Kimbrough Boulevards

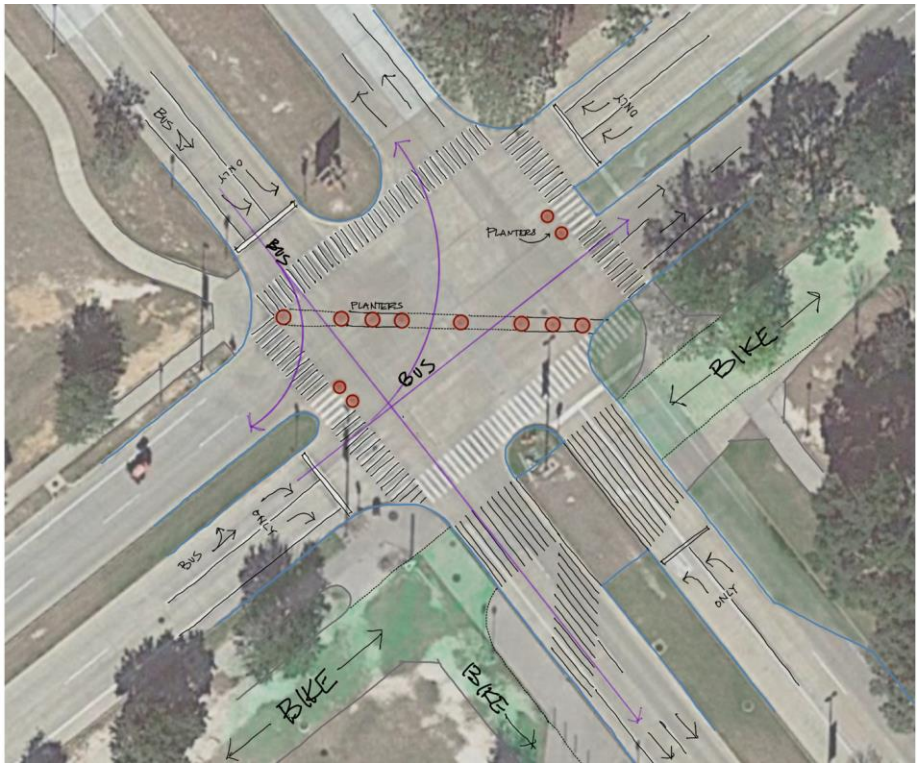
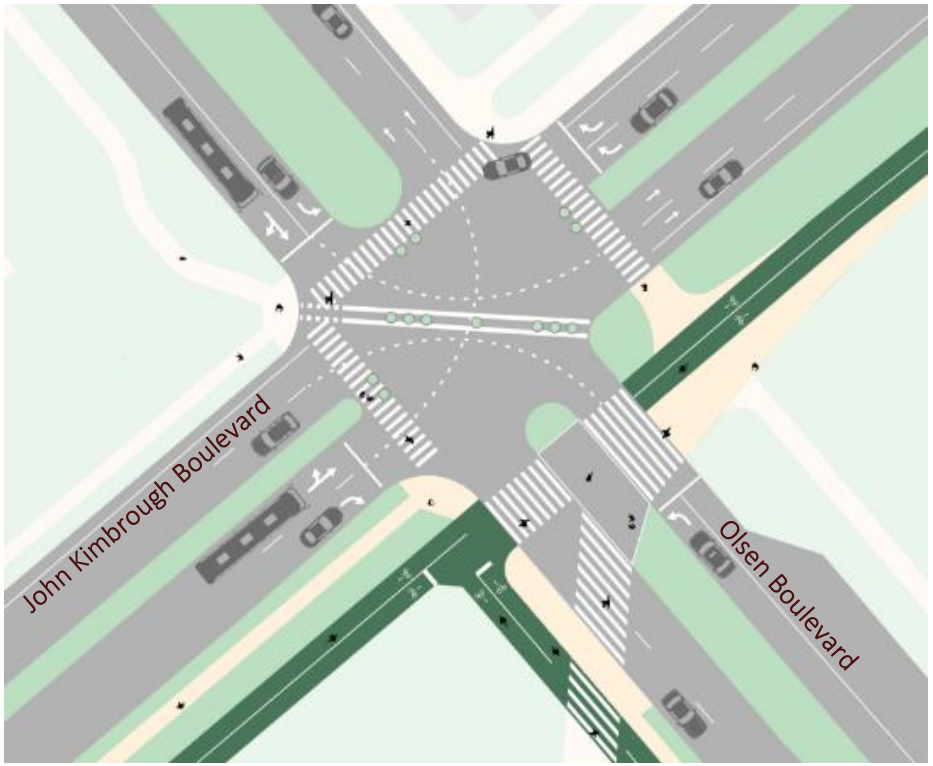


Figure 122: Olsen and Kimbrough Boulevards redesign including two-way bike paths



1. Close intersection to through traffic, except for Texas A&M buses.
2. Create a diagonal diverter of traffic with planters. Force vehicles to turn at intersection.
3. Add planters to protect pedestrians at crossings.
4. Add two-way bike path on south side of Kimbrough Boulevard to connect with Pickard Pass.
5. Add two-way bike path on west side of Olsen Boulevard to connect with West Campus and Reed Arena.
6. Connect intersection crossings with diagonal walkway to Reed Arena.

Right Turns Only In/Out of Stallings Garage

Drivers exiting the Stallings Garage have the choice of a) turning right and returning to Wellborn Road via Routt Boulevard, or b) turning left and driving around the Simpson Drill Field to Wellborn Road. The former puts them in conflict with people walking along Gene Stallings Boulevard, as well as hotel traffic. The latter puts them in conflict with people walking along Stallings Boulevard and buses on Lamar Street.

There is a service road between the garage and the Innovative Learning Classroom Building (ILCB) and the Stallings Garage. Allowing access to this service road by turning right while heading north on Wellborn Road redirects much of the vehicular traffic into the Stallings Garage. This service road could be redesigned to make this the only route into the garage. The exit on Stallings Boulevard could be updated to only allow right turns, redirecting vehicles away from pedestrians (and buses). In doing so, all vehicular traffic in and out of Stallings Garage would be done with right turns. A right turn land could be added to Wellborn Road to allow for queuing, if necessary. These changes would allow for Lamar Street to become a bus-only roadway (with the exception of the cycling tract). Walker projects these changes could also negate the need for crossing guards on Stallings Boulevard.

Figure 123: Addition of Stallings Garage direct exit to Wellborn Road

Polo Road and Lot 47/51

Polo Road suffers from congestion at the Bizzell Street intersection. This is caused by a) people walking to/from the Emerging Tech Building and the Polo Road Garage/Building, and b) drivers exiting the Polo Road Garage and Lots 47 and 51 to the west. As was explored during the Sept 30, 2021 cone exercise, there may be solutions to simultaneously "traffic calm" and divert drivers away from this junction.

Lot 47/51 short-term (Figure 124):

- Create a pedestrian refuge area with planters in the left turn lane at the crosswalk between the Polo Road Garage and Lot 51. Install a left turn lane at the Lot 51 entrance to the east.
- Close the northern access between Lots 47 and 51. It is too near the street entry and causes confusion. Closing it forces drivers around to the back of the lot where they can properly join the exit queue.
- Prohibit right turns from Lot 47 onto Polo Road. Direct drivers to exit via Lot 51.
- Prohibit left turns from Lot 51 onto Polo Road.

Lot 47/51 long-term (Figure 127):

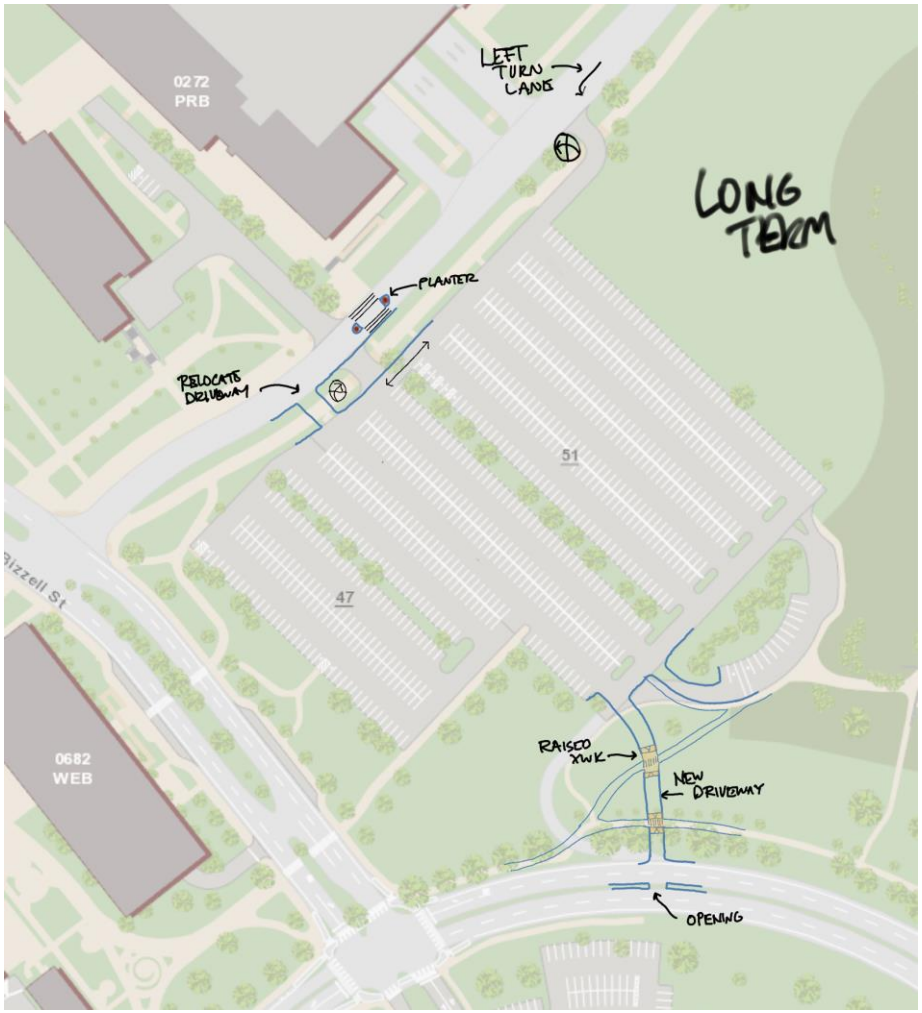
- Make the pedestrian refuge island permanent with curbs and landscaping.
- Relocate the Lot 47 driveway to the west. Reopen the access between the two lots.
- Redesign the driveway to Lots 47/51 from Bizzell Street to allow both entry and exit. Direct drivers destined to the south and west to use this exit. Include raised crosswalks where the paths cross the driveway.

Figure 124: Lot 47/51 entry/exit configuration—short term solution

Figure 125: Cones closing driveway between Lots 47 and 51

Figure 126: Cones creating a pedestrian refuge on Polo Road

Figure 127: Lot 47/51 entry/exit configuration—long term solution



Polo Road and Bizzell Street Intersection

The intersection of Polo Road and Bizzell Street experiences congestion at class change times due to traffic from vehicles exiting the Polo Road Garage and Lots 47 and 51. Restrictions to exit from Lot 47 and 51 (as described above) will help alleviate pressure at this intersection.

However, with the recent growth of campus on the east side of Bizzell, this intersection is now a major pedestrian route that puts people in conflict with cars. The design of the intersection favors cars and puts pedestrians at a disadvantage while crossing the street. A series of changes are proposed to reduce the area dedicated to cars, shorten the crossing distances for pedestrians, and provide more protections to pedestrians when crossing Bizzell Street.

A cone exercise was carried out on Sept 30, 2021, to explore design changes. The design change recommendations below are informed by the experiment results.

Polo Road & Bizzell Street:

- Use planters to tighten turning radii. This will encourage drivers to yield to people crossing the street.
- Use planters to create median tips., to buffer the crosswalk on both sides. This forces drivers to turn more slowly and protects people in the crosswalk. Paint the refuge area.
- Stripe the bike lanes on Bizzell Street and install bollards. Construct a bicycle curb ramp so that cyclists can continue north via the sidewalk path.
- Close the southbound left turn lane on Bizzell Street. Turn lanes are typically for signalized intersections, where queue space is needed; they are unusual at intersections with all-way stop control and create more confusion for drivers entering the intersection.
- Ultimately, curb and landscape the new design.

Figure 128: Conceptual redesign of Bizzell Street and Polo Road intersection

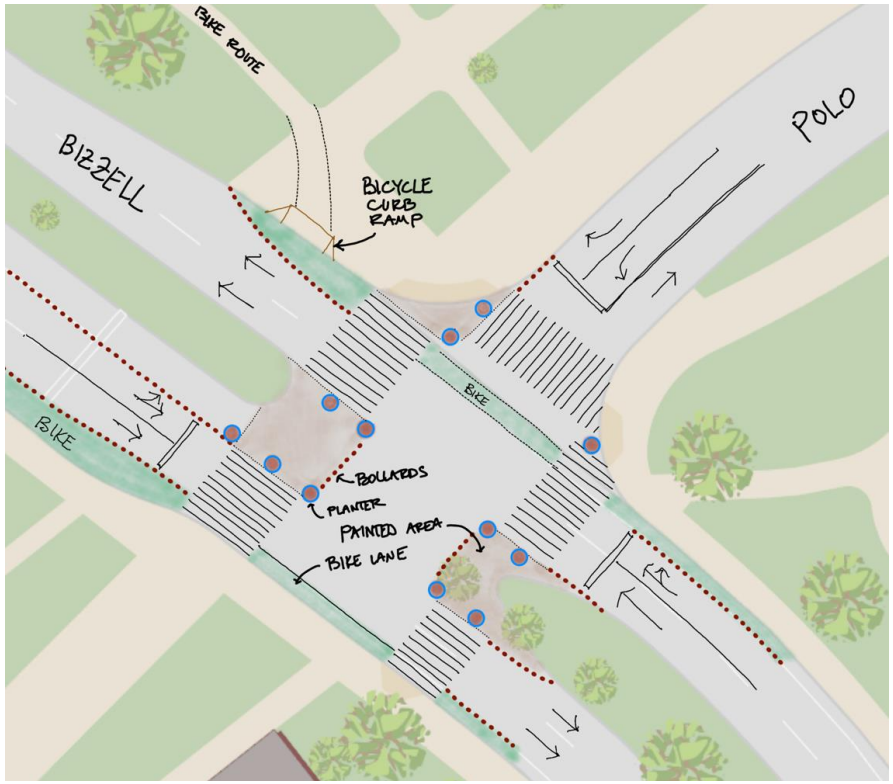


Figure 129: Cones creating pedestrian refuge in median of Bizzell Street

Bizzell Street median is designed for high-speed turns.

Figure 130: Cones reduce turning radii and effectively limit speeds

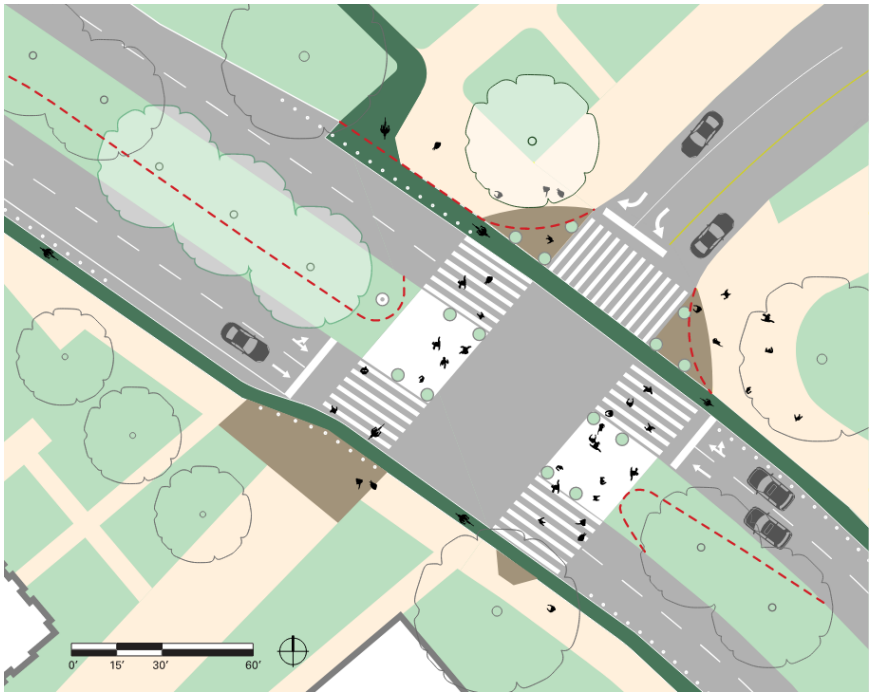
Figure 131: Median refuge islands provide a comfortable space for people

Figure 132: Cones demarcate the bike lane, which ends north of Polo

Bike lane needs a ramp to continue on sidewalk path to the right.

Figure 133: Southbound bike lane of Bizzell ends abruptly

Figure 134: Proposed redesign of Bizzell Street and Polo Road intersection



The southbound curb lane of Bizzell Street, north of Polo Road, is frequently used as a pick-up and drop-off area. This creates conflicts with the bicycle lane and bus stop.

Closing the southbound left turn lane will provide space to redesign this leg of the street and add a platform between the bike path and roadway. This will help protect the bike path and accommodate pick-up and drop-off activity at this location, which is a primary access point to the Zachry Engineering Education Complex and surrounding buildings.

Micro-Climates

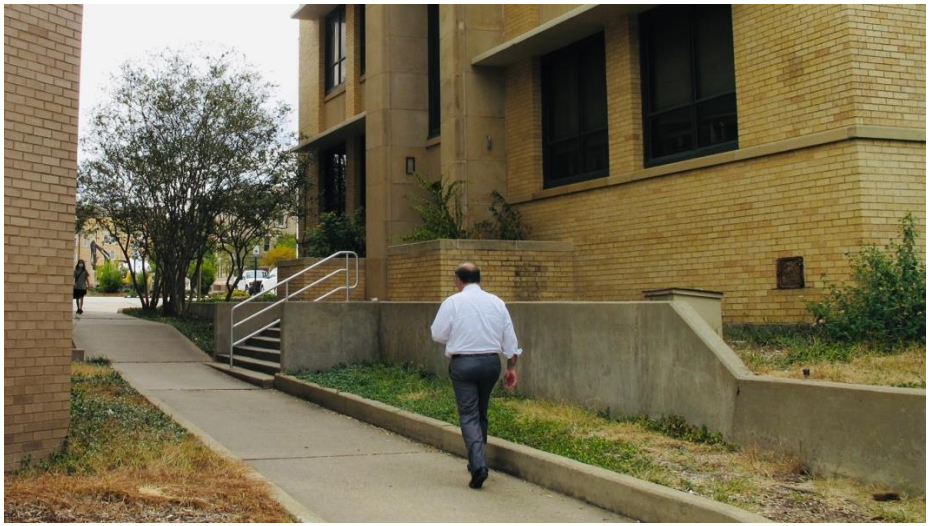
Throughout the day and seasons, exposure to the everchanging elements of sun, wind, rain, temperature, and noise creates a set of dynamic micro-climates unique to each place. People will instinctively move through campus based on their senses of the most opportune of these moments. Even with the best of physical infrastructure such as new sidewalks or outdoor furniture, people naturally choose alternative spaces when the micro-climate is not ideal.

Much of the campus experience today has an abundance of hot, exposed microclimates in the areas where students often need to be. Many parking lots, bus stops, and corridors, such as Spence Street, offer prime examples. Transforming these spaces with strategically located trees or even pavilions angled to offer summer shade and winter sun can make a critical difference to the use of the spaces and even the larger systems each space serves. For instance, many students interviewed about the campus bus, bicycle, and personal automobile networks indicated they would use each of these services more effectively if the routes connecting parking locations to destinations were not so hot and exposed, or perceived as dangerous pedestrian experiences.

A few examples of microclimate locations exist on campus:

- The walkway between the Biological Sciences Building East and Heldenfels Hall is narrow and usually in shadow. It is typically cool with a breeze caused by the proximity of the two buildings to each other.
- Tents erected during the pandemic and open-air gazebos near the Engineering Quad provide comfortable outdoor studying areas.
- Shade and “pocket” plaza on the south side of Evans Library provide a respite to hot weather.

Walkway between BSBE and Heldenfels Hall



Plaza on South Side of Evans Library at end of Lot 6

Tents Erected During the Pandemic for Outside Study

Open Air Gazebo near the Engineering Quad

Walkway between Library and Anthropology Building

Figure 135: Planters between Evans Library and Anthropology Building

Curbed planter upstream of catch basin at NW corner of Evans Library. Removing the curb would allow the tree pit to process stormwater and reduce ponding.

Figure 136: Conceptual Design of Planters including Stormwater Basin

1. Remodel curbs around existing planting areas to include storm drains.
2. New basins could harvest and filter stormwater while also becoming placemaking tools.
3. North-side slope of walk creates a low end for each planting area that could feature bench seating around new landscaped basin.

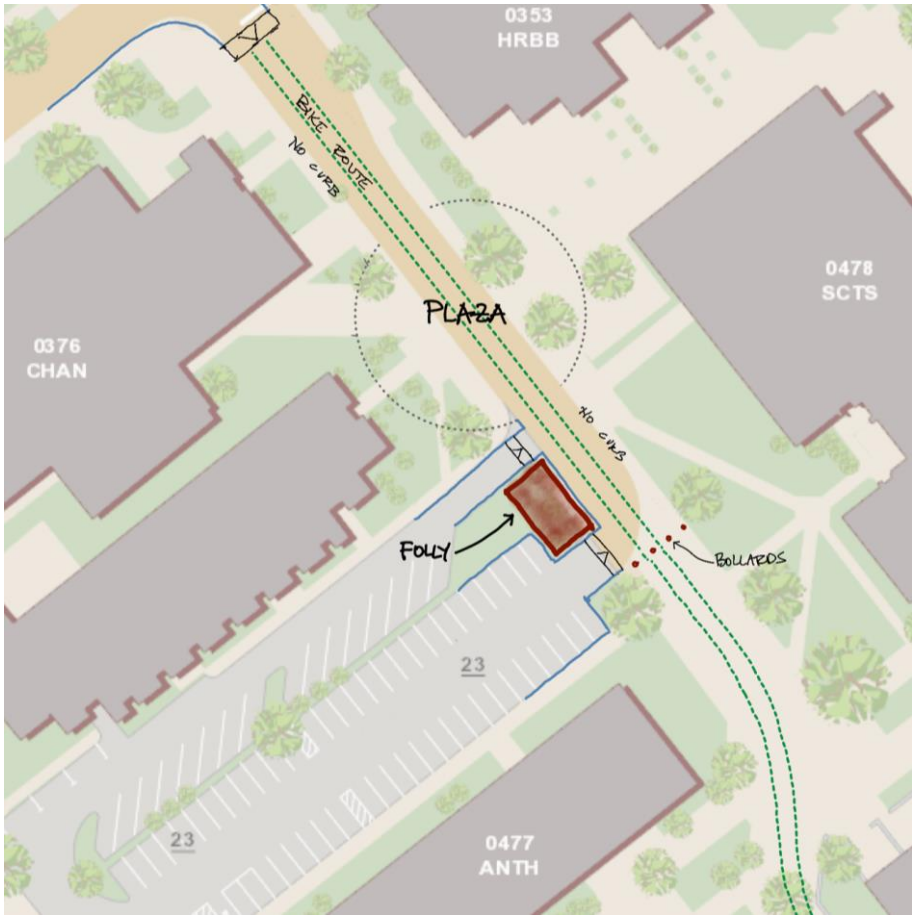
Spence Street at Lot 23

Lot 23 is nestled between the Anthropology and Chemistry Buildings. Access is provided via a 350-foot access-controlled stretch of Spence Street. The 2017 Campus Master Plan calls for the parking lot to be removed and Spence to be fully pedestrianized (CMP p89). This area seems to be the "back" of buildings. The entrance to the Chemistry Building appears to be closed.

The area between Scoates Hall and the Bright Building can be better defined. It provides an opportunity to connect with the Architecture Building.

There may be an opportunity to refashion this area as a plaza with structures that create cooling micro-climates for students to use. The street curbs would be removed to create a shared street environment and a slow bike route marked.

Figure 137: Schematic of Shared Street and Plaza on Spence Street



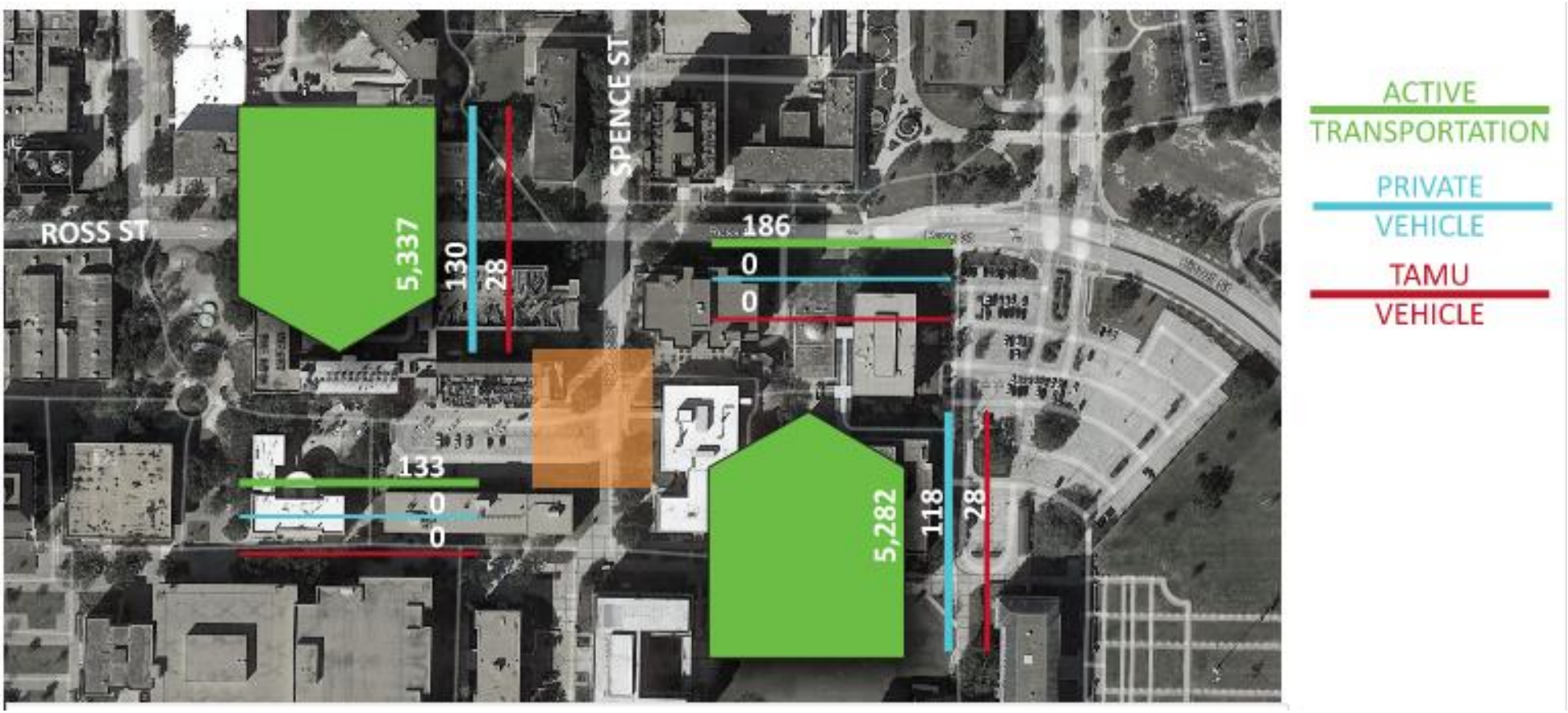
A folly, in urban design, refers to a building or structure meant to attract, creating a sense of space.

Figure 138: Spence Street at Lot 23

Spence Street at Lot 23

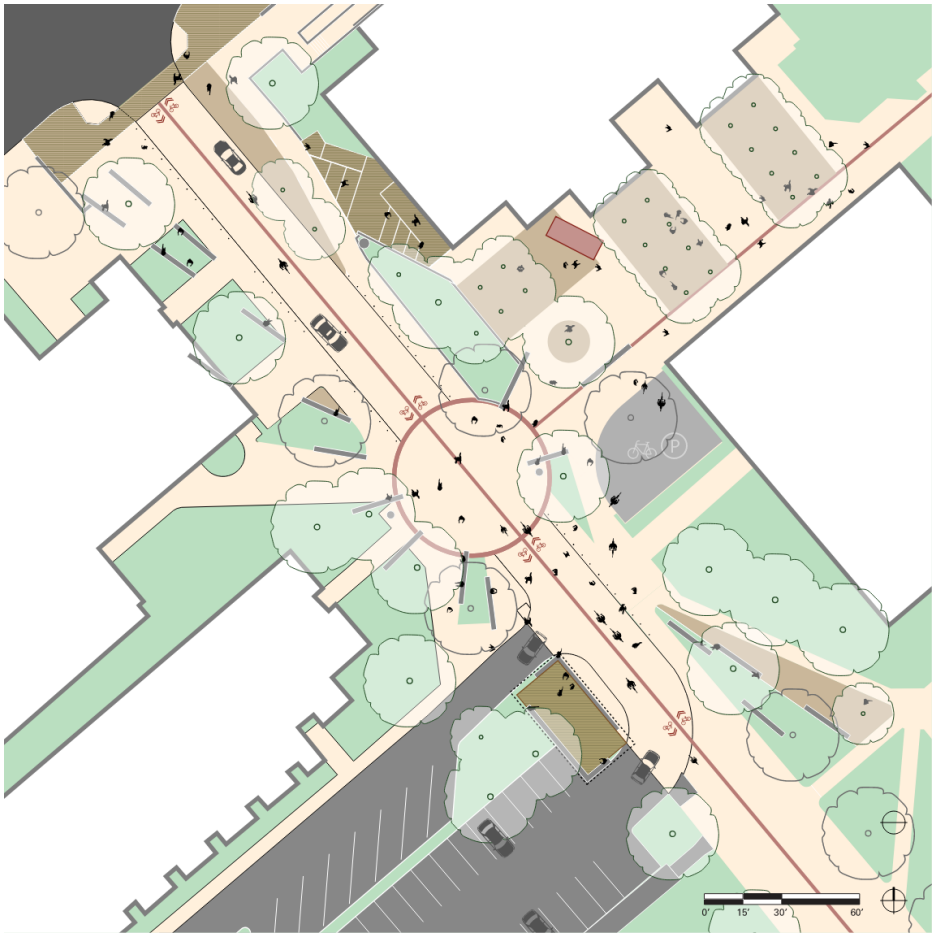
Figure 139: Eastside of Spence Street, across from Lot 23

Figure 140: Traffic Volumes on Spence Street at Scoates Hall



Spence Street south of Ross Street has very low vehicle traffic and very high pedestrian traffic.

Figure 141: Conceptual Redesign of Spence Street and New Plaza



1. Raise pavement to create a curbless street (or shared-street environment) and give priority to pedestrian traffic.
2. Pavement patterns, benches, and tree plantings throughout the street reinforce the pedestrian experience.
3. Converting Spence Street to a shared street consolidates the pedestrian areas inside the core of campus

Figure 142: Conceptual Sketch of Spence Street as Shared Street

1. A new stair and ramp improve access to a reimagined plaza between Scoates and Bright Halls, where a shaded study and café space have potential.
2. Spence Street comes alive with a series of nodes taking advantage of existing trees and open spaces along this spine.
3. A pavilion at the median of Lot 23 provides a secondary focal point while also screening the parking area.

TRANSPORTATION DEMAND MANAGEMENT

Texas A&M Transportation Services offers a range of facilities, infrastructure, policies, and programs that support and enable non single-occupant vehicles commuting to and traveling throughout campus. Despite its success, potential exists to improve the breadth of TDM offerings, and leverage TDM more deliberately to influence and promote sustained behavioral change. To this end, Walker recommends pursuing the following strategies:

- Implement a **"park-once"** policy and approach to parking,
- Complement the park-once strategy with robust **cross-campus shuttle service**
- Increase **off-campus transit service**, primarily by serving new residential areas south of campus
- Promoting ridesharing—**carpooling and vanpooling**—through incentives and parking privileges
- Adopt a comprehensive **curb management** policy to manage multiple pickup and drop-off access points on campus
- Continue the pursuit of a **smart mobility vision**
- Strengthen **TDM support services**, including marketing and promotion of transportation options to commute and travel within campus

"Park-Once" Strategy

A "park-once" strategy refers to the idea of driving less and walking, busing, and cycling more, once on campus. In a "park-once" environment there is walkable parking in the vicinity of each part of campus and/or frequent, direct transit or shuttle service. Though, the key element of a park once strategy is that the campus environment is safe, comfortable, and attractive enough for visitors to walk through it, make stops, and engage in multiple trips on foot, bicycle, or bus, as opposed to driving from one destination to another within the district.

In the last commute survey of 2019, nearly 63% of general staff and 45% of faculty/research staff indicated they drive alone when they need to travel around campus during the day. Additionally, for their commute trip to campus, the drive alone ratios were 87% of general staff and 79% of faculty/research staff.

The sample of project interventions in this plan are primarily intended to improve walking and bicycling conditions around campus, and to especially reduce conflicts between vehicles and pedestrians, like those occurring at Stallings Garage and the intersection of Bizzell Street and Polo Road (which leads to the Polo Road Garage and Lots 47 and 51).

Implementing a successful park-once strategy requires good walking, cycling, and/or shuttle access to/from parking facilities. There are good examples of this on campus. For instance, the Northside Garage provides good access to campus and an effective separation between vehicles and pedestrians, the West Campus garage is connected to campus via Pickard Pass.

But additional TDM measures are needed at Texas A&M to reduce drive alone rates of faculty and staff on both, the commute to campus trip, and trips throughout campus during the workday.

Cross-Campus Shuttle Service Enhancement

Some of the most currently available parking areas are found in the southern and western portions of Texas A&M University's campus. In order to reduce parking pressure on the historic core of campus, especially as development displaces existing surface parking and as the University's populations grows, some parking will need to be reallocated (see "Parking" later in this section). This "Parking" section describes how the south and west quadrants of campus have the most availability of parking, while, currently, the north and east quadrants have the lowest availability of, but highest demand for, parking.

Four Aggie Spirit bus routes provide access to parking resources in the south and west quadrants of campus, these include Routes 01 Bonfire, 05 Bush School, 35 Hullabaloo, and 40 Century Tree. Routes 01 and 05 are campus routes providing east-west cross campus circulation service. Routes 35 and 40 are off-campus routes providing north-south commuter service to MSC via Penberthy Boulevard and West Campus.

Reallocation of parking demand to the south and west quadrants of campus may require enhanced service, as follows:

- Route 01 Bonfire was experiencing crush loads during peak hours in the fall of 2019, because it is the primary route connecting the northeast side of campus (Ross Street) with the southwest side of campus (Lot 100). This route is the primary candidate to receive additional service and capacity with operation of one or two additional vehicles during peak times.
- Route 04 Gig 'Em is a short route providing service between new student housing developments along Hensel Drive and the northeast side of campus. The proposal is to extend this route, which has available capacity, and overlap the Route 01 service to provide cross-campus connections to Hensel Drive and increase service capacity along Route 01's alignment. At least one additional bus will be needed to extend the route while maintaining its current frequency.
- Route 05 Bush School is the primary route connecting Research Park with east campus at MSC, and the primary route providing access to the Fan Field parking area. Operating one additional vehicle on this route during peak times would reduce wait times to no more than six minutes and make the use of Fan Field more accessible. Additionally, Fan Field and Research Park could be connected to east campus with two east-west bike routes and facilities:
    1. An extension of the White Creek Greenway via Enterprise Avenue, that will provide it with access to the West Quad and continuity across Olsen Boulevard to MSC.
    2. A two-way cycle track on the south side of John Kimbrough Boulevard that will connect it with Pickard Pass, Joe Routt Boulevard, and Gene Stallings Boulevard for continuation to the campus historic core and northeast side.

These changes will add three to four buses to the Aggie Spirit daily service operation (considering that a potential additional demand of around 750 riders will be spread over a morning peak period of four hours, and that the peak hour of the morning will require an additional capacity of approximately 250 seats/hour).

At the current cost-per-hour of service, adding three to four buses to the daily operation, during the academic year, will add roughly $500,000 to $600,000 in the yearly cost of operation of the Aggie Spirit service. This investment in transit service will allow more effective use of existing parking inventory, reducing and/or delaying the necessity to construct additional parking as inventory is lost in and around the historic core.

Off-Campus Transit Service Enhancement

A major strategy to reduce drive-alone travel to campus is to enhance off-campus bus service. The Aggie Spirit bus service is extensive and achieves high performance, but like any good transit system in the country, it is continuously adapting to changing conditions on and off campus. Walker recommends pursuing the following initiatives to address overcrowding issues on existing routes and attracting a larger group of users.

Service Increase

An analysis of home addresses suggests that there is significant potential to encourage more students, faculty, and staff to take transit to campus. Walker recommends the following initiatives to bring more riders onto the service and reduce drive-alone ratios to campus:

- The Aggie Spirit provides good service and coverage of residential areas that are within 3 miles of campus. Some service routes are very successful and experience overcrowding. These include Routes 15 Old Army, 31 E-Walk, 35 Hullaballoo, and 36 Cotton Bowl. These routes need additional capacity to relieve crush loads and keep providing reliable and attractive service.
- There is a large group of faculty, staff, and students that live more than 3 miles away from campus, with a particular concentration south of campus in the City of College Station. Three routes – 31 E-Walk, 34 Fish Camp, and 40 Century Tree – could be extended to provide service to residential areas south of Rock Prairie Road.
- Texas A&M could test service in these areas, with the intent of developing the market for transit, with two pilots:
    1. A fixed-route providing frequent service – every 10 minutes or better, during rush hours.
    2. A microtransit service that provides flexible on-demand service during off-peak hours, provided through a smartphone app.
- Develop a specific transit plan for the Aggie Spirit service. Walker recommends conducting a comprehensive operations analysis of the Aggie Spirit service to look into specific operational and performance issues, and plan the service adjustments that are needed for the future.

Vehicles and Stops

Vehicles and stops are important elements of any transit service as they provide the physical infrastructure of the operation. They also provide clues to users about the presence of service and the type of service.

Walker recommends the following initiatives:

- Continue implementation of Battery Electric Buses (BEBs). BEBs have many benefits including reduced noise and fewer oil and fuel leaks on pavement. They have also demonstrated to have good performance in hot weather conditions.
- Continue conversion to low floor vehicles—and wide doors. Low-floor buses are very effective at carrying large numbers of passengers and are efficient at loading and unloading at stops, which improves operational performance.
- Partner with Brazos Transit District and the City of College Station for capital grants to improve stops. Great attention should be paid to ensuring comfortable and accessible bus stops to increase transit use and mode share. This includes improvements to pedestrian-crossings and to the design of intersections, as well as accessible routes to bus stops from residential neighborhoods.

User Information

Another important aspect is the communications and information that are provided to prospective users and existing users. Texas A&M has an excellent application that tracks buses' locations in real time. However, there are very good applications in the market as well that provide the same capabilities and more, such as trip planning. Walker recommends the University pursue the following initiatives:

- Publish the GTFS data and make it available to developers. There are multiple platforms available to riders that could use this data, such as Google Maps, the Transit App, and Movit.
- Let users access the platform of their choice. Many users coming from other parts of the state, other states, and other countries, are familiar with these tools. Allowing the information to be available in a familiar application will make the service accessible to a wider range of potential users.

Carpooling & Vanpooling Strategy

Carpooling and ridesharing are also very effective strategies to reduce the drive-alone mode share. Texas A&M Transportation Services promotes ridesharing (https://transport.tamu.edu/Alternative/rideshare.aspx) through a portal that has been very effective at matching users and forming carpools and vanpools. The 2019 commuter survey shows that 7% of general staff and 9% of faculty/research staff shared the ride for the commute trip to campus. This is a great achievement. Walker recommends continuing and redoubling efforts on this strategy. Some initiatives that the University could pursue include:

- Test a third-party application and software platform, such as Waze Carpool, Scoop, or Ride Amigos. They have extensive experience implementing carpooling programs and also critical mass to promote, market, and incentivize participation in carpooling. They can be an effective tool to move the program over a 10% mode share participation target.

- Add or increase gamification of the carpooling program through ongoing tracking, accrual of points, rewards, and incentives. Gamification can be effectively managed and introduced through third-party applications.

- Implement a Guaranteed Ride Home (GRH) program for carpool and vanpool users. GRH programs are very effective at overcoming the fear of not being able to get back home during an emergency. They can be easily integrated and administered with third-party ridesharing platforms.

- Vanpools are an effective strategy for commuters that live 25 miles and more from campus. New software platforms have come to market that make tracking, reporting, and sharing of seats more user-friendly and flexible, such as MagicBus.

Curb Management Policy

Management of Pick-up and Drop-off Locations

During our visit to campus, we observed pickup and drop-off activity at multiple locations. The main areas included Joe Routt Boulevard in front of Rudder Tower, the Trigon loop, the southbound curb lane of Bizzell Street, Lot 47/51 on Polo Road, the loading dock entrance between the Polo Road and Emerging Technologies Buildings, and Lot 72a on West Campus.

All these areas are close to main-campus destinations and are readily accessible to vehicular traffic. On one hand, they need to be recognized as providing a critical function in a campus community of 100,000 people; on the other hand, they need to be managed and controlled to minimize operational impact to pedestrian and bicycle traffic and transit services.

Drop-off activity at Trigon conflicts with bus and bike traffic

The image above, at Trigon, provides an example of a one-off but potentially impactful activity that needs control. The images below, at Rudder Tower, provide an example of a best practice that recognizes and accommodates a need for access to multifunctional buildings.

The images below, in contrast, provides an example of a recurrent activity that is generating conflict with the operation of the bicycle lane, bus stop, and general south-bound traffic.

Figure 143: Vehicle Drop-Off Area on Joe Routt Boulevard at Rudder Tower

Smart Mobility Vision

Adopt a Smart Mobility Campus Vision

The main curb-management recommendation is to adopt a smart mobility campus vision or framework to manage and control curb access on campus. This framework will provide Texas A&M with a set of goals, policies, and facility design recommendations to support dynamic use of the curb and multimodal transportation access.

The smart mobility campus vision includes at least the following components:

- Designated vehicle pickup and drop-off locations at key access points on campus for the campus community and Transportation Network Companies (TNCs or ride-hailing services)
- Dynamic management of designated curb areas through geofencing agreements with TNC companies, video monitoring and analytics, automated enforcement, and data reporting
- Co-location of campus micro-mobility hubs to integrate shared micro-mobility vehicles (e-bikes and e-scooters) with pickup and drop-off access points and transit hubs, to facilitate first/last mile travel throughout campus
- Dedicated bicycle and scooter parking areas at major buildings and quads of campus (an existing good practice at Texas A&M University)
- A complete and continuous network of protected bicycle paths throughout campus to provide access among campus areas, buildings, and parking areas—a major recommendation of this plan

UCLA Mobility Hub, example of a good practice

TDM Support Services

Texas A&M Transportation Services offers a comprehensive set of infrastructure, transit services, and mobility programs (such as VeoRide) to reduce campus commute and daily circulation of single-occupant vehicles. In doing so, the University has implemented a number of policies and supporting programs to manage parking and offer transportation options to the campus community.

Still, there are several initiatives that could be pursued to continue improvement of mobility services and options and to encourage more members of the community to travel by alternative modes. Walker recommends Transportation Services pursue the following:

- Leverage incentive-based policies to support and encourage non-single-occupant vehicle commuting. This mainly includes pricing adjustments based on demand, and daily parking pricing for high-demand locations and facilities.
- Pricing must be complemented with good transportation options, practical information, and promotional strategies to attract drive-alone commuters, especially faculty and staff.
- Results of the 2019 commuter survey indicate that many members of the campus community lack familiarity with Transportation Services' offerings, such as the bike lease program, ride-matching platform, and carsharing service (Zipcar).
- The unfamiliarity with programs and services highlights the importance of marketing and communications. Transportation Services needs to promote its offerings relentlessly, through multiple channels, similar to what a private brand would do. Constant promotion to stay top of mind and build a recognizable brand. A continued and enhanced social media strategy would be a key ingredient of this initiative.
- Additionally, the University can increase the promotion of its programs and services through regular events, including transportation fairs and participation in larger campaigns such as Bike-to-Work Day and Month, Earth Day, etc.
- Other supporting efforts include personalized travel planning and motivational interviews to offer customized travel options and encouragement to change behaviors. Examples of success around the country have used motivational interviews, journey mapping, and buddy systems to get people to try new options and adopt new behaviors.
- Still a major obstacle is to maintain new behaviors once adopted. Introducing gamification is a good strategy to incentivize people to try and maintain behaviors over time. There are several third-party platforms that provide the ability to incentivize commuters through various rewards for achieving specific goals.
- Most importantly, commuting and gamification platforms allow comprehensive administration and management of commute and mobility programs with tools and solutions to track, monitor, and report participation and use of services and programs.
- Each of the initiatives recommended herein require dedicated staff time and organizational capacity to manage the TDM program. That is, perhaps, the most important recommendation: maintain at least one full-time position to coordinate and oversee the TDM program.

- Finally, a guaranteed ride home (GRH) program may be the most important support service to offer. The importance of a GRH program is its existence. It is a "safety net" of last resort. There is generally a fear that GRH programs will be costly and abused. The collective experience is exactly the opposite. For instance, the University of Colorado Boulder introduced GRH and the amount of money that was budgeted to pay for rides in the first year of the program was not depleted for over ten years. The reason for its low use is that even those people who are eligible, and whose circumstances dictate a need for a GRH, will seek out other means of obtaining a ride before calling for this service.
- Guaranteed rides home can be provided or augmented by campus staff using University vehicles, with taxicabs, by employing a ride-hailing service (e.g., Uber or Lyft), or by taking advantage of carsharing vehicles. They provide commuters with the peace of mind and certainty that they will be able to get back home in an emergency. GRH are very cost effective in that they are cheap to operate while providing the immense benefit of overcoming one of the biggest barriers drive-alone commuters when considering an alternative option.

Parking

Texas A&M University continues to develop and grow. This means an increasing density of building in the historic core, the removal of some centralized surface parking infrastructure, and an ongoing increase in campus population. If the Campus Master Plan takes shape as intended and if aggressive enrollment growth targets are met (and given the trends from the past couple of decades, there is no reason to expect they wouldn't be), the campus is anticipated to experience significant parking pressures, as soon as within the next ten years.

Because this is a gradual process, however, the University has adequate time to prepare to address these challenges with both demand- and supply-side mitigations.

Based on projections, initially, the campus has excess parking capacity and can reallocate demand from the historic core to currently underutilized parking lots, such as those on West Campus. This will require additional shuttle resources as described in the Transportation Demand Management section, above.

The matrix, illustrated in Figure 145 as well as in the Phase 2 section of this report, describes potential frameworks that could be pursued to address these anticipated changes. Walker, through discussions with the University, is recommending a balanced approach (illustrated in the rightmost column of the matrix).

Parking Reallocation Strategy

The current parking program designates permit types as follows:

Figure 144: Permit Type Information

Permit Abbreviations	Permit Details
CCG	Central Campus Garage
CMP	Campus Permit
SBG	Gene Stallings Boulevard Garage
MC-2ND	Motorcycle in addition to vehicle permit
MOTOR	Motorcycle
NHT	Night
NSG	Northside Garage
NSPR	Northside Garage Priority Bay
NSR	Northside Garage Reserved
PRG	Polo Road Garage
RET	Retiree
SER	Service
SSG	Southside Garage
UCG	University Center Garage
UCPR	University Center Garage Priority Bay
UCR	University Center Garage Reserved
UCX	University Center Garage (Undergrads Only)
VN	Vendor
WCG	West Campus Garage
WCR	West Campus Garage Resident Student

Within each of these permit types, users are assigned a specific facility, based on their eligibility. There are strict policies clearly outlined in detail on the Texas A&M Transportation Services' website. Depending on the type of campus user, access to certain facilities is limited. The users are categorized in four (4) groupings including: on-campus resident students, off-campus students (i.e., commuters), university or state/agency employees, and vendor, contractor, or service providers.

Walker appreciates this organizational prioritization of permit allocation. The allocation of users on a facility-by-facility basis means that each lot and garage may be managed on a more granular basis. This is a practice that Walker recommends Transportation Services continue with moving forward.

With the current parking demand patterns, anticipated population growth, and development infill in the northern and eastern portions of campus, it is vital that users are more heavily allocated to the southern and western half of campus—these are more remote parking locations that should functionally operate somewhere between a park-and-ride (which are generally in off-site locations that mitigate parking and traffic demand) and an on-site, but walkable, lower demand parking location within campus.

In Phase 1, Walker indicates the facilities where the average parking occupancy is low; these are reiterated in Figure 145.

Figure 145: Framework Matrix

Mode & Strategy	More Parking	Less Parking – More Mobility	Recommended Framework: Balanced Parking and Mobility
Parking	• 10,500 net new spaces (would build 15,700 spaces to replace parking losses). • Maintains 69% occupancy ratio, as current. • Accommodates growth by continuing existing parking ratio per person (0.43 spaces/person). • New parking garages in West Campus, Research Park, University & Agronomy, Athletic & Recreation, Southside, and Northside districts.	• No net new spaces (would build up to 900 spaces to replace parking losses). • Increases parking occupancy to 90%. • This would require aggressive implementation of Automated Parking Guidance Systems, to guide users to available capacity throughout campus. • Intends to reduce the parking ratio per person to about 0.30 spaces per person. • New parking in the Northside district to replace Lot 30.	• 2,800 net new spaces (would build 6,000 spaces to replace parking losses). • Increases parking occupancy to 80%. • Continues progressive reduction in parking ratio per person (in effect since 2008). • New parking garages in West Campus, Northside, and Southside districts.
Transit	• 15% increase in service hours. • Increase frequency and seat capacity per hour on internal routes (to reduce overcrowding and pass-ups). • Serve outlying parking garages on West Campus, Research Park and Athletic & Recreation districts. • New transit hub on West Campus. • Circulation and distribution around Historic Core district to connect with parking resources in West Campus, Athletic & Recreation, and Research Park districts.	• 50% increase in service. • New commuter service routes to/from College Station and Bryan. • New transit hub on Northside district. • Eliminate circulation and distribution around Historic Core and rely on network of protected ped/bike facilities to access transit hubs. • Concentrate transit access on three hubs – north, south, and west of historic district.	• 30% increase in service. • Increase frequency and seat capacity per hour on internal routes. • Circulation and distribution on the periphery of East Campus. • New commuter service routes to/from College Station. • New transit hub on Northside district. • Connect with new parking resources in West Campus and Southside districts. • Concentrate transit access on three hubs – north, south, and west of Historic Core district.

			Recommended Framework
Urban Design & Mobility	• 10 miles of protected facilities on campus. • Design a shared transit/bike corridor along John Kimbrough to connect Research Park, West Campus, and East Campus. • Build north-south protected bike facilities on Olsen, College Main, Houston, and New Main to connect campus with the community. • Facilitate commuting by bike and electric mobility vehicles.	• 10 miles of protected facilities on campus. • 30 miles of protected facilities off campus*. • Rely on protected ped, bike and electric mobility facilities to connect West and East Campus across John Kimbrough and Old Main. • Build north-south protected bike corridors on Agronomy/Olsen, College Main/Houston, and College/Bizzell to connect campus with the community. • Provide bike parking and changing rooms infrastructure to facilitate alternative commute modes.	• 10 miles of protected facilities on campus. • 15 miles of protected facilities off campus*. • Emphasize bike and electric mobility along John Kimbrough to connect West and East Campus. • Design a shared bike/ped corridor along Old Main and New Main to facilitate east-west travel across campus and to/from the community. • Build a north-south bike corridor on College Main/Houston.
Transportation Demand Management	• Launch branded University TDM program. • Active promotion of alternative transportation and commuting modes, and personalized commute plans. • Rely on marketing and communication of options through social media channels and digital hub or dedicated website. • Encourage voluntarily use of non-single occupant vehicle (SOV) modes for commuting and campus circulation.	• 10% increase in non-SOV mode share by 2031. • Implement all strategies listed in “More Parking” and “Balance Parking and Mobility.” • Deliberate and proactive commute management with dedicated TDM manager and commute management staff. • Move to daily choice parking/mobility options with financial rewards for those that choose to forego purchasing a long-term permit.	• 5% increase in non-SOV mode share by 2031. • All strategies listed in “More Parking”. • Increase price of long-term parking permits to distribute demand. • Launch incentive program for those that opt out of parking permits. • Introduce pay-as-you-go only parking facilities in the campus core. • Launch mobility concierge and Guaranteed Ride Home.
Additional Cost (10-Year Projection)	• $370 million in capital** • $17 million in operations (transit only) • $387 million total	• $145-168 million in capital** • $56 million in operations (transit only) • $201-224 million total	• $222 million in capital** • $34 million in operations (transit only) • $256 million total

* Assumes matching funds form state or local jurisdictions to develop ped/bike infrastructure projects.
** Include capital costs of building new parking garages, new transit depot to accommodate fleet, battery-electric buses for all new vehicles, and improved transit hub facilities.

Figure 146: Low Demand Parking Facilities

Parking Facility	Inventory	Occupancy Percentage	Occupied Spaces	Available Spaces	Geographic Quadrant
1	381	33%	126	255	East
33	7	10%	1	6	West
44	22	20%	4	18	West
49	178	40%	71	107	West
58	310	1%	3	307	South
63	177	30%	53	124	South
81	21	25%	5	16	West
86	9	15%	1	8	South
87	53	40%	21	32	West
90	55	20%	11	44	East
92	9	20%	2	7	West
94	12	30%	4	8	West
95A	84	30%	25	59	South
100D	317	35%	111	206	South
100M	218	30%	65	153	South
102	82	35%	29	53	South
112	40	30%	12	28	South
113	432	30%	130	302	South
118	267	30%	80	187	South
125	23	30%	7	16	West
126	351	20%	70	281	West
127	9	30%	3	6	West
128	11	40%	4	7	West
129	45	40%	18	27	West
FAN FIELD	2,300	4%	81	2,220	South
Total	**5,413**		**937**	**4,476**	

The vast majority of the excess/available parking supply is located in the south and west quadrants. These parking locations, which include Lots 49, 58, 63, 100, 113, 118, 126, and Fan Field, are not walkable for most users. As such, if parking is reallocated into the southern and western portions of campus as parking in the core of campus is displaced, it is important that transit services (including number of buses, routes, headways, and overall capacity) be bolstered to and from these areas.

The transit supporting this parking reallocation strategy is addressed in the paragraphs below. Walker anticipates, with an appropriate reallocation of permits to these parking facilities, the demand for transit could increase by approximately 750 users during the a.m. peak (from 900 displaced parking spaces in and around the historic core).

Balancing Parking and TDM

Our work with Texas A&M Transportation Services and our interactions with stakeholders—informed by our work on other campuses—suggests that an approach that balances the addition of parking and the enhancements to options to commuting by single-occupancy vehicle. The campus and its stakeholders were nearly unanimous in suggesting that this balanced approach respects the current campus culture, but also can begin shifting that culture over time.

The extremes of addressing future challenges by solely focusing on new and replacement spaces to maintain current parking ratios on one hand—or trying to address all incremental demand with alternative transportation programs are each impractical. Current projections of parking losses and population gains would yield a mid-term need for nearly 16,000 parking spaces—which would maintain the current typical peak parking occupancy at about 69%, with approximately 0.43 spaces per campus community member. The consequences are extraordinary expense and debt service obligations, increased traffic congestion, reduced pedestrian and cyclist safety, and significant land-use demands for parking. Transit service and pedestrian and

cyclist infrastructure would still need to be improved for the increasing population. The total cost (in 2021 dollars) is projected at nearly $400 million, including $370 million in capital funds.

On the other hand, an all TDM solution that replaces only 900 parking spaces would focus on transit, cycling, and pedestrian infrastructure representing about $225 million ($170 million in capital funding). The consequences of this approach include a very crowded remaining parking system at about 90% occupancy (a drop to 0.30 parking spaces per campus community member), a 50% increase in transit service (including new commuter service from College Station and Bryan), and significantly investment in off-campus cycling facilities. This approach would require a significant culture shift around driving, cycling, and walking. It would also be necessary to invest in a sophisticated campus-wide automated parking guidance system to help users navigate to the last available spaces.

The recommended approach honors the growth projections and the fact that campus culture will shift only gradually. Our recommended approach includes the judicious addition of parking infrastructure (a total of approximately 6,000 parking spaces over the next 10 to 20 years, representing 2,800 net new spaces). This increases the typical peak occupancy from 69% to 80% and continues a progressive reduction in parking ratio per person (a trend which started in 2008). The balanced approach also adds pedestrian and cyclist infrastructure, as well as more transit service. Total expenditures are projected at about $250 million, about $225 million of which is capita funding.

The Path Forward

In short, Walker's recommendations around parking recognize that some parking will need to be replaced on and adjacent to the historic core (e.g., in the areas of Lots 30 and 40); some parking will need to be reallocated to areas of lower demand (shifting some people's privileges from the historic core to West Campus); and, some demand will need to be mitigated (see TDM section of these recommendations).

The implementation plan, which follows, sets a timetable and priorities for these changes, addressing immediate needs for parking and establishing programs, services, infrastructure, and communications strategies to affect the culture change that will be necessary as the campus can no longer accommodate the same degree of parking adjacent to the biggest drivers of demand. In this way, mobility, transportation, and parking can continue to support and enable the meteoric growth of Texas A&M University, rather than being a limiting factor.

Implementation Plan

Phase 3 of this report showcases recommendations provided by Walker. The Texas A&M team reviewed the draft report and vetted Walker's recommendations. The University requested various changes and clarifications that Walker has included in this final report, and have been integrated into the Implementation Plan, which follows. As the University looks to actualize the plan, it should consider the following questions:

- Which aspects of the frameworks align with other University goals and objectives?
- Which modes are to be prioritized and where?
- What recommendations are the most practical and which are financially unreasonable?
- How can Texas A&M University best assist the most vulnerable populations, most frequent users, and/or largest share of the campus population?
- How are habits changed to modes that are most desired by the University?

Implementation Plan

INTRODUCTION

The following section details the priority, timing, impact, and opinion of probable cost for the implementation of various transportation demand management (TDM) strategies and improvements to transportation options on campus. The primary purpose is to strengthen Texas A&M's TDM programming in order to accommodate future demand on campus as the University grows, while minimizing the amount of new parking needed. As part of the implementation details, Walker describes the potential costs associated with providing mobility options and access to the institution. Ancillary intentions of this plan extend beyond addressing immediate parking needs and allow for the University to meet campus sustainability, safety, and congestion goals.

The implementation plan consists of 77 potential investments in pedestrian, cyclist, traffic, and TDM improvements. Each is assigned an opinion of probable cost—along with a timeframe and a recommended priority.

IMPLEMENTATION FRAMEWORK

This exercise illustrates potential investments of approximately $24 million over 10 years that could offset the need for over 5,500 parking spaces (which could otherwise cost around $200 million to construct).

What follows is a series of tables—based on a multidimensional matrix—with goals and weighted action plans for each mode share and support service. The mode choices analyzed to reduce single-occupancy vehicles include transit, carpooling and vanpooling, biking, and walking. There are also congestion mitigation recommendations that are not intended specifically to offset any parking demand—but can make things safer and more pleasant for those using other non-motorized modes. The implementation items listed in this section are detailed within the "Recommendations" section of the accompanying Transportation Mobility Master Plan. TDM support services are included as these services, when marketed aggressively, can be excellent tools in moving the needle away from SOVs on campus.

Potential costs and impacts by project type

Overall, if taken in aggregate, these infrastructure and programmatic projects have the potential to offset the parking demand generated by up to 4,400 commuters. If—as the University populations continues to grow—parking was to be constructed to accommodate this level of additional demand, the number of spaces needed would likely be greater than 4,400 (since parking occupancy is targeted at 80-85% occupancy).

The table below illustrates potential 10-year investments in transit, pedestrian, biking, traffic, carpool/vanpool, and TDM support services. Each is accompanied by an associated increase in daily users, and the number of parking spaces that could be offset—along with a calculation of the approximate cost per user per year, over the ten-year planning horizon. These costs range from $500 to $1,000 per year; though it is worth noting that some of the capital improvements will have a service life well beyond the planning period. By comparison, a structured parking space can cost between $3,000 and $3,500 per year per space to provide (including debt service, operations, and maintenance). While the pedestrian improvements are the most expensive on a per capita basis, they have the potential to serve many more people than the "average daily users," as everyone (at some point in their commute) is a pedestrian.

Figure 147: Potential costs and impacts by project type

Projected Costs and Impact by Type	Total Cost	Max. Daily Users	Max. Spaces Saved	Avg. Daily Users	Costs/User/Year
1. Transit Service	$9,329,000	1,670	2,090	1,414	$660
2. Walking Improvements	$3,410,000	350	440	320	$1,070
3. Biking Improvements	$1,725,000	300	380	280	$620
4. Vehicle Traffic	$590,000	-	-	-	-
5. Carpool & Vanpooling	$688,000	130	160	125	$550
6. TDM Support	$8,618,000	1,950	2,440	1,338	$640
Grand Total	**$24,360,000**	**4,400**	**5,510**	**3,476**	**$700**

Costs by timeframe and funding type

While most of the recommendations are programmatic and operational (approximately $18M), and represent on-going costs beyond the planning period, other aspects of the implementation plan (approximately $6M) represent one-time capital improvements. This breakdown is shown below, including by timeframe. Short-, medium-, and long-term represent years one through three, four through six, and seven through ten, respectively.

Figure 148: Potential costs by timeframe and funding type

Funding Type	Short-Term Subtotal	Mid-Term Subtotal	Long-Term Subtotal	Total Costs
Capital	$2,995,000	$1,780,000	$1,200,000	$5,975,000
Operations	$1,898,000	$5,183,000	$11,304,000	$18,385,000
Grand Total	**$4,893,000**	**$6,963,000**	**$12,504,000**	**$24,360,000**

Potential costs by project type and timeframe

In the table below, the suggested improvements are broken down by service-type and timing over a period of ten years. The changes start more modestly in the short-term and allow the University to be flexible and course-correct in the mid- to long-term, as growth patterns continue to emerge and as certain recommended programs and services have more or less success than is hypothesized in this implementation plan.

Figure 149: Potential costs by project type and timeframe

Projected Costs by Type and Timing	Short-Term Subtotal	Mid-Term Subtotal	Long-Term Subtotal	Total Costs
1. Transit Service	$1,141,000	$2,977,000	$5,211,000	$9,329,000
2. Walking Improvements	$1,910,000	$660,000	$840,000	$3,410,000
3. Biking Improvements	$545,000	$820,000	$360,000	$1,725,000
4. Vehicle Traffic	$290,000	$300,000	$0	$590,000
5. Carpool & Vanpooling	$185,000	$203,000	$300,000	$688,000
6. TDM Support	$821,000	$2,003,000	$5,793,000	$8,618,000
Grand Total	**$4,892,000**	**$6,963,000**	**$12,504,000**	**$24,360,000**

Potential costs by priority and timeframe

In addition to timeframe (short-, mid-, and long-term), Walker has assigned each mitigation a priority to help Texas A&M Transportation Services target and time its investments. About three-quarters of the investments (approximately $17M) are classified as high-priority ramping up from $1.6M in the short-term to $4.7M and $10.6M in the mid- and long-term, respectively. The medium- and low-priority items also represent smaller investments and diminish over time.

Figure 150: Potential costs by priority and timeframe

Priority \ Timeframe	Short-term	Mid-term	Long-term	TOTAL
High	$1,565,000	$4,710,000	$10,605,000	**$16,880,000**
Medium	$2,099,000	$1,796,000	$1,360,000	**$5,255,000**
Low	$1,230,000	$460,000	$540,000	**$2,230,000**
TOTAL	**$4,894,000**	**$6,966,000**	**$12,505,000**	**$24,365,000**

Thousands $ | 3.0% inflation rate | 80% occupancy rate

					Capital and Operations Costs Estimate													Average Daily Users Estimate											Saved Parking Spaces Estimate			
Item	Project Category	Cost Type	Priority	Project Description	Costs FY 2023	Costs FY 2024	Costs FY 2025	Costs FY 2026	Costs FY 2027	Costs FY 2028	Costs FY 2029	Costs FY 2030	Costs FY 2031	Costs FY 2032	Short-Term Subtotal	Mid-Term Subtotal	Long-Term Subtotal	Total Costs	Daily Users FY 2023	Daily Users FY 2024	Daily Users FY 2025	Daily Users FY 2026	Daily Users FY 2027	Daily Users FY 2028	Daily Users FY 2029	Daily Users FY 2030	Daily Users FY 2031	Daily Users FY 2032	Short-Term Average	Mid-Term Average	Long-Term Average	Max. Daily Users	Short-Term Average	Mid-Term Average	Long-Term Average	Max. Spaces Saved
1	Transit Service	Capital	High	Ross Street bus hub implementation	-	$100	-	-	-	-	-	-	-	-	$100	-	-	$100			50	60	60	60	70	70	70	70	50	60	70	70	63	75	88	88
2	Transit Service	Capital	Low	Asbury Street lane restriping and reverse operation	$20	-	-	-	-	-	-	-	-	-	$20	-	-	$20						-	-	-	-	0	-	-	-	-	-	-	-	-
3	Transit Service	Capital	Medium	Asbury Street bus lane addition	$20	-	-	-	-	-	-	-	-	-	$20	-	-	$20	25	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
4	Transit Service	Capital	Low	Asbury Street parking changes and restriping	$20	-	-	-	-	-	-	-	-	-	$20	-	-	$20						-	-	-	-	0	-	-	-	-	-	-	-	-
5	Transit Service	Capital	Low	Ireland Street lane restriping and reverse operation	-	-	$30	-	-	-	-	-	-	-	$30	-	-	$30						-	-	-	-	0	-	-	-	-	-	-	-	-
6	Transit Service	Capital	Medium	Ireland Street bus lane addition	-	-	$20	-	-	-	-	-	-	-	$20	-	-	$20			25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
7	Transit Service	Capital	Low	Ireland Street bike lane addition	-	-	$20	-	-	-	-	-	-	-	$20	-	-	$20						-	-	-	-	0	-	-	-	-	-	-	-	-
8	Transit Service	Capital	Low	New Street lane restriping; two-way bikes; one-way vehicle traffic	-	$20	-	-	-	-	-	-	-	-	$20	-	-	$20						-	-	-	-	0	-	-	-	-	-	-	-	-
9	Transit Service	Operations	High	Add 1 all-day vehicle to Routes 01, 04 and 05 (3 vehicles total)	-	$315	$324	$334	$344	$355	$365	$376	$387	$399	$639	$1,033	$1,528	$3,200		450	475	500	525	550	575	600	625	650	463	525	613	650	578	656	766	813
10	Transit Service	Operations	High	Add 1 peak-hour vehicle to Routes 15, 31, 35 and 36 (4 vehicles total)	-	-	$252	$260	$267	$275	$284	$292	$301	$310	$252	$802	$1,187	$2,241			400	425	450	475	500	525	550	575	400	450	538	575	500	563	672	719
11	Transit Service	Operations	High	Start microtransit service from south of Rock Prairie (3 vehicles)	-	-	-	-	$563	$579	$597	$615	$633	$652	-	$1,142	$2,497	$3,638					200	225	250	275	300	325	-	213	288	325	-	266	359	406
12	Walking	Capital	Medium	Add direct path between Military Walk and Rudder Plaza	-	$150	-	-	-	-	-	-	-	-	$150	-	-	$150		25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
13	Walking	Capital	Medium	Redesign entrance to Rudder Plaza	-	$150	-	-	-	-	-	-	-	-	$150	-	-	$150		25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
14	Walking	Capital	Medium	Change pavement pattern/texture around Trigon-MSC bike path	-	$150	-	-	-	-	-	-	-	-	$150	-	-	$150		25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
15	Walking	Capital	Medium	Raise Lot 19 pavement - covnert to curbless plaza/shared environment	-	-	$300	-	-	-	-	-	-	-	$300	-	-	$300			25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
16	Walking	Capital	Medium	Add trees and delineate bike route through Lot 19	-	-	$80	-	-	-	-	-	-	-	$80	-	-	$80			25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
17	Walking	Capital	Medium	Add double-arm gate and bollards to control vehicle access	-	-	$200	-	-	-	-	-	-	-	$200	-	-	$200			25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
18	Walking	Capital	Low	Raise ped crossing on Ross at end of Military Walk "wheels route"	$50	-	-	-	-	-	-	-	-	-	$50	-	-	$50						-	-	-	-	0	-	-	-	-	-	-	-	-
19	Walking	Capital	Low	Relocate gates at Ross/Asbury and Ross/Ireland	-	-	$100	-	-	-	-	-	-	-	$100	-	-	$100						-	-	-	-	0	-	-	-	-	-	-	-	-
20	Walking	Capital	Medium	Extend pavement treatment of Ross from Ireland to Fish Pond	-	-	-	-	-	$350	-	-	-	-	-	$350	-	$350						25	25	25	25	25	-	25	25	25	-	31	31	31
21	Walking	Capital	Low	Tactical urbanism of Ross Street between Ireland and Spence	$80	-	-	-	-	-	-	-	-	-	$80	-	-	$80						-	-	-	-	0	-	-	-	-	-	-	-	-
22	Walking	Capital	Medium	Raise pavement of Spence Street- curbless street/shared environment	-	-	-	-	$250	-	-	-	-	-	-	$250	-	$250					25	25	25	25	25	25	-	25	25	25	-	31	31	31
23	Walking	Capital	Low	Add pavement markings and bollards to Spence	-	-	-	-	$60	-	-	-	-	-	-	$60	-	$60						-	-	-	-	0	-	-	-	-	-	-	-	-
24	Walking	Capital	Low	Add trees, benches and pavillion to screen Lot 23	-	-	-	-	-	-	-	-	$200	-	-	-	$200	$200						-	-	-	-	0	-	-	-	-	-	-	-	-
25	Walking	Capital	Medium	Landscaping of walkway between Evans Library and Anthropology	-	-	-	-	-	-	-	-	-	$300	-	-	$300	$300						-	-	-	-	25	-	-	25	25	-	-	31	31
26	Walking	Capital	Low	Add bench seating on downside of planting areas	-	-	-	-	-	-	-	-	-	$100	-	-	$100	$100						-	-	-	-	0	-	-	-	-	-	-	-	-
27	Walking	Capital	Medium	Raise crosswalk in front of PEAP building	-	$60	-	-	-	-	-	-	-	-	$60	-	-	$60		25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
28	Walking	Capital	Medium	Build sidewalk to connect Lot 100 with crossing at PEAP, and add trees	-	$150	-	-	-	-	-	-	-	-	$150	-	-	$150		25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
29	Walking	Capital	Medium	Add bus shelters and benches at PEAP	-	$100	-	-	-	-	-	-	-	-	$100	-	-	$100		25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
30	Walking	Capital	Low	Mid-block crossing on Olsen to connect Reed Arena and Recreation Ctr	-	-	-	-	-	-	-	$180	-	-	-	-	$180	$180						-	-	25	25	25	-	-	25	25	-	-	31	31
31	Walking	Capital	Low	Raise ped crossings across Lot 102	-	-	-	-	-	-	-	$60	-	-	-	-	$60	$60						-	-	-	-	0	-	-	-	-	-	-	-	-
32	Walking	Capital	Low	Reduce curve radius of corners at Bizzell & Polo. Add planters	$180	-	-	-	-	-	-	-	-	-	$180	-	-	$180						-	-	-	-	0	-	-	-	-	-	-	-	-
33	Walking	Capital	Medium	Extend medians to create ped refuges at Bizzell & Polo	$100	-	-	-	-	-	-	-	-	-	$100	-	-	$100	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
34	Walking	Capital	Low	Eliminate SB left turn lane of Bizell and increase width of median.	$60	-	-	-	-	-	-	-	-	-	$60	-	-	$60						-	-	-	-	0	-	-	-	-	-	-	-	-
35	Biking	Capital	Low	Demarcate bike lanes with green paint along both sides of Bizzell	-	-	-	$25	-	-	-	-	-	-	-	$25	-	$25						-	-	-	-	0	-	-	-	-	-	-	-	-
36	Biking	Capital	Low	Add plastic bollards to Bizell bike lanes for protection	-	-	-	$75	-	-	-	-	-	-	-	$75	-	$75						-	-	-	-	0	-	-	-	-	-	-	-	-
37	Biking	Capital	Low	Bike path connection between Trigon and MSC	-	$35	-	-	-	-	-	-	-	-	$35	-	-	$35						-	-	-	-	0	-	-	-	-	-	-	-	-
38	Biking	Capital	Low	Implement bike path between Lots 10 and 19	-	$50	-	-	-	-	-	-	-	-	$50	-	-	$50						-	-	-	-	0	-	-	-	-	-	-	-	-
39	Biking	Capital	Low	Continue Old Main bike lanes across Olsen	$20	-	-	-	-	-	-	-	-	-	$20	-	-	$20						-	-	-	-	0	-	-	-	-	-	-	-	-
40	Biking	Capital	Low	Move pedestrian crosswalks to separate ped & bike crossings	$30	-	-	-	-	-	-	-	-	-	$30	-	-	$30						-	-	-	-	0	-	-	-	-	-	-	-	-
41	Biking	Capital	Medium	Bike path to connect West Campus quad with White Creek CC	-	-	$50	-	-	-	-	-	-	-	$50	-	-	$50			25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
42	Biking	Capital	Medium	Two-way bike path on north side of Enterprise Ave	-	-	$30	-	-	-	-	-	-	-	$30	-	-	$30			25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
43	Biking	Capital	Medium	Ped/bike path connection across Lot 122b	-	-	$30	-	-	-	-	-	-	-	$30	-	-	$30			25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
44	Biking	Capital	Medium	Two-way bike path on west side of Penberthy Blvd	-	-	-	$120	-	-	-	-	-	-	-	$120	-	$120				25	25	25	25	25	25	25	-	25	25	25	-	31	31	31
45	Biking	Capital	Medium	Two-way bike path on south side of John Kimbrough Blvd	-	-	-	$200	-	-	-	-	-	-	-	$200	-	$200				25	25	25	25	25	25	25	-	25	25	25	-	31	31	31
46	Biking	Capital	Medium	Connect Kimbrough and Enterprise bike paths in Research Park	-	-	-	-	-	-	-	-	$140	-	-	-	$140	$140								25	25	25	-	-	25	25	-	-	31	31
47	Biking	Capital	Medium	Two-way bike path on west side of Olsen, from Stotzer to Kimbrough	-	-	-	-	$140	-	-	-	-	-	-	$140	-	$140					25	25	25	25	25	25	-	25	25	25	-	31	31	31
48	Biking	Capital	Medium	Two-way bike path on west side of Olsen, from Kimbrough to George Bush	-	-	-	-	-	$140	-	-	-	-	-	$140	-	$140						25	25	25	25	25	-	25	25	25	-	31	31	31
49	Biking	Capital	Medium	Two-way bike path on west side of Agronomy Road	-	-	-	-	-	-	-	-	-	$220	-	-	$220	$220						-	-	-	-	25	-	-	25	25	-	-	31	31
50	Biking	Capital	Low	Pickard Pass channelization at blind corner	$50	-	-	-	-	-	-	-	-	-	$50	-	-	$50						-	-	-	-	0	-	-	-	-	-	-	-	-
51	Biking	Capital	Low	Pickard Pass demarcation of bike routes at Kyle Field	$20	-	-	-	-	-	-	-	-	-	$20	-	-	$20						-	-	-	-	0	-	-	-	-	-	-	-	-
52	Biking	Capital	Medium	Two-way bike lane on east side of Gene Stallings	-	$50	-	-	-	-	-	-	-	-	$50	-	-	$50		25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
53	Biking	Capital	Low	Bike roundabout and changes to intersection of Stallings and Joe Routt	-	$40	-	-	-	-	-	-	-	-	$40	-	-	$40						-	-	-	-	0	-	-	-	-	-	-	-	-
54	Biking	Capital	Low	Convert painted medians to landscaped areas on Stallings at Lamar	-	-	$80	-	-	-	-	-	-	-	$80	-	-	$80						-	-	-	-	0	-	-	-	-	-	-	-	-
55	Biking	Capital	Low	Raise crosswalk at Stallings and Lamar, connect MSC and ILCB	-	-	$35	-	-	-	-	-	-	-	$35	-	-	$35						-	-	-	-	0	-	-	-	-	-	-	-	-
56	Biking	Capital	Medium	Connect two-way bike lane on Stallings with Lamar bike lanes	-	-	$25	-	-	-	-	-	-	-	$25	-	-	$25			25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
57	Biking	Capital	Medium	Build Dutch style intersection at Bizzell and Lamar/Lubbock	-	-	-	$120	-	-	-	-	-	-	-	$120	-	$120				25	25	25	25	25	25	25	-	25	25	25	-	31	31	31
58	Traffic	Capital	Low	Install diagonal traffic diverter at John Kimbrough and Olsen	-	$120	-	-	-	-	-	-	-	-	$120	-	-	$120						-	-	-	-	0	-	-	-	-	-	-	-	-
59	Traffic	Capital	Low	New exit from Stallings Garage to Wellborn via service road	-	-	-	$200	-	-	-	-	-	-	-	$200	-	$200						-	-	-	-	0	-	-	-	-	-	-	-	-
60	Traffic	Capital	Low	Relocation of entry and exit to/from Lot 47 and 51	$100	-	-	-	-	-	-	-	-	-	$100	-	-	$100						-	-	-	-	0	-	-	-	-	-	-	-	-
61	Traffic	Capital	Low	Raise crosswalk from Lot 51 to Polo Bldg; eliminate left turn lane	$70	-	-	-	-	-	-	-	-	-	$70	-	-	$70						-	-	-	-	0	-	-	-	-	-	-	-	-
62	Traffic	Capital	Low	Redesign southern entrance to Lot 47/51 to and from Bizzell	-	-	-	$100	-	-	-	-	-	-	-	$100	-	$100						-	-	-	-	0	-	-	-	-	-	-	-	-
63	Carpool/Vanpool	Operations	Medium	Test third party platform to promote and form carpools	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
64	Carpool/Vanpool	Operations	Medium	Add incentives and gamification compoenent to maintain carpools	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
65	Carpool/Vanpool	Operations	Medium	Support ridesharing with guaranteed ride home (expansion)	$20	$21	$21	$22	$23	$23	$24	$25	$25	$26	$62	$68	$100	$229	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
66	Carpool/Vanpool	Operations	Medium	Test third party platform to promote and form vanpools	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
67	Carpool/Vanpool	Operations	Medium	Add incentives and gamification compoenent to maintain vanpools	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
68	TDM Support	Operations	Medium	Conduct transportation fairs twice per year	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
69	TDM Support	Operations	Medium	Promote and participate in behavior change campaigns	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
70	TDM Support	Operations	Medium	Create on-boarding program, including personalized travel plans	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
71	TDM Support	Operations	High	Promote transportation options through social media; branding	-	$100	$103	$106	$109	$113	$116	$119	$123	$127	$203	$328	$485	$1,016		100	125	150	175	200	225	250	275	300	113	175	263	300	141	219	328	375
72	TDM Support	Operations	High	Use TDM admin platform to manage/promote TDM program offerings	-	-	-	-	-	$1,000	$1,030	$1,061	$1,093	$1,126	-	$1,000	$4,309	$5,309						400	600	800	1000	1,200	-	400	900	1,200	-	500	1,125	1,500
73	TDM Support	Operations	Medium	Publish Aggie Spirit GTFS data for use by app developers	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
74	TDM Support	Operations	Medium	Publish bikesharing and scooter sharing data on MDS	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
75	TDM Support	Operations	Medium	Promote and increase funding of GRH program	$20	$21	$21	$22	$23	$23	$24	$25	$25	$26	$62	$68	$100	$229	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
76	TDM Support	Operations	Medium	Add more carsharing vehicles on campus and in University Dr	$10	$10	$11	$11	$11	$12	$12	$12	$13	$13	$31	$34	$50	$115	25	25	25	25	25	25	25	25	25	25	25	25	25	31	31	31	31
77	TDM Support	Operations	High	Hire a TDM Manager	$120	$124	$127	$131	$135	$139	$143	$148	$152	$157	$371	$405	$599	$1,376	50	75	100	125	150	175	200	225	250	275	75	150	238	275	94	188	297	344
				TOTAL	**$1,080**	**$1,858**	**$1,955**	**$1,824**	**$2,026**	**$3,113**	**$2,702**	**$3,023**	**$3,206**	**$3,572**	**$4,893**	**$6,963**	**$12,504**	**$24,360**	**400**	**1,150**	**1,875**	**2,060**	**2,410**	**2,985**	**3,320**	**3,670**	**4,020**	**4,395**	**1,825**	**2,873**	**3,908**	**4,395**	**2,281**	**3,591**	**4,884**	**5,494**

IMPLEMENTATION PLAN NARRATIVE

Transit Service

Item	Transit Service Change Initiatives	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Ross Street Bus Hub			
1	Eliminate bus traffic on Ross Street between Ireland and Bizzell Streets by re-routing Routes 01 Bonfire and 04 Gig Em. Re-route of buses and addition of two bus shelters and signs on Ross Street. Create a bus hub on Ross Street between Asbury and Ireland Streets, similar to the bus hub at Trigon. Reversing operation of buses on Asbury and Ireland to loop in the counterclockwise direction. This will improve turning movements on Ross Street and place bus stops away from the Power Plant and closer to northside campus destinations.	High Priority		
	Asbury Street Bus Lane			
2	Reverse operation of Asbury Street from NB to SB traffic. Keep exit lanes from North Side garage between New Street and University Drive. Restriping of traffic lanes.	Low Priority		
3	Addition of bus-only lane (1,000 feet painted lane and stenciling) on west side of Asbury Street.	Medium Priority		
4	Change orientation of angle parking spaces (31 spaces) on west side of Asbury (to point south) to allow access from SB traffic lane next to bus lane (vehicles would cross bus lane to park).	Low Priority		
	Ireland Street Bus Lane			
5	Reverse operation of Ireland Street from SB to NB traffic. Keep vehicle access to North Side garage as contraflow lane between University Drive and New Street.	Low Priority		

Item	Transit Service Change Initiatives	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
6	Add NB bus lane to middle lane of Ireland Street (1,000 feet painted lane and stenciling).	Medium Priority		
7	Add NB bike lane to east side of street (1,000 feet painted lane and stenciling) to connect with bike lane across University Drive. No impacts to vehicle and motorcycle parking on east side of street.	Low Priority		
8	Make New Street one-way WB traffic for vehicles and two-way traffic for bicycles (500 feet restriping and stenciling).	Low Priority		
	Campus Transit Service Increases			
9a	Add 1 vehicle to Route 01 Bonfire to increase frequency and carrying capacity during peak times.	High Priority	High Priority	High Priority
9b	Add 1 vehicle to Route 04 Gig Em and extend the route to follow alignment of Route 01 to provide additional capacity on the corridor during peak times, and additional connections to northeast side of campus.	High Priority	High Priority	High Priority
9c	Add 1 vehicle to Route 05 Bush School to reduce waiting times at the Fan Field Lot and increase frequency of service between Research Park and MSC.	High Priority	High Priority	High Priority
	Off-Campus Transit Service Recommendations			
10	Add 1 vehicle to Routes 15 Old Army, 31 E-Walk, 35 Hullaballoo, and 36 Cotton Bowl, during the peak hour, to increase carrying capacity and reduce crash loads.	High Priority	High Priority	High Priority
11	Startup a microtransit service that provides flexible on-demand service to campus from neighborhoods south of Rock Prairie Road in the City of College Station. Try out the service with a minimum of 3 vehicles during peak hours and 2 vehicles at off peak hours.		High Priority	High Priority

Walking Recommendations

Item	Walking Improvement Initiatives	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Military Walk @ Rudder Plaza			
12	Add direct pedestrian path between Military Walk and Rudder Plaza—to separate pedestrian flows and eliminate conflict with bike flows connecting between Trigon and MSC. Direct diagonal walking path (150 feet) between Military Walk and Rudder Plaza.	Medium Priority		
13	Redesign entrance to Rudder Plaza—move stage to Rudder Fountain, and redesign landscaped areas.	Medium Priority		
14	Change pavement pattern bordering new bike path (connecting Trigon and MSC) at Rudder Plaza to provide visual and sensorial warning to cross bike lane. 12,500 sq. ft. of new pavement (175 x 75 feet).	Medium Priority		
	Lot 19 Pedestrian Plaza			
15	Raise Lot 19 and convert it into a curb less plaza—no reductions in parking, to provide seamless path for pedestrians between MSC/Trigon and Evans Library. 15,000 sq. ft. of new pavement.	Medium Priority		
16	Add trees (2) to screen parking lot and pavement markings (320 feet) to delineate bicycle path through lot—connecting Trigon with Ross Street and Sbisa Hall/Asbury Street.	Medium Priority		
17	Add a double-arm gate to control vehicle access and bollards (20) to delineate shared path—vehicles and bikes.	Medium Priority		
	Ross Street			
18	Raise pedestrian crossing (widen existing raised crossing) at Military Walk to provide a level crossing for both pedestrians and bicyclists. Most pedestrians are walking on the “wheels route” that has more shade. About 800 sq. ft. of new pavement.	Low Priority		

Item	Walking Improvement Initiatives	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
19	Relocate vehicle gate at Ross/Asbury to Asbury Street, and vehicle gate at Ross/Ireland to Ireland Street, to control access between 7:00 a.m. and 6:00 p.m. Permit access to TAMU service vehicles and buses at all times. One-way (eastbound) traffic for buses between Houston and Ireland.	Low Priority		
20	Pedestrianize Ross Street between Sbisa Hall/Fish Pond and Ireland Street—extend pavement treatment and design that is provided between Ireland and Spence Streets. 25,000 sq. ft. of new pavement (1,000 x 25 feet).		Medium Priority	
21	Use tactical urbanism elements such as planters to reduce width of carriageway on Ross Street between Ireland and Spence (about 80 planters to cover 800 – 1,000 feet). Provide a carriageway between planters of 12-16 feet and allow sidewalk traffic to overflow onto street between planters and curb (4-6 feet) to accommodate heavy pedestrian traffic during class changes. Divert all bus traffic to University Drive. Operate carriage way as one-way (westbound) for motorized vehicles and two-way for bikes and golf cart vehicles.	Low Priority		
	Spence Street			
22	Pedestrianize Spence Street between Ross Street and the Anthropology Building. Raise the street to create a curb less street and plaza environment. About 8,000 sq. ft of new pavement (320 x 24 feet).		Medium Priority	
23	Add shared path pavement markings—pedestrians, bicyclists and vehicles, and bollards (30) to channel vehicle traffic to Lot 23 parking.		Low Priority	
24	Add trees (2-4), planters, benches, and a pavilion to screen Lot 23 and create a plaza connecting with the Architecture Building.			Low Priority
	Evans Library Landscaping			
25	Improve landscape of walkway between Evans Library and Anthropology Building (about 500 feet). Remodel curbs around planting areas to include rainwater capture and storm drains (bioswales).			Medium Priority
26	Add bench seating on downside of planting areas and new landscape (about 150 feet).			Low Priority

Item	Walking Improvement Initiatives	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Penberthy Crossing at Physical Education Building			
27	Raise pedestrian crossing between Lot 100 and Physical Education Building (about 750 sq. ft. of pavement).	Medium Priority		
28	Build connection to sidewalk from Lot 100 (100 feet). Add 4 to 6 trees to demarcate crossing and direct pedestrian traffic from parking lot.	Medium Priority		
29	Add bus shelters and benches on each side of the street to increase passenger comfort and transit service wayfinding.	Medium Priority		
	Reed Arena Pedestrian Paths			
30	Provide direct walking route between Reed Arena and Student Recreation Center. Provide midblock pedestrian crossing (painted crosswalk) across Olsen Blvd. Add pedestrian activated Rapid Flashing Beacon (2) to alert drivers.			Low Priority
31	Raise pedestrian crossings on Lot 102, in front of Reed Arena, to continue pedestrian route (2 x 320 sq. ft.). Add pavement texture or different pavement across Lot 104 to continue route to Student Recreation Center (200 feet).			Low Priority
	Bizzell Street & Polo Road Intersection			
32	Reduce curve radius at corners to slow down turning vehicles. Add planters (14-18), improved paving and striping to protect pedestrians.	Low Priority		
33	Extend medians to create a refuge for pedestrians and slow vehicle turn movements (improved paving and striping protected with planters).	Medium Priority		
34	Eliminate southbound left turn lane from Bizzell to Polo—increase size of median (150 feet x 11 feet) to reduce crossing distance of SB lanes for pedestrians.	Low Priority		

Biking Recommendations

Item	Biking Improvement Initiatives	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Bizzell Street & Polo Road Intersection			
35	Add new striping and signage to demarcate bike lanes along Bizzell Street and continue across Polo Road intersection (about 1,800 feet).		Low Priority	
36	Add plastic bollards to protect bike lanes from vehicles along Bizzell (200 plastic bollards); add bike ramp on northeast corner to connect lane with bike route through University Drive and College Avenue intersection.		Low Priority	
	Military Walk @ Rudder Plaza			
37	Build bike path connection between Trigon (Throckmorton Street) and MSC (Lamar Street). Paint and markings for 550 feet long path.	Low Priority		
38	Move "wheels route" on Military Walk to new bike path connecting Lot 19 with Lot 10. Add markings along existing foot path to designate new bike route—1,000 feet.	Low Priority		
	West Campus Connection			
39	Continue Old Main Drive bike lanes across intersection with Olsen Boulevard to provide safe bike crossings and continuity through West Campus quad (about 150 feet; 75 feet per crossing).	Low Priority		
40	Shift location of crosswalks to separate ped and bike traffic across Olsen Boulevard. Extend median tips to reduce speed of vehicle turns and improve protection of pedestrians (about 720 sq. ft. of new pavement; 360 sq. ft. each).	Low Priority		
41	Develop bike path to connect the West Campus quad with the White Creek path (about 750 feet).		Medium Priority	

Item	Biking Improvement Initiatives	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
42	Build protected two-way bike path along the north side of Enterprise Avenue (1,500 feet) to continue the bike route along the White Creek path and create a complete route from Research Park to MSC.		Medium Priority	
	White Creek Community Center Connection			
43	Build a ped and bike path through Lot 122b (400 feet) to connect the White Creek Community Center with The Leach Teaching Gardens and the College of Agriculture and Life Sciences; provide direct access to WCCC from the path.	Medium Priority		
44	Build two-way bike path on west side of Penberthy Boulevard from John Kimbrough Boulevard to George Bush Drive (about 2,700 feet long).		Medium Priority	
	John Kimbrough Boulevard			
45	Build a two-way bike path on the south side of Kimbrough Boulevard to connect Pickard Pass, the Fan Field and Research Park. About 5,000 feet long.		Medium Priority	
46	Connect the Kimbrough Boulevard bike path with the two-way path on Enterprise Avenue at Enterprise Avenue & Research Park Parkway to complete a bike loop through West Campus (2,900 feet).			Medium Priority
	Olsen Boulevard			
47	Build two-way bike path on west side of Olsen Boulevard from Raymond Stotzer Parkway to John Kimbrough Boulevard (about 1,000 feet on each side of quad). Mark slow route through the West Campus quad (about 500 feet).		Medium Priority	
48	Continue Olsen Boulevard two-way bike path south of Kimbrough Boulevard to George Bush Drive. About 2,400 feet.		Medium Priority	

Item	Biking Improvement Initiatives	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Agronomy Road			
49	Build two-way bike path on west side of Agronomy Road from F and B Road to Raymond Stotzer Parkway, to continue Olsen Boulevard bike route and connection to West Campus. About 4,000 feet including crossing of Raymond Stotzer.			Medium Priority
	Pickard Pass			
50	Address blind corner of path going to Recreation Center with channelization of walking and pedestrian paths. Install planters (3-4), plastic bollards (15-20), and painted markings to reinforce separation of modes and safety at blind corner.	Low Priority		
51	Mark the bike path on pavement at the end of Pickard Pass where it meets the Kyle Field plaza, to provide guidance to cyclists and pedestrians and continuity of bike route to connect with bike lanes on Gene Stallings and Joe Routt Boulevards (about 300 feet).	Low Priority		
	Gene Stallings & Joe Routt Boulevard			
52	Relocate southbound bike lane on Gene Stallings Boulevard to east side of street, forming a 2-way bike path. This reduces conflicts with the garage entry and at the intersections with Joe Routt and Lamar. About 600 feet.	Medium Priority		
53	Add bike roundabout at intersection to distribute bike traffic. This will be a painted circle to allow buses and loading vehicles to go through, as well as the Corps march on gamedays. Relocate gate for bus and service vehicle access on Joe Routt to nearside of intersection, to reduce conflicts with bicycle traffic.	Low Priority		
	Gene Stallings Boulevard & Lamar Street			
54	Convert painted medians to landscaped areas, to channelize traffic, reduce speed and increase safety (about 150 feet of medians on Gene Stallings). Add safety islands on Lamar (about 150 feet) to protect bike and ped crossings. This also reinforces bus priority on Lamar.	Low Priority		

Item	Biking Improvement Initiatives	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
55	Raise crosswalk (about 2,000 sq. ft. of new pavement) between MSC and ILCB and eliminate right turns from Lamar to Gene Stallings (at least for non-game days).	Low Priority		
56	Continue two-way bike path across intersection to connect with two-way bike path on Lamar Street, along the Simpson Drill Field (about 60-80 feet).	Medium Priority		
	Lamar/Lubbock & Bizzell Street Intersection			
57	Build "Dutch style" intersection at Bizzell and Lubbock to sort out traffic conflicts between vehicles on Bizzell, TAMU buses turning on Lubbock and bicycle traffic on Lamar and Bizzell.		Medium Priority	

Vehicle Traffic Management

Item	Vehicle Traffic Management Strategies	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Olsen Boulevard & Kimbrough Boulevard Intersection			
58	Close intersection to through traffic by installing a diagonal traffic diverter that forces vehicles to turn. Provide an opening or gate for TAMU buses traffic.	Low Priority		
	New Stallings Garage exit to Wellborn Road			
59	Open a new exit to the Stallings Garage on the service road between the garage and the Innovative Learning Classroom Building (ILCB) to provide a direct connection with Wellborn Road and diver traffic from Gene Stallings Boulevard and the intersection with Joe Routt Boulevard. Add an exit only gate.		Low Priority	

Item	Vehicle Traffic Management Strategies	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Lot 47/51 entry and exit changes			
60	Relocate entry to Lot 47 from Polo Road away from pedestrian crossing to Polo Recreation Center. Close northside exit from Lot 47 to Polo Road. Close northside driveway connecting Lots 47 and 51. Redirect vehicles exiting Lot 47 to southside exit on Bizzell, and to northeast exit on Lot 51.	Low Priority		
61	Eliminate left turn lane to Lot 47 from Polo Road and build a pedestrian safety island to protect crossings. Raise crosswalk (about 400 sq. ft.) and provide a direct route to ADA parking on Lot 51.	Low Priority		
62	Redesign southern entrance to Lots 47/51 so that drivers can turn right or left onto Bizzell when exiting. Open gap on Bizzell Street median to allow entry and exit of vehicles to/from Lots 47 and 51.		Low Priority	

Carpooling & Vanpooling

Item	Carpooling & Vanpooling Strategies	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Carpooling Recommendations			
63	Test a third-party application and software platform such as Waze Carpool, Scoop, Ride Shark, or Ride Amigos.	Medium Priority	Medium Priority	Medium Priority
64	Add gamification to the carpooling program through incentives and rewards. For instance, incentives to form a carpool and rewards for using and maintaining a carpool arrangement.	Medium Priority	Medium Priority	Medium Priority
65	Implement/expand a Guaranteed Ride Home program to support ridesharing (carpooling and vanpooling).	Medium Priority	Medium Priority	Medium Priority

Item	Carpooling & Vanpooling Strategies	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Vanpooling Recommendations			
66	Test a third-party application and software such as MagicBus to create, track, and maintain use of vanpools.	Medium Priority	Medium Priority	Medium Priority
67	Add gamification through incentives and rewards.	Medium Priority	Medium Priority	Medium Priority

TDM Support

Item	TDM Support Strategies	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
	Marketing and Promotion			
68	Conduct transportation fairs on campus twice a year—during fall and spring, to promote TAMU transportation options program. Develop collateral materials and content for Transportation Services' website. Focus on both students and faculty/staff.	Medium Priority	Medium Priority	Medium Priority
69	Promote and participate in behavior change campaigns such as Bike-to-Work Day, Earth Day and others. At least 2 campaigns per year and offer incentives and/or rewards.	Medium Priority	Medium Priority	Medium Priority
70	Create an on-boarding program for new students and employees to educate them about all transportation options, steer them to not bring a car to campus, and help them use options. Include personalized travel plans, commute commitments and motivational interviews.	Medium Priority	Medium Priority	Medium Priority

Item	TDM Support Strategies	Short-Term (1-3 years)	Mid-Term (4-6 years)	Long-Term (7-10 years)
71	Promote TAMU transportation options as a brand and through social media channels, radio ads and television, website and collateral materials. Establish a generous marketing budget of at least $100,000 to conduct these activities, and a specific marketing plan with participation and reach goals.	High Priority	High Priority	High Priority
72	Use a TDM admin platform to manage the program and track participation, such as Luum, Commutifi, Ride Amigos, or Ride Shark. These platforms allow data inputs from technology and service partners, as well as calendars for users to report commute and engage in gamification.		High Priority	High Priority
73	Publish shuttle services GTFS data for widespread distribution and use by Google Maps and other applications such as the Transit App. This to provide more flexibility to users to consume transportation options information.	Medium Priority	Medium Priority	Medium Priority
74	Publish bikesharing and carsharing information through the bikesharing and micromobility data standards for widespread distribution and use by developers and mobility applications. Also, to provide users with multiple channels and options to consume transportation options information.	Medium Priority	Medium Priority	Medium Priority
	Other Programs			
75	Increase promotion and availability of Guaranteed Ride Home program. Make it extend to carpool, vanpool, and transit users (Aggie Spirit and Brazos Transit District users).	Medium Priority	Medium Priority	Medium Priority
76	Increase promotion of carsharing, adding more cars on campus and in the University Drive commercial area.	Medium Priority	Medium Priority	Medium Priority
	Organizational Capacity			
77	Hire a TDM manager (incl. data analytics skills)	High Priority	High Priority	High Priority

IMPLEMENTATION PLAN SUMMARY

This Implementation Plan offers 77 potential investments in pedestrian, cyclist, traffic, and TDM improvements totaling around $24M over ten years. Each possible project, program, or initiative are briefly described in this plan. They are described in greater detail in the main body of the Transportation Mobility Master Plan. If successfully implemented these interventions have the potential to avert the need for nearly $200M worth of structured parking.

Texas A&M Transportation Services need not implement all aspects of the Implementation Plan; it is not an all or nothing proposition. The order, timeframe, and priority for any of the recommended items may change as the University continues to grow, develop, and evolve.

Appendix

FULL STAKEHOLDER INPUT

What current issues and challenges would you like to see addressed?

- *Traffic in Stallings Garage area - need help! Traffic assistance at specific times of day or event*
- *Traffic near 1 LCB and Stallings Garage*
- *Parking space estimate in Stallings Garage. 2nd floor hotel # is way off daily*
- *Significant lines to get into Stallings Garage*
- *Limited disabled parking and restricted access to get to disabled parking due to gates*
- *Some roads need repavement [sic]*
- *Not enough busses on Route 47*
- *Peds crossing road without looking and almost getting hit*
- *Make busses always run on time (good luck with that!)*
- *Treat adults like adults. We don't need the NO RIGHT TURN ON RED on University Dr. If people don't know how to cross a street, the driver shouldn't be punished*
- *Strongly disagree with (above comment). My children and I almost got run over by cars turning on red. Those "adults" must earn their way out of being told the obvious.*
- *Bicycles cannot survive the fall and spring semester without covered parking. (rust)*
- *Pickard Pass is dangerous due to ped and cyclist (activity)*
- *I still have trouble knowing what bus to take. - Better app*
- *Pedestrians and bicycle traffic have challenges because it gets so bad during class changes and at morning time when people come to work and classes and 5 pm time when going home*
- *Veos under maintenance*
- *If (trying to get) from Zachry to the MSC, I have to take Bus 1 which adds a 20-minute detour instead of going directly to the MSC. A bus that goes from Zachry to the MSC would be great!*
- *Bizzell St. at University - very bad. Also - no traffic control at Polo and Bizzell.*
- *App doesn't allow searching or trip planning*
- *Hart Hall is too far from parking. Lowest price point residence hall.*
- *Takes too long to get out of West Campus Garage*
- *(From) Drill Field going toward Sbisa there is only a bike lane on one side, causing bikers to play chicken with other bikers or cars)*
- *Issues with flow between different modes "jams" of people/cars*

- *On-campus shuttles don't always run on schedule (Route 1) More frequently would be great too.*
- *Sometimes buses are really full (eg, Bus #1). Can they be rebalanced? Overall, works good*
- *Buses leaving too early so kids miss the bus.*
- *Unevenness and potholes on road - Agronomy Rd.*
- *Bus Route #47 from off-campus - bus does not stop at Wehner Hall (from Lake…)*
- *Have never had a challenge finding parking spot for Lot 100.*
- *Takes too long to get out of West Campus Garage.*
- *I work on campus, but it's easy for my dad to drive me off early, so I don't need a car*
- *The intersection of Harvey Mitchell and Holleman usually adds 15 minutes of waiting for the light…*
- *12,000 freshmen…. They are on campus. 11,100 total resident units*
- *Move-in day still a struggle.*
- *How are autonomous shuttles a viable option when they are broken half the time?*
- *How am I supposed to use an autonomous shuttle when I can walk faster than the shuttle?*
- *Can be longer to park/bus than just bus*
- *… the pedestrian + bicycle to improve. Better for vehicles + buses to get on campus on time and around campus as well*
- *Road construction*
- *Dilineation [sic] - often not … everywhere. - Scooters are… speed. No sharing once you go past this speed.*
- *Unintended benefit/consequence. Well-being as a university we should care about users' health.*
- *Hard to lock Veo bikes because you have to back them in.*
- *Throttle assist are expensive*
- *I know a lot of Aggies who have late night labs on campus and it is sad that when we get out no more buses are running as often…*
- *George Bush and Wellborn is a nightmare at 8 am - 5 pm. At least 10 minutes wait.*
- *There is a lot of congestion on Wellborn. My commute's supposed to take 8 minutes but with added traffic on campus it takes 35 minutes minimum.*
- *Getting in and out of SBG Garage at (…) is a good 10 - 15 minute enterprise.*
- *Some dangers with cyclists….*
- *There is an overselling of parking passes and it causes students to be late and traffic due to the build up of cars - my bus is always late because of Lot 100 traffic*
- *Academic plazas, quad have traffic with too many cyclists at high speeds - sidewalks aren't adequate*
- *The buses are too small. We need to get the long shuttle buses to seat everyone. Everyone is/was crowded.*
- *There is a lot of late night classes or labs on campus. The buses come less often at every 45 min. We should have more buses come later more often.*

- *Bike riders are reckless; unaware of basic traffic. IE, they turn right with busses. Very dangerous.*
- *Congestion getting into the garages. Bike riders not following the rules.*
- *Class interchange at Zachry (in/around) is a mess*

Think of the future! What do you envision on campus in 10 + years?

- *More bike rails to BCR bikes - Zachry Building*
- *Separate peds and cyclist in the underpass with infrastructure*
- *Separate cars and bicycles with more than paint*
- *Want - live time bus mapping, how long will it take?*
- *More signal lights on campus*
- *Less congestion, more pedestrian-friendly interior campus, including less service vehicles*
- *I like parking elimination in the core of campus, have this area for buses and bike/ped traffic*
- *More short-term (30 min) parking in residential… to allow for unloading …. Etc.*
- *Dedicated express lanes for bike scooters….*
- *Parking off or on outskirts of campus, increase bus riders*
- *I wish that the pedestrian crossings would have lights at night/day*
- *Along Texas Ave. need dedicated route, separated bike and ped lanes*
- *Light rail might be nice*
- *Incentives/awards for F/S/S who carpool, use bike and or bus, and carsharing like Zipcar*
- *Using specific colors for walking paths, bike/scooter paths, and driving paths and bus and trucks*
- *Having, hiring more bus drivers, some with big city experience, and mentoring student bus drivers (coming from someone who lived in WDC)*
- *Transition from mass transit buses to SkyTran, or some type of on-demand personal transport*
- *Monorail type transportation through high traffic areas where a continual vehicle can pick folks up.*
- *Agree with this! (comment above)*
- *Agree with this! (comment above) At 5 it takes me an hour to find a #40 bus that's not full*
- *Tip jar for bus drivers*
- *In 10 years, maybe underground tunnels for pedestrians and bicycles*
- *A campus park n ride*

- *Bus 25 Centerpole - PLEASE PLEASE add a stop at Foster Ave. and Warren Dr. PLEASE so many more people would use the bus if this was a stop. The nearest stop to me is a 20 minute walk away…*
- *Expand pedestrian space on Ross St. More space for….*
- *Partnership with Bryan and College Station for better bike lanes in town*
- *Less car traffic on campus - designated bike/skateboard paths*
- *No car traffic in central core. Bike/ped/bus only with perimeter parking. Expand limited access zones.*
- *Cheaper parking permits?*
- *A single bus route for Bus 321 to Deacon West > Trigon*
- *Need designated right turn lane @ George Bush and Wellborn*
- *Better access to Lot 40D. The Music Activity Center needs better access for delivery trucks and buses*
- *Pedestrian crossing at MSC/Lamar St.*
- *Pedestrians are able to walk and ride their bikes safely on campus*
- *On demand personal transit. Buses have scheduled leave times I would like to see something like SkyTran that will allow me to call for a personal transport.*
- *Partnerships with large student population complexes to subsidize their shuttles*
- *Harvey Mitchell is a bicycle's nightmare. I'd love a bike lane to extend further on.*
- *Traffic - vehicular pedestrian congestion. Change some large class times to different times.*
- *Pedestrian crossing at MSC/Lamar St.*
- *Too many cars. Texas A&M University needs to make safe and welcoming bike lanes*
- *Dedicated bus/shuttle lanes that extend off campus.*
- *Hub should be located somewhere by northside*
- *Already a lot of traffic at MSC. - mobility hub away from MSC*
- *Providing lower cost parking but far away. Northside… parking problem*
- *I like the idea of balancing. As a bus driver, I like the idea of mass transit*
- *More bicycle parking at more activity centers*
- *(Bikes and peds) go first (before cars) at intersections*
- *Pedestrians and bicyclist safety and enforcement*
- *Be the first university to think futuristic. A tram system. Elevated people mover. No carbon footprint. Less buses and cars.*
- *Busses from complexes. Better bike lanes/safety education*
- *(When buses full), say "capacity" instead of "out of service." Also have excess buses running the first week instead of less.*
- *Comfort - shade, shade, landscape is important, irrigation is a problem!*
- *Pub peddlers - fun way to move people! - Deb Kellstedt's idea*

- *More abundant bus only lanes on campus + off campus so buses can run on time even with traffic*
- *Raise for bus drivers….*
- *More covered parking for cars. Also please make more parking garages and please lower the price!*
- *More information to students about bike lanes/riding laws. More bike racks.*
- *More transit buses, less personal cars, trucks, etc.*
- *More transit buses in Bryan. Controlling foot traffic on W. Laker by building something different.*
- *More parking available for students in high traffic areas*
- *More places for students to park closer to buildings. (the small parking lots). Faster way to get from West to (core) campus.*
- *More pedestrian friendly zones. No vehicle/ped mix interior of campus*
- *Repurpose Lot 100 into a transit hub like MSC or Trigon.*
- *Underpass under University for pedestrians*
- *Primary focus - no cars - increase active transport - transit*
- *Good parking somewhere closer to work and class*
- *I use the A&M app but it needs update to app. It should show satellite view so we know where every bus is at. Also if we could add a class in Maps…. And it (tells us?) what we can take.*
- *We should implement underground tunnels so we can fit more cars on road and cut traffic*
- *We should get permission with Uber or Lyft to give students discounted rides during school hours*
- *More buses in Bryan.*
- *More accuracy on… bus schedule*
- *Cheaper parking*
- *Benches at bus stops (stop for bus #1 at the Commons) - I'm disabled and can't stand to wait for the bus*
- *Mosher Circle congestion. Connect to access or west side of SSG?*
- *Golf course is a bad use of space. Use it for student benefit not just old Ags who golf sometimes*
- *If buses stop and wait, would like to know for how long.*
- *More game day buses*
- *Buses that can bus students on campus by 7 am for work.*
- *Need to update sidewalks, ramps, and accessible routes. Especially at the Langford Architecture Building.*
- *More parking or (ways) to get students/staff to carpool.*
- *34 fish camps. Early AM bus…*
- *More limited access, more perimeter parking with options to move more around within campus*
- *"Bikes, buses, and people walking."*
- *Better off-campus infrastructure for bikes.*

- *Would like to…. Pedestrian only campus.*
- *Cheaper parking passes if possible.*
- *Harder it is to park - the better the transit. Increase demand*
- *How to make bike/ped more comfort [sic]. - Dilineations of space [sic]. Need education too!*

If getting people to use transportation choices other than their personal vehicle were our primary mission, what innovations and initiatives could we pursue?

- *Create park and ride transit hubs in major residential areas of town. Partner with the cities to build garages in these areas.*
- *Increase/rotate the amount of Veo scooters at each bike rack. There were no scooters near my residence hall. Additionally, if feasible, please rent out private medical scooters for the disabled of those who had recently twisted an ankle or who had broken/fractured a foot.*
- *More frequent shuttle might help with crowded buses. If I know another bus is coming in a few minutes, then I would be more fine with passing on a crowded bus for one that is less crowded and about to show up.*
- *Park and ride permit lots; having lots off campus that people can buy cheaper permits for and have a bus route out there to bring them to and from campus.*
- *Combo permits: Park/ride with Veo Ride access and on campus parking a certain number of days.*
- *A system that can tell you which route to take across campus from building to building*
- *Run buses to South College Station*
- *Consider park and ride lots that are less money than on-campus.*
- *Close core campus roads to private vehicle traffic. Bus lane and bike lane expansion.*
- *Good communication with people; help them understand what we [Transportation Services] do.*
- *More bus routes and more frequent times.*
- *Better accessibility on the bus routes app; some people don't know how the app works.*
- *Offer permit variety—example: a 20-day pass allows for flexibility on days you need your vehicle.*
- *Remote parking lots (like a park and ride lots for trains in big cities), so I can bus to campus.*
- *Park and ride option with X days of campus parking included*
- *Physical bus maps with all routes at once*
- *Renovate [bus] maps online to see all routes at once.*
- *Cut back on surface lots.*
- *Use transfer buses on campus for riders in Bryan.*
- *If the student and workers live close by, they could walk to campus and maybe receive points for wellness to purchase stuff on campus.*

- *Make parking passes possible to share people at one time by lowering the price for "shared" permits.*
- *I don't know if there is a solution; Texans love to drive.*
- *More efficient bus on campus, alternative transportation as a whole.*
- *Some type of monetary incentive.*
- *Dutch intersections (where bikes don't stop but cars do).*
- *One-way streets with opposing bike lanes, bus lanes, parking garages closer to the exterior of campus (keeps cars out of interior).*
- *For walking, more shade areas across campus.*
- *Parking on the outside/edge of campus, then buses and bike lanes inside campus*
- *More frequent bus service, more bike lanes and connected bike lanes (some existing bike lanes just end in random places).*
- *Raise the cost of parking more (it's already crazy high), BUT must drastically increase bus service.*
- *More transit buses—extend pick-up and drop-off areas to include more areas in Bryan, TX.*
- *Provide incentives to using a different mode on a different day.*
- *More buses; I wait an hour+ outside of Kleburg because all of the #40 buses are full.*
- *Raise the parking lot rates—especially no "free" time in visitor lots.*
- *Better app for bus routes (I can't ever get it to load).*
- *Benches and shade at ALL stops (better for students with disabilities).*
- *More trees; more shade while waiting.*
- *Scenic routes encourage more feet traffic.*
- *Bus route from Bryan, TX.*
- *Park and ride.*
- *More buses and routes.*
- *Make buses run on time.*
- *Need more bus route options that move across campus (north/south).*
- *I really like how the buses are transitioning to electric and I think it's a positive trend.*
- *More paratransit vans.*
- *Making the bus route website easier to use—integration with Google Maps like most real transit agencies.*
- *Grab-and-go bikes—include this in the transportation fee—a bit cumbersome to use Veo.*
- *Shorter bus routes.*
- *More destinations for buses (there's lots of "dead" spots with no bus stops).*
- *Wheelchair ramps aren't bike racks! Where this is a problem you need to put in more racks.*
- *Physical bus maps—for color, the site won't load on the phone.*
- *Make them feel safe.*

- *Make it convenient, so not as much waiting.*
- *Time in between buses needs to be shorter; add more buses.*
- *Add more bus stops along already established routes.*
- *Make more [bus] routes.*
- *Bike, scooter, bus system, walk, skateboard, golf carts.*
- *Expand Veo Ride and possibly add scooters. Create hubs near student housing, on- and off-campus, if possible.*
- *More bus stops and increase in money for drivers.*
- *Have a bus pickup off-campus where people (who live off-campus) can drive to, park, and get picked up by the bus and driven onto campus.*
- *Shuttles that run on time.*
- *Maybe provide more buses and bus routes so kids all around College Station can do it!*
- *Texas A&M University shuttles also visit transportation hubs in Bryan and College Station.*
- *Maybe show them the benefits of riding bikes or buses.*
- *[Buses] less crowded, more often, more locations, earlier and later times, guaranteed cleanliness, more stops on campus (Zach to MSC).*
- *SkyTran or some kind of on-demand, personal, mass transit system. NOT slow, unreliable shuttles! Stop investing time and effort in these.*
- *Dedicated bus/shuttle lanes that extend off campus. Shuttles can better run on time.*
- *Travel to more off-campus places, like apartments and others.*
- *Trolley/monorail; more buses; subway/metro; pretty bike and walking paths.*
- *More housing options nearby.*
- *More stops in residential areas (maybe some kind of park and ride with Tower Point/HEB area?).*
- *Light rail along Wellborn or Texas. Will be a fast way for most students to get on campus.*
- *Create "express" transit routes that run between Main and West campuses with minimal stops.*
- *Adding bus routes to areas that were removed.*
- *Providing more buses and routes and providing a more distinct outline of where and when people should bike or walk.*
- *More signage.*
- *For staff, maybe more Zipcar-type options for the times we need to run off campus for meetings and errands.*

If helping people make the best transportation choice for them were our primary mission, what innovations and initiatives could we pursue?

- *Make it more convenient to access bus route maps (post at stops, kiosks, etc.).*
- *More bike racks.*
- *Interactive kiosks at high transit/pedestrian hubs, explaining options. Include other mobility options in these areas.*

- *TS consultation appointments during NSC or Howdy Week.*
- *More information about transportation options*
- *Mandatory mobility workshops for incoming students/staff, explaining multimodal options.*
- *Show user perspective of all options, what each option means/looks like for students.*
- *Making it easier than driving to campus—less friction (i.e., wait times, full buses).*
- *Have the app lag less and work better, as well as have a search option to help figure out bus options.*
- *EXTENDED hours buses or shuttles, i.e., 8 p.m.-2 a.m.*
- *Regular bus or shuttle to downtown Bryan.*
- *Large shuttles to major cities at end of week or month.*
- *Texas A&M University bus system needs a complete overhaul—more efficient routes, more drivers (higher starting pay would accomplish this), running earlier in the morning.*
- *TS consultation for staff prior to purchasing permit.*
- *Advertise more for public transportation, and teach people how they work. Some people don't ride the bus because they don't understand how it works.*
- *Teach more about this at NSC for freshman students who don't know.*
- *Better signage for buses and where they go.*
- *Better bike paths for off-campus students.*
- *Bus names that really reflect their destinations (rather than "Aggie branding").*
- *Give them more information—part of orientation could be more about what transportation system is best for what.*
- *Kids wanna get to class quick and easy, so show them what is!*
- *Role modeling. Do top level University employees drive personal vehicles?*
- *The innovations that should be pursued are the addition of easier bus scheduling and a more distinct outline of where all people should use their form of transportation.*
- *Information based on the distance you need to go.*
- *Emphasize options: Aggie map, transit website more stable, more robust.*
- *Improving transit services to compete with the convenience of using a car.*
- *Emphasize the pros of each transportation: cost, time, comfort, ease/accessibility, locations.*
- *Greater outreach to incoming graduate students about their transportation options.*
- *Ensure people are instructed and shown what to expect during a normal day. To alleviate traffic of people who don't know what they are doing.*
- *Emphasize what is most cost-effective—riding buses is way cheaper than paying for parking and gas.*
- *Invest resources in trip planning. I know Aggie Map has features but needs to be user friendly like Google Maps.*

- *Raise parking lot rats and people will stop driving to campus just because it is "convenient."*
- *Information. Options.*
- *More buses on each route.*
- *Improve app accuracy.*
- *More buses into Bryan.*
- *Hit them hard in the pocketbook and they will pick the cheapest (and usually more effective option).*
- *Bus times and routes on large digital signs at bus stops.*
- *Cost analysis documents (comparing options) for staff, faculty, and student read/understand.*
- *Send out e-booklets with the pros and cons of each method of transportation.*
- *Possibly offer a survey to students to suggest the transit option for them.*
- *Choose alternative routes, carpool, use bus, bike, scooters.*
- *Ensuring people know of options to choose from.*
- *Shote the time it takes to get from point A to B.*
- *Better marketing of all options. Run pilots on new initiatives and seek volunteers.*
- *Improve app accessibility—cannot zoom to enlarge bus times.*
- *Loyalty/rewards program. Incentives for not getting tickets.*
- *Do a loyalty program. If drivers have a permit for a year, the next year is cheaper, or each Veo gets cheaper as you ride.*
- *Longer passing period.*
- *Improve app to allow trip search, to tell you what buses to take from point A to point B.*
- *Avoid pollution and expensive maintenance costs, get rid of most buses. Think of the future. Install a tram system like at Disney Land.*
- *More stress on bus line and near University.*
- *More education on buses, less parking access inside campus.*
- *More buses on each of the routes.*
- *More information given out to people, so they know how the buses work.*
- *Make sure that everyone knows all options. Lots of options, the more options, the more people are likely to try new stuff.*
- *If people knew they weren't going to be late—update real time.*
- *Maybe be rewarded with points to use on campus to buy items or get discounts for other things.*

If maximizing safety when using transportation were our primary mission, what innovations and initiatives could we pursue?

- *Enforcing the handicap parking laws!! For the disabled community this is a HUGE safety concern. Walking from the back of a lot can put us at risk because of medical conditions.*

- *Keep bikes out from riding head on into traffic. Make raised designated lanes.*
- *More control of feet/bike traffic (crossing lights?)*
- *Increase encouragement to wear masks on buses.*
- *Just pay attention at the signs and they will make everyone safe.*
- *Separating peds/bikes/scooters. Separated facilities and enforce it.*
- *Bus drivers need to be trained better and DPS tests should not be given in-house—conflict of interest.*
- *Keeping bikes off sidewalks! (I've almost been run over multiple times because my wheelchair can't dodge fast enough!)*
- *More information on how to properly ride buses when at full capacity.*
- *More signage, flashing lights.*
- *Enforcing traffic laws, like stopping at stop signs and speeding.*
- *Bike/ped enforcement is crucial to safety. Buses are constantly having interactions that should never happen.*
- *More buses during busy times and routes. A lot of people standing in the buses today.*
- *Signage at crosswalks alerting pedestrians of oncoming traffic. Stop signs for pedestrians.*
- *Pedestrian over- and underpasses at major road intersections near campus.*
- *Catwalks: safety of peds and bikes over traffic/streets.*
- *MONORAIL! Like at Disneyland. No carbon footprint, no more buses, less cars, innovative, fantastic.*
- *Better enforcement of rules (or, conversely, catch people doing the right thing and reward).*
- *Safer pedestrian areas—no bicycles/skateboards on sidewalks.*
- *Ensuring peds and cyclists watch intersections and not stop off curb as others (cars) have the right of way.*
- *Separate cars, people, and bikes.*
- *Stop punishing the 99% of people because 1% doesn't know how to be safe. If someone gets hit by a car because they walked into the middle of the street without looking, don't make it "safer" for the walker, thus punishing cars.*
- *Just making sure everyone knows the rules of walking or driving on campus and not being a jerk and walk out in front of vehicles when not using crosswalks.*
- *Do something about the electric skateboards. They are a menace when mixed in with pedestrians.*
- *Cameras on buses in event of incidents with riders.*
- *Accountability/enforcement of bike/scooter traffic.*
- *Bus drivers go through no safety training and have no idea how to respond in an emergency. This is a problem!*
- *More "present" and "active" enforcement for bike rider not following the rules.*
- *Staggered release to decrease foot traffic.*
- *More bike lanes to separate bikes from traffic. Bike lanes do not have to follow the road! Also, more signage to separate bikes from pedestrians (Military Walk).*

- *Safety for bikes: shouldn't use sidewalks because of pedestrians, but buses, cars, and gates on campus roads are not safe either.*
- *Expanded bus service dynamically on busiest routes to maintain a person capacity per bus.*
- *Get rid of the people. People are inherently dangerous.*
- *Health safety—make it required to wear masks since we're so close.*
- *Do giveaways and incentives for people that practice safe protocols.*
- *Creating express lanes for bikes to avoid collisions.*
- *Identify and reduce conflict points between peds and vehicles.*
- *I wish there could be covered bike/scooter parking.*
- *Stricter enforcement of dismount zones, more dismount zones, encouraging bikes to ride on streets, more crossing guards at intersections, clearer signage of bike lanes.*
- *Separate bicycles/e-bikes/longboards from pedestrians as well as cars. Better signage?*
- *Review bus stops to make sure they are all wheelchair accessible.*
- *Ensuring every format of transportation didn't effect one another. Pedestrians cause traffic buildup, students coming to campus cause more backup, which in turn messes with bus schedules.*
- *Better turn lanes. Distinct bike paths, not lanes. Completely separate bikes from cars.*
- *Dedicated and enforced bike lanes.*
- *Cleaning buses often. Have wipes on buses.*
- *Provide bike/motorcycle training. I've gotten hit twice, just walking to class.*
- *Adding more bike lanes to separate cars from bikes and bikes from people walking.*
- *Creating physical medians between: 1) cars and bikes, 2) bikes and pedestrians, 3) slow walking pedestrians and fast walking pedestrians.*
- *Consider signals at heavy pedestrian-used intersections—example includes Bizzell and Polo Road, with people that extends into Engineering area.*
- *No vehicle traffic on campus.*
- *More bike lanes, pedestrian lanes, finding ways to minimize traffic especially at high value times.*
- *More bike lanes!*
- *Distinct bike paths and more sufficient bike paths allows for safer transportation.*
- *Making sure that there are crossing guards in the early mornings (7am-8am) for pedestrians. Some student was hit by a car yesterday near Cain Garage. :(*
- *Add seatbelts and more rails to hold onto in the bus.*
- *Educating bike laws.*
- *Overpasses on busy streets for pedestrians.*