California State University

TRANSPORTATION DEMAND MANAGEMENT MANUAL

Final Report

November 2012

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1 INTRODUCTION

The California State University (CSU) system is comprised of 23 campuses located throughout the state in settings ranging from urban to rural. As the type of locale and number of students vary by campus, the transportation needs at one campus may be very different from another campus. As such, this Transportation Demand Management (TDM) manual seeks to address the unique transportation needs of different campuses and provide a system-wide framework for implementing sustainable transportation programs.

This manual contains a set of goals, criteria, and best practices to guide the provision of programs, tools, and strategies that encourage students, faculty and staff to commute to and from campus via bus/rail transit, carpools, vanpools, bicycling and walking to lessen reliance upon single-occupant vehicle (SOV) travel and reduce vehicle trips to campuses. A wide range of measures are discussed in order to reflect the unique needs of different locations and campus environments and touch on several subjects including parking, transit services, on-campus land uses, and programs such as carpooling and vanpooling.

The ultimate purpose of this manual is to provide university staff, and those working to develop campus TDM plans, a means to craft effective programs by providing:

1. **Prioritized goals and objectives.** The manual's goals and objectives are intended to be broad enough to apply to every CSU campus and allow for TDM programs to be tailored to individual campuses. At the same time, they are designed to provide staff with enough definition (in conjunction with the information discussed in Chapters 3 and 4) so that objectives, such as the monitoring of key criteria, are carried out.
2. **Campus typology system**. With campuses situated in many different environments, the manual uses a campus typology system to facilitate the selection of TDM strategies. Campus types include urban, inner suburban, suburban, exurban, and rural/college town.
3. **TDM program tools**. Although there are many TDM measures available, transportation investments should be prioritized to assemble the most effective "toolbox" of strategies. As such, the manual describes both the types of measures currently being utilized at various campuses and a set of priority TDM strategies by campus type to best reduce vehicle trips and increase non-auto mode use.
4. **Evaluation methodology**. TDM strategies should have a demonstrable impact in reducing vehicle trips with units of measure in place to monitor programs. The manual offers a methodology with which to gauge program effectiveness and indicates how key metrics are applied to individual TDM programs.

5. **Ranges of success**. In order to determine whether programs are having the desired effect, the manual provides a range of quantitative targets for key criteria. Targets are tailored to individual campus types so that expectations properly correspond to particular settings.
6. **Best practices**. The manual includes case studies by campus type and TDM strategy for universities within and outside of the CSU system. The best practices demonstrate broadly which TDM programs have proven successful and specifically what elements of particular programs have enhanced certain measures.

Given the key aims of the manual, it is structured as follows:

Chapter 2 – TDM Goals & Objectives: Provides a description of the goals and objectives designed to offer guidance to individual campuses when developing and implementing TDM programs and strategies.

Chapter 3 –Establishing a TDM Program: Provides a description of each of the campus types, key TDM strategies by campus type, and a description of TDM performance metrics and evaluation methodology that will provide campuses with tools for evaluating the success of various TDM programs.

Appendix A – Best Practices: Includes several best practice case studies of colleges and universities that have recognized the capacity, economic, and environmental advantages of balancing transportation needs and investing in alternatives to the automobile.

2 TDM GOALS & OBJECTIVES

This chapter provides a description of the goals and objectives designed to provide guidance to individual campuses when developing and implementing TDM programs and strategies. These goals and objectives are designed to be a template for campus TDM programs and adapted and implemented in a manner as appropriate for each campus. It is important to note that the goals and objectives are intended to be relatively broad in order to serve the entire CSU system. Because of this, and the fact that TDM programs function best as packages of strategies (as opposed to individual measures), they do not typically possess individual targets. Instead, users of the manual should refer to Chapter 3 for ranges of quantifiable reductions in key metrics based on campus type to determine whether programs are achieving success.

The following goals have been developed to create a more integrated, outcome-oriented approach to the design and implementation of TDM programs and strategies system-wide while also still providing each individual campus with the flexibility to adjust their strategies based on local circumstances. For each goal, specific objectives are identified.

Goal 1: Encourage the Use of Non-Auto Modes

Objective 1A: Develop TDM programs that are effective, scalable, and sustainable over time.

Description 1A: TDM programs should have measurable effects (see Objective 1B) that when tracked over time, result in positive trends. TDM programs often start off small as pilot programs or serving a distinct population. However, if a program is shown to have positive measurable effects on key criteria (such as reducing vehicle trips), the design of the program should be such that it could be scaled to serve the entire campus population. In order to enable the ongoing success of a TDM program, reliable funding and staffing are necessary to ensure long-term sustainability.

Objective 1B: Monitor key criteria to ensure the effectiveness of TDM programs.

Description 1B: There are a number of criteria that can be used to measure the effectiveness of TDM programs in encouraging the use of non-auto modes. Criteria include campus-generated vehicle trips, mode split, parking demand, greenhouse gas emissions, program participation rates, and cost per trip of varying modes. The applicable criteria will depend on the TDM program and data collection capabilities of a campus. However, in order to determine the positive effects of a

given TDM program, consistent data collection for at least a few key criteria will be necessary. This data will enable campuses to determine if a given program is having a positive effect and where to best utilize limited funding resources.

Objective 1C: Enhance the pedestrian, cyclist and transit user experience.

Description 1C: Providing a pleasant and convenient user experience for pedestrians, cyclists, and transit riders is vital to encouraging the campus community to not drive to campus. For pedestrians and cyclists, this includes creating a safe walking and biking environment (Objective 1F) and also providing amenities such as high quality walkways and secure bicycle storage. For transit users, facilities can include amenities such as real-time arrival information, quality lighting, and protection from inclement weather.

Objective 1D: Enhance safety for pedestrians and cyclists.

Description 1D: Providing safe pedestrian and cyclist facilities is critical to encouraging the campus community to walk and bike. Examples include providing adequate lighting along walkways, sufficient sidewalk and pathway widths to accommodate pedestrian volumes, and separated bicycle pathways when possible. While campuses may not be able to physically construct off-campus infrastructure connecting to campus, whenever possible, a campus should work with local jurisdictions to prioritize community links to campus thoroughfares.

Objective 1E: Increase dialogue and communication among campus departments and establish a forum for ongoing coordination and policy development to strengthen a campus's capacity to design and deliver effective TDM strategies in a coordinated manner.

Description 1E: At many campuses, a number of different departments are responsible for overseeing various TDM programs. As such, there is an opportunity to enhance existing programs through increased dialogue and communication between departments. Establishing a regular forum for communication, such as a quarterly or semester meeting may ensure that there is ongoing and open communication.

Objective 1F: Provide effective transportation alternatives to driving alone.

Description 1F: By measuring key criteria (Objective 1B), campuses will be able to determine the effectiveness of their TDM programs. With this information, campus administrators will be able to focus resources on those TDM programs which have been shown to have a positive effect on encouraging the use of non-auto modes.

Objective 1G: Provide sufficient on-campus or nearby housing and basic commercial needs to encourage walking and biking.

Description 1G: Providing on-campus housing enables students who reside in these buildings to walk or bike to campus and reduces their need to own a vehicle. The provision of basic commercial services such as a convenience store, post office, small grocery store, or dry cleaner further enables students to live on-campus without a car as they can meet their basic needs within walking or biking distance. In addition, providing these services on-campus enables faculty and staff to run errands, before, after, or during work which in turn makes non-auto commute options more viable.

Objective 1H: Effectively market all TDM programs.

Description 1H: In order to make affiliates aware of their range of transportation options, TDM programs should be marketed at least to the same degree as parking. Marketing should include

easily locatable website information, printed information and schedules at key buildings on campus, and in information packets provided to students at their time of enrollment and employees on their hiring date.

Goal 2: Maintain Financial Sustainability

Objective 2A: Develop TDM programs that are financially sustainable over time.

Description 2A: A key component to ensuring that TDM programs can be maintained and potentially grow over the long-term is to develop TDM programs that are financially sustainable. Securing a long-term stable source of funding should be a key evaluation point, particularly considering the current and future economic outlook. To the extent feasible, these funding sources should provide adequate revenues to cover capital, operating, and maintenance costs as this will affect the success of a given program. Potential sources can include items such as parking citations and fines, student "green fees," corporate sponsorships and advertising, and grants.

Objective 2B: Implement the most cost-effective blend of parking & TDM investments to accommodate affiliate needs.

Description 2B: Utilizing data collected for key criteria (Objective 1B), campus administrators can determine the cost-effectiveness of TDM programs offered at their campus. Cost-effectiveness can be measured by evaluating the annualized marginal costs (the cost to accommodate one more commuter) of each mode and comparing them to one another. Costs can include any factors deemed appropriate by the campus, including monetary, environmental, traffic congestion, safety, and public health costs. With this information, a given campus can then determine the most cost-effective combination of parking and TDM programs over the life of the specified measure, given the needs of their campus. For example, if a new universal transit pass program is projected to cost $500 annually per person to serve 400 students and a parking garage is projected to cost $2,000 annually per person to serve the same population, it is prudent to invest in the transit pass program. As such, investments in non-auto modes need not be viewed as "subsidies" and can ultimately lead to lower transportation costs for both sustainable mode users and motorists. This example also highlights the fact that it can be financially beneficial for campuses to conduct a cost-benefit analysis before the construction of any new parking facilities to ensure that this is the most cost-effective transportation investment.

Goal 3: Ensure Equitable Access

Objective 3A: Provide transportation opportunities for all students.

Description 3A: Students attending CSU come from a wide range of financial circumstances and backgrounds that affect their transportation and housing location choices. Vehicle sharing, transit service, and ridesharing opportunities should be offered in order to ensure that students are able to access the campus.

Objective 3B: Encourage the use of non-SOV modes through financial incentives.

Description 3B: By offering financial incentives to those who walk, bike, take transit, or rideshare, such that the cost to use these modes is less than or equal to the cost of driving, campuses can provide students, staff, and faculty with the opportunity to use a wide variety of transportation modes.

Goal 4: Preserve Valuable Campus Land

Objective 4A: Ensure that campus land is treated as a commodity to help meet future needs.

Description 4A: Careful consideration should be given to the potential future use of campus land when determining how a campus will accommodate future growth. The opportunity costs of using campus land for parking investments as compared to other active uses should be measured when planning for future development. As a campus grows, there will likely be an increase in parking demand. However, by reducing existing and future parking demand through the use of TDM measures, the amount of parking that will need to be constructed in the future can be reduced. By reducing the amount of new parking, land can be utilized for more active uses such as on-campus housing, academic and research facilities, and green infrastructure. Freeing up on-campus land for active uses is especially important at campuses which cannot physically expand due to existing development or other constraints around the campus.

Objective 4B: Reduce off-site infrastructure needs.

Description 4B: Given potential off-site transportation impacts associated with growth, it is important to address TDM measures to reduce such impacts. As part of the effort to accommodate growth, campuses should develop campus TDM programs that identify strategies appropriate for the campus in advance of growth inducing measures such as Master Plan revisions and quantify how non-auto mode and TDM strategies reduce vehicle trips.

Goal 5: Promote Environmental Sustainability

Objective 5A: Support system-wide sustainability goals set forth in California State University Executive Order 987, adopted in August 2006.

Description 5A: CSU Executive Order 987 includes a Policy Statement on Energy Conservation, Sustainable Building Practices, and Physical Plant Management for the California State University system. This document identifies a number of policies and goals related to environmental sustainability. Campuses should strive to develop TDM programs that support the goals set forth in this document.

Objective 5B: Encourage the use of non-SOV modes for both internal and external trips to and from campus.

Description 5B: The transportation sector is typically a large contributor to the overall greenhouse gas (GHG) emissions generated by a campus. By encouraging the campus community to use non-SOV modes, universities can significantly reduce their GHG emissions. For internal trips which cover shorter distances, staff and students should be encouraged to walk, bike, or take a shuttle service (if applicable). For external trips, options such as transit, carpooling, or vanpooling should be encouraged in addition to walking and biking. Carsharing can serve both internal and external trips, allowing affiliates access to a car when necessary, while relying on non-auto modes for the majority of trips. In addition, upgrading shuttle vehicles (if applicable) to more fuel efficient models can help reduce GHG emissions. Objectives identified under Goals 1, 2, and 3 provide a number of strategies that will help achieve this objective.

Objective 5C: Measure the environmental impacts of transportation investments.

Description 5C: By measuring key criteria (Objective 1B), campuses will be able to determine the environmental benefits of their TDM programs. With this information, campus administrators

will be able to demonstrate the degree to which investment in TDM programs have reduced environmental impacts (e.g., GHG emissions and fuel usage).

Goal 6: Build Partnerships with the Local Community and Private and Institutional Actors

Objective 6A: Increase the level of engagement and partnership with regional agencies and regional transit providers.

Description 6A: Through involvement in local and regional planning processes, campuses can provide input and feedback on how these planning efforts may positively or negatively affect their campus. Planning processes also offer campuses an opportunity to coordinate their efforts with planning efforts in their community and/or nearby jurisdictions. This coordination is particularly important as many transportation planning efforts have regional impacts.

Objective 6B: Enhance collaboration between the university and public and private sectors.

Description 6B: Universities should seek to build relationships with the local business community, City and/or County staff and elected officials, community groups and non-profit businesses. The development of strong relationships and ties to the community will enhance opportunities for collaboration on efforts that affect both the university and the surrounding community. In addition, these relationships can help foster a better working relationship.

Objective 6C: Develop and test new ways of engaging and partnering with public and private institutional actors.

Description 6C: Universities should explore new ways of engaging and partnering with public and private actors. This could include developing new services in partnership with the local transit provider, and collaborating with neighbors to craft residential parking permit programs. In addition, it is important to reflect on the various methods of engagement and types of partnerships to determine what relationships have proven to be most valuable and effective in order to better utilize resources.

Objective 6D: Ensure quality multi-modal campus connections between on-campus and off-campus pedestrian, bicycle, and transit routes.

Description 6D: The transition and connection between regional bicycle and pedestrian facilities and those on university campuses should ensure ease of use from the user perspective. When designing on-campus pedestrian and bicycle facilities, consideration should be given to how these on-campus facilities will connect with local and regional facilities. For campus transit services, direct connections to local and regional transit services should be provided where appropriate. Stops for local and regional transit services providing access to campus should be located such that there is a direct connection between these services and bicycle and pedestrian facilities.

3 ESTABLISHING A TDM PROGRAM

The goals and objectives outlined in Chapter 2 provide a foundation for campus transportation demand management programs. Each of the 23 campuses in the California State University system faces different existing conditions and priorities. Thus, the general goals detailed in Chapter 2 will vary by campus. Chapter 3 describes five campus types and suggests potential TDM strategies relevant to each given - how the measures have performed both within the CSU system and elsewhere.

Monitoring and measuring the success of TDM strategies is critical, particularly in an age of limited resources. Therefore, the second half of this chapter also includes a description of a number of TDM performance metrics and an evaluation methodology that will provide campuses with a tool for evaluation of the success of various TDM measures in meeting the goals and objectives stated in Chapter 2.

CAMPUS TYPOLOGY

A total of five campus types were used to organize the 23 CSU campuses. Each of these five typologies is described in further detail below and the relevant CSU campuses are identified.

Urban

Urban campuses, such as San Francisco State University and San Jose State University, are generally deeply enmeshed in the surrounding city fabric. In some cases, university buildings are indistinguishable from surrounding land uses. These areas are characterized by high population density[1] and high employment density. The concentration of people and mix of land uses makes urban campuses unique. In contrast to other campus types, urban campuses often rely on surrounding land uses to meet the daily needs of the campus community. For example, dining facilities on-campus may take on less prominence in an urban core surrounded by numerous and diverse dining establishments. However, depending on the location of the campus within an urban area, nearby amenities may not be sufficient to serve the needs of the campus or be open during the evening when staff and students may still be on campus.

[1] The U.S. Census Bureau defines urban areas as those block groups with a population density of at least 1,000 people per square mile and surrounding census blocks that have an overall density of at least 500 people per square mile.

Urban campuses also face unique access conditions. Urban campuses in California may have good access to transit, though parking facilities may be severely restricted. Some urban areas in California have a complete sidewalk network, though pedestrian and bicycle amenities are not uniform. In the CSU system, San Francisco State University has the greatest opportunities to encourage the use of non-auto modes, largely due to its geographic location (*Goal 1: Encourage the Use of Non-Auto Modes*). In highly developed areas, there are often opportunities to partner with private entities and community groups (*Goal 6: Build Partnerships with the Local Community and Private and Institutional Actors*) to work with local transit agencies to provide subsidized transit passes, and with local carshare groups to promote carsharing,[2] Other potential TDM strategies include parking pricing, shuttle service, providing on-campus housing, and improving bicycle and pedestrian facilities.

Campuses: San Francisco State University, San Jose State University

Inner Suburban

Many inner suburban campuses are located in close proximity to major urbanized cities. These places largely grew during the pre-World War II era and have population densities lower than that of the urban core. Inner suburbs are typically among the denser residential areas in a region, often featuring a mixed-use core or corridors. CSU Long Beach, CSU Los Angeles, CSU Sacramento, and San Diego State University campuses are located in inner suburban areas.

Strategies that have proven to be effective at reducing vehicle trips and GHG emissions related to transportation in inner suburban areas include carpooling, vanpooling, rideshare matching[3], on-campus housing, parking pricing, and subsidized transit, for many of the same reasons these measures are effective in urban areas. Inner suburbs are largely built-out with little vacant land to build transportation infrastructure, such as parking. To preserve valuable campus land and promote environmental sustainability and equitable access, these strategies seek to encourage the use of non-drive alone modes.

Campuses: CSU Long Beach, CSU Los Angeles, CSU Sacramento, San Diego State University

Suburban

Suburban areas are usually further away from the central core than inner suburbs, but they are still associated with the urban core. Traditionally, these areas have been further removed from activity found in the urban core but are still culturally and economically connected. Suburbs are generally located well within a region's boundaries, often composing a great deal of its area. Suburbs are lower density, largely residential, and generally offer plentiful parking and easy access via automobile. Ten of the CSU campuses fall within this rubric.

To increase campus access via non-auto modes and promote environmental and financial sustainability, many of the same TDM measures listed previously apply in suburban areas,

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[2] Carsharing is a program where cars and/or trucks are privately or cooperatively owned. Members reserve a vehicle on-line or over the phone, pick up the vehicle at the designated time and return it by the designated time. The most effective carsharing programs distribute "pods" of vehicles across the city to increase convenience for members. Carsharing programs are intended to reduce automobile ownership without sacrificing mobility.

[3] Rideshare matching programs connect people willing to offer a ride with someone looking to catch a ride. Based on common origins and destinations, these portals allow people to find carpool partners.

including carpool, vanpool, rideshare matching, on-campus housing, parking pricing, and subsidized transit. However, their scale, cost, and approach may differ from more urbanized areas.

Campuses: **CSU Bakersfield, CSU Dominguez Hills, CSU East Bay, CSU Fresno, CSU Fullerton, CSU Northridge, California Polytechnic University, Pomona, CSU San Marcos, Sonoma State University**

Exurban

Exurban areas are very loosely associated with an urban area. Exurban areas are located beyond the suburbs, hence the term "exurb," or extra urban. Exurbs are almost exclusively residential and traditionally exurban residents commute by automobile to more urban areas. In fact, exurbs generally have very little non-auto access to the urban core or attraction. These areas have generally been developed in the last 20 years and feature very low population density.

Because land uses are spread far apart in exurban areas, walking and bicycling are less attractive transportation alternatives. In some instances, sidewalks may not even be provided along streets. Nevertheless, reducing the reliance on driving alone to these campuses has been achieved with shuttle, vanpool, carpool, and rideshare incentives. Locating campuses in these largely residential fringe areas does present the opportunity to provide campus housing nearby, thereby reducing the distance between the campus and home and associated vehicle miles traveled and greenhouse gas emissions.

Campuses: **CSU Channel Islands, California Maritime Academy, CSU Monterey Bay, CSU San Bernardino**

Rural/College Town

Rural college towns are small towns where civic life centers on the university. The university and city are so closely linked that the identity of each is intertwined. In these areas, the university pervades economic and social life. The university may serve the majority of the town's residents, and the town has a different character during university recess than when class is in session. In contrast to the other four typologies, rural college towns do not look to a large metropolitan area for employment or cultural amenities. These areas are largely self-contained. Examples in the CSU system include CSU Chico, Humboldt State University, California Polytechnic State University, San Luis Obispo, ad CSU Stanislaus.

Bicycling and walking are generally viable options for traveling to and from campus in rural college towns. Other TDM measures geared toward reducing driving on campus include subsidized transit passes, improved transit and shuttles, parking pricing, and locating student housing on-campus.

Campuses: **CSU Chico, Humboldt State University, California Polytechnic State University, San Luis Obispo, CSU Stanislaus**

CREATING A TDM PROGRAM

There are a wide range of TDM measures that campuses can implement. However, it is not always feasible given funding and staffing constraints to implement all potential strategies. This section provides guidance on how to prioritize investments in TDM measures that have demonstrated the greatest effectiveness in reducing vehicle trips and encouraging non-auto modes of travel. These recommendations were informed by a survey of CSU campuses to gather information regarding the successes and challenges they have faced with their previously implemented TDM measures as well as a survey of TDM best practices at campuses across the country.

Current TDM Measures Being Offered at CSU Campuses

A survey of a number of CSU campuses was conducted in order to better understand the types of TDM measures currently being utilized by various campuses and how those programs either succeeded or experienced difficulties. Figure 3-1 lists various TDM measures currently offered by the surveyed CSU campuses.

Figure 3-1 TDM Measures

TDM Measure	Applicable Surveyed Campuses
Parking	
Student, Faculty and Staff Permits	CI, C, EB, F, LB, M, S, SF, SM
Daily Parking Pricing	C, EB, F, LB, S, SF, SM
Short Term/Hourly Parking	C, EB, F, LB, SF, SM
Preferential Parking for Carpools and Vanpools	C, F, S, SM
Transit	
Reduced/Subsidized Transit Fares	F, LB
Universal Transit Pass	F, LB, M
Shuttle Services	CI, C, EB, LB, M, S, SF, SM
Walking/Bicycling	
Walking and Biking Incentives	F, LB
Bicycle Parking and Showers	CI, C, EB, F, LB, S, SF, SM
On-site Bicycle Maintenance	C, F
Bikesharing	LB (2013), S
Other	
On Campus Amenities	CI, EB, F, LB, M, S, SF, SM
On Campus Housing	CI, EB, F, LB, M, S, SF, SM
Guaranteed Ride Home Program (for Employees)	EB, F, LB, S
Carpool and Vanpool Incentives	F, LB
Marketing and Educational Campaigns	CI, F, LB
Carsharing	CI, EB, LB, S, SF
Pre-tax Commuter Benefits (for Employees)	LB, SF
Ridematching Program	CI, C, LB, SF, SM

CI = Channel Islands, C = Chico, EB = Easy Bay, F =Fullerton, LB = Long Beach, M = Monterey Bay, S = Sacramento, SF = San Francisco, SM = San Marcos

As part of the survey, participating campuses were asked to describe their experiences regarding the successes and challenges of the TDM measures listed in Figure 3-1.

Several campuses noted that their Universal Transit Pass program has been one of the most successful measures offered with steady increases in ridership witnessed since implementation. Several campuses stated that the success of this program is due to the fact that it is both free for students and easy to use; students need only show their campus ID card to use designated transit services. This suggests that a Universal Transit Pass can be successful at various campus types.

Bicycle programs were also mentioned as having been successful by several campuses. The programs offered vary by campus and include a free bike checkup service, bike commute class, bike safety inspections, and a traffic skills class. The campuses stated that the success of these programs is partly due to the fact that they are free. Other factors contributing to the success of these programs noted by the campuses include marketing and their regular offerings around the same time each month. This feedback also suggests that bicycling programs can be successful at various campus types. However, certain types of bicycle programs may be more successful at one type of campus than another given the connectivity of routes from the campus to surrounding areas.

Lastly, survey respondents noted that marketing and clearly explaining the benefits of TDM programs to students, faculty, and staff is key to the success of various TDM measures. They also noted that at an organizational level, different TDM strategies are often overseen by separate departments with one measure sometimes requiring coordination between several different departments. As such, having a single full-time staff person dedicated to overseeing the entire TDM program would also help increase the effectiveness of TDM measures.

A key challenge in creating successful TDM programs is the lack of financing, particularly on-going funding. Campuses may receive a one-time grant that enables them to implement a strategy, but lack the necessary funding to maintain the strategy in the long-term. A lack of funding also hinders the expansion of successful measures.

In general, campuses noted that the low cost of parking and convenience of SOV commuting make it challenging to encourage campus affiliates to use non-auto modes. Transit often is not reliable and the frequency or availability of train and bus routes cause travel time to be excessive in many cases, making driving more convenient. At the same time, the low cost of parking permits, which are difficult to increase for faculty and staff due to union negotiated contracts further incentivize driving. Additional challenges to raising parking prices include the public perception of an entitlement to parking, a lack of wage increases, and rising education costs.

At the program level, developing a successful vanpool system has been a challenge for a number of campuses. Key hindrances to the success of vanpooling are the convenience of SOV commuting in conjunction with the low cost of parking permits. In addition, the process of identifying eligible employees and students requires the cooperation of the human resources department, and vanpool formation meetings can only be successful if attendance is encouraged by management.

Prioritizing TDM Strategies by Campus Type

Given the wide range of available measures, it can be difficult to determine which measures to invest in particularly given that many campuses face staffing and funding constraints. To assist campuses in prioritizing the types of measures to pursue, Figure 3-2 lists the top five measures by campus type based on their effectiveness for that given setting. These recommendations were informed by the experiences of campuses in the CSU system as well as a review of best practices at other universities throughout the country. For more information refer to Appendix A.

Figure 3-2 Top 5 TDM Measures by Campus Type

Campus Type	TDM Measure
Urban	Parking Pricing
	U-Pass
	Bicycle & Pedestrian Amenities
	Campus Housing & Amenities
	Carsharing
Inner Suburban	Parking Pricing
	U-Pass/Subsidized Transit
	Carpool & Vanpool Incentives
	Campus Housing & Amenities
	Ridematching Program
Suburban	Parking Pricing
	U-Pass/Subsidized Transit
	Campus Housing & Amenities
	Carpool & Vanpool Incentives
	Ridematching Program
Exurban	Campus Housing & Amenities
	Carpool & Vanpool Incentives
	Ridematching Program
	Parking Pricing
	Shuttle Service
Rural/College Town	Campus Housing & Amenities
	Bicycle & Pedestrian Amenities
	Shuttle Service
	Parking Pricing
	Ridematching Program

As shown in Figure 3-2, the same measure can be effective at different campus types. However, the way in which measures are applied may be different depending on the campus setting. While the same measure is recommended for different campus types, the effectiveness of a given measure will vary somewhat. For example, the presence of campus housing and amenities is designated as a primary means of reducing driving in an exurban context, given its proxy as a mixed use environment in a largely single use setting, while it is relatively less effective in an already more integrated urban context.

Best Practices Summary

A review of best practices at comparable universities was conducted to help identify the most effective measures by campus type. These best practices provide valuable information on how different campuses have structured their TDM programs to better ensure success. Figure 3-3 provides a summary of the case studies that were selected for each recommended TDM measure by campus type. A brief description of each TDM measure is provided. For the complete best practices case studies please refer to Appendix A.

Figure 3-3 Summary of Best Practice Case Studies

TDM Measure	Case Study	Description
Urban Campuses		
Parking Pricing	Massachusetts Institute of Technology	Distance based parking pricing and no on-campus parking for freshmen.
U-Pass	University of California, Berkeley	Unlimited free rides on AC Transit and university shuttle system. Paid for by student fees.
Bicycle & Pedestrian Amenities	Portland State University	On campus bike shop, secure long-term bicycle parking, bike rental program, extensive marketing.
Campus Housing & Amenities	Georgetown University	All freshman and sophomore students must live on-campus and housing is available for juniors and seniors.
Carsharing	University of California, San Francisco	All campus affiliates are eligible for discounted memberships. Parking is provided free of charge for carshare vehicles.
	San Francisco State University	Students receive discounted carsharing memberships.
	Portland State University	Peer-to-peer carsharing service. Discounted parking is provided for carshare vehicles.
Inner Suburban		
Parking Pricing	University of California, Los Angeles	Point-based parking permit system, location and time based parking permit pricing.
	Stanford University	Incentives for driving to and from campus outside of peak hours.
U-Pass/Subsidized Transit	California State University, Long Beach	Free, unlimited rides on Long Beach Transit for all campus affiliates. Subsidized transit passes for employees to use on other regional transit providers.

TDM Measure	Case Study	Description
Carpool & Vanpool Incentives	California State University, Long Beach	Cash incentive for each day employees use an alternative mode of transportation.
Campus Housing & Amenities	San Diego State University	The campus is currently working on providing enough on-campus housing so that all freshman and 94% of sophomores can live on campus.
	Stanford University	Nearly all undergraduates and 50% of graduate students live on-campus. All undergraduates must purchase a meal plan.
	University of California, Los Angeles	On-campus housing is guaranteed for freshman, sophomores, and juniors.
Ridematching Program	California State University, Long Beach	Online carpool and ridematching service. The service is free to users and drivers set the price for the ride.
Suburban		
Parking Pricing	Simon Fraser University	Parking pricing tiers based on the three desirability factors including proximity, covered versus uncovered, and reserved versus "search" stalls.
	California State University, Fullerton	Parking revenue funds the U-Pass program.
U-Pass/Subsidized Transit	California State University, Fullerton	Provides free rides on OCTA transit service for all campus affiliates. Reimbursement for other transit passes up to $75 for bus and $120 for rail per month.
Campus Housing & Amenities	California State University, San Marcos	Working with the private development sector to provide housing and amenities as part of nearby private, off-campus developments.
Carpool & Vanpool Incentives	California State University, Fullerton	$1 per day cash reward for carpooling if only one person in the carpool has a parking permit.
Ridematching Program	California State Polytechnic University, Pomona	Tailored list of potential ridematching partners. Free parking for carpools in priority parking lots.
Exurban		
Campus Housing & Amenities	Kennesaw State University	Constructed on-campus housing to shift away from being primarily a commuter school. Provides a housing match service.
Carpool & Vanpool Incentives	California State University, San Bernardino	$2 per day incentive for campus affiliates who walk, bike, carpool or vanpool.
Ridematching Program	University of Central Florida	Online carpool and ridematching service. The service is free to users and drivers set the price for the ride.
Parking Pricing	Wellesley College	Freshmen are not allowed to have vehicles on campus. Student parking permits are provided in order of priority.
Shuttle Service	California State University, Monterey Bay	Free shuttle service on campus. Free rides on MST transit service for all campus affiliates.

TDM Measure	Case Study	Description
Rural/College Town		
Campus Housing & Amenities	University of Colorado, Boulder	Freshmen are required to live on-campus. The university is exploring public-private partnerships to increase the housing supply.
Bicycle & Pedestrian Amenities	University of California, Davis	Bike racks, bike lockers, commuter shower facilities, and bike maintenance stations located throughout campus. Bicycle maintenance classes.
Shuttle Service	University of California, Santa Cruz	Free on-campus shuttle service. Late night bus service between the campus and downtown Santa Cruz.
Parking Pricing	University of Colorado, Boulder	Parking pricing structure is based on the distance from the main campus and frequency of use. Residential Parking Permit Program in adjacent neighborhoods.
Ridematching Program	University of California, Davis	Online carpool and ridematching service. The service is free to users and drivers set the price for the ride.
	California State Polytechnic University, San Luis Obispo	Provides a ridematching service. $0.15 stipend for each day an alternative mode is used.

Figure 3-3 shows that parking pricing is a key TDM measure regardless of campus type, with it being the number one measure for urban, inner urban and suburban campuses. As the best practice case studies illustrate, there are a variety of parking pricing strategies that can be employed depending on the circumstances of a given campus, from restricting freshman from parking on campus or setting parking fees by location. Parking revenue can also serve as a source of funding for other TDM programs. For exurban and rural/college town campus types, parking pricing is still a key measure, but it is not quite as effective in these settings due to the fact that there is typically a larger supply of low cost parking provided at these campuses and transit services may not be as robust.

It is important to note that there is a limit to the success of TDM measures without supportive parking policies. For example, while CSUMB provides a free on-campus shuttle service as well as free rides on MST transit service for all campus affiliates, the percentage of campus affiliates using transit is relatively low due to the fact that parking on the CSUMB campus is plentiful (.73 spaces per capita, more than double any other CSU campus), close to every building (so there is little incentive to avoid driving), and inexpensive ($12/month) with union contracts preventing an increase in parking fees or eliminating any currently available parking (with contracts having just been renewed for roughly eight years). With driving being prioritized and subsidized at these levels, it is very difficult to encourage transit or other sustainable mode use.

On-campus housing and amenities are another key TDM measure regardless of campus type, with it having relatively greater effectiveness at exurban and rural/college town campus types. These locations typically have fewer alternative transportation options. Thus, enabling students to live on or near campus can play a significant role in reducing the number of driving trips to school. Similarly, providing on-campus amenities is important as these types of campuses often have fewer services and amenities nearby. Regardless of campus type, exploring partnerships with private developments to provide student housing and amenities can be an effective strategy, particularly when there is a lack of funding or a campus does not have available land on-campus.

Working with private developers through the planning process can result in private development that serves the needs of a campus.

As the best practice case studies show, transit services can also be effective at all campus types, though the structure will vary. At urban, inner suburban and suburban campuses, which are typically located near local transit services, U-Passes or subsidized transit passes can be very effective. At CSU Long Beach annual transit ridership on Long Beach Transit has increased from 98,860 to 1,114,709 since the program's inception. The campus has chosen to invest in transit rather than new parking facilities as it is more cost effective to provide a U-Pass and subsidized transit passes and reduce parking demand than to build new parking facilities. At UC Berkeley, which has a U-Pass paid for with student fees, the overall student transit mode share has grown from 14% in 1997 to 27% in 2008, while the student drive-alone share fell from 16% to 7% during the same period. At exurban and rural/college town campuses, shuttle services can be more effective as they may not be served as well by local transit.

MEASURING TDM PROGRAM PERFORMANCE

The setting of a campus largely governs which types of TDM strategies are likely to be successful. To identify and define success, a proposed evaluation methodology is described in this section. The methodology will enable all types of campuses to more clearly measure the effects of various TDM measures on the goals and objectives described in Chapter 2 and to provide campuses with quantifiable data that will allow them to better prioritize campus's financial and personnel resources.

TDM Performance Evaluation Methodology

Listed below are descriptions of performance metrics that all campus types can use to evaluate and track the performance of their TDM programs over time. The first metric, mode splits, also includes two separate measures, which can be calculated using mode split data. For each performance metric, the necessary inputs for calculation are identified. In addition, each metric is noted as required or optional. In this context, mode split is the only metric that is classified as required due to the fact that mode split data is considered a foundational data point and is the input into several other measures such as GHG emissions and Average Vehicle Ridership (AVR).

Metric One (Preferred): Mode Split

Mode split data identifies what mode of travel students and staff use to get to and from campus and is the key metric in determining if a campus has achieved *Goal 1: Encourage the Use of Non-Auto Modes*. It also serves as a foundational piece of data as it is needed to calculate greenhouse gas emissions and average vehicle ridership. Mode split data should be collected annually through the administration of a transportation survey of students, faculty, and staff. It is recommended that the Chancellor's Office develop a template transportation survey that can be utilized by campuses. By providing a template that includes basic key questions that will be included in each individual campus' annual transportation survey, the campus can track mode splits, GHG emissions, and AVR.

This is not to say that some campuses may not adapt the template to address more specific needs related to their campus. For those campuses who wish to create their own transportation survey, key and optional questions are listed below. In addition, key considerations for all campuses with regards to administering a transportation survey are also provided below.

1. **Develop a transportation survey**: The survey can be very basic or more complex depending on the level of detail desired by the campus. Listed below are key questions that must be asked as well as additional questions that could be included.

   Key Questions

   a. Primary mode of transportation to campus (i.e. if more than one mode was used, select the mode used for the majority of the trip)
   b. For those who carpooled or vanpooled, the number of people in the carpool or vanpool, including the driver
   c. Affiliation (i.e. faculty, staff, freshman, undergraduate student, graduate student)
   d. Full or part-time
   e. Home location (on or off-campus, may want to request zip code information for off-campus affiliates)
   f. Distance travelled to campus

   Optional Questions

   g. Parking location
   h. Cost of parking
   i. Arrival and departure times
   j. Interest levels in using alternative transportation programs

Level of Difficulty: Moderate to High

The time required to oversee the survey will depend on the complexity of the survey. For a simple survey the time to create, administer, and analyze the results could take a little as 30 hours.

Cost: Low to High

The cost will depend on the complexity of the survey and if the campus administers the survey and conducts the analysis themselves or if an outside consultant is hired. If an outside consultant is hired the cost could range from $5,000 to $15,000.

Key Considerations:

- Mode split data provides a baseline from which campuses can measure success.
- Data collected as part of this survey will enable campuses to track many other metrics such as AVR and GHG emissions.
- Survey's can be as simple or as complex as deemed necessary by each campus.
- San Francisco State and Cal Poly Pomona currently monitor mode split. Please refer to Appendix B for a copy of their survey instruments. It should be noted that San Francisco State's survey is much more complex than is necessary for most campuses.

2. **Distribute the transportation survey**: There are several options for distributing a survey. Typically, an online survey in which a web link to the survey can be emailed out to all campus affiliates is the easiest way to administer a survey as it eliminates the need to enter the results by hand. However, there may be classifications of staff persons that do not have access to email while at work and may require a paper survey. Free services such as surveymonkey.com can be used for simple online surveys (up to 10 questions). For more complex online surveys, a pay version of surveymonkey.com can be used. Also, some campuses have designed their online surveys in house with the assistance of their information technology department. Additional distribution considerations are listed below:

   a. Survey should be administered regularly to enable tracking of performance metrics year to year.
   b. Survey should be administered at the same time each year to eliminate the influence of factors such as weather.

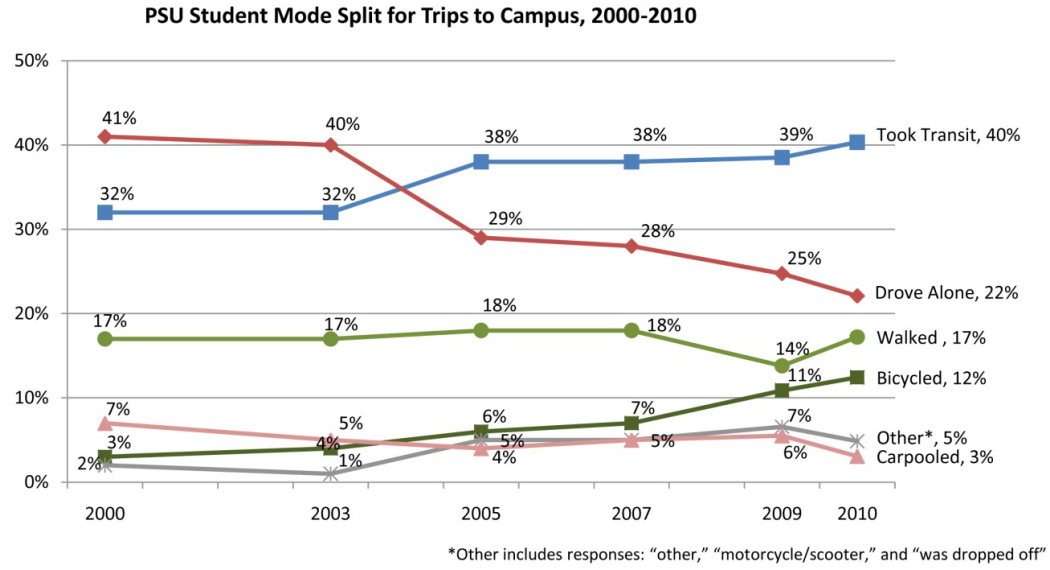
c. Survey should not be administered at the very start of the semester/quarter as campus affiliates may need a few weeks to establish their typical commute pattern.

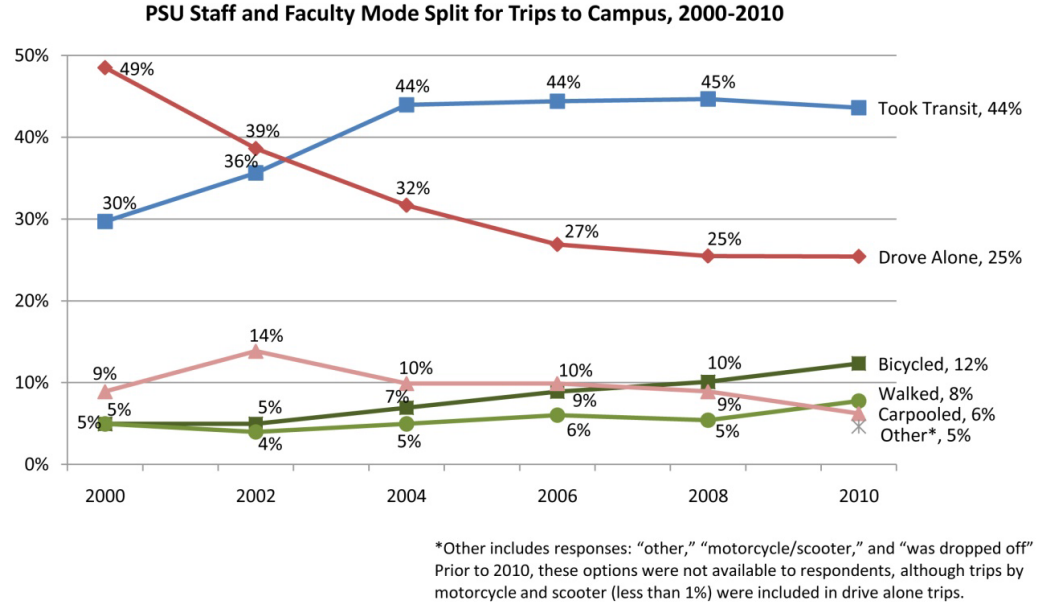
d. The timing of the survey should take into account weather patterns as these will affect travel choices.

3. **Analyze survey data**: The first year of mode split data will provide the baseline from which the change in mode share will be measured to track the effects of the TDM program over time.

Figure 3-4 below shows an example of how the analyzed mode split data from a transportation survey can be presented graphically to show how a campus' mode split changes over time.

Figure 3-4 Portland State University (PSU) Transportation Mode Split, 2000-2010





Measure A (Optional): Transportation-related carbon emissions (in GHG tons)

The transportation sector is typically a large contributor to the overall greenhouse gas emissions generated by a campus. Thus, shifting campus affiliates away from single occupancy vehicle modes can have a significant impact on the number of tons of GHG emissions generated by the transportation sector (*Goal 5: Promote Environmental Sustainability*).

Mode split and distance travelled data are needed in order to calculate GHG emissions, which should be collected as part of the mode split transportation survey. Other data that is needed includes:

- average gas mileage by type of vehicle
- average number of persons per vehicle for transit vehicles, carpools, vanpools, and shuttles
- pounds of CO_2 per mile by vehicle type or pounds of CO_2 per gallon of gasoline

Data regarding average gas mileage by type of vehicle and pounds of CO_2 per mile may be obtained from local transit agencies and government agencies such as the Environmental Protection Agency (EPA).

There are a number of preexisting GHG calculators provided by agencies such as the EPA. However, campuses can create their own calculators using a program such as Excel. Listed below is one possible way of calculating GHG emissions.

1. Utilizing data from the transportation survey, sum the daily mileage travelled by each mode.
2. Scale the mileage travelled on each mode based on the survey response rate to the campus population to obtain the total daily mileage by mode.
3. Calculate pounds per CO_2 per passenger mile if no data for this metric is available. This calculation will vary depending on the mode.
    a. For transit vehicles or shuttles, divide pounds of CO_2 per mile by the average number of passengers
    b. For drive alone, divide the average miles per gallon of gas by average pounds of CO_2 per mile
    c. For carpools, divide the average miles per gallon of gas by average pounds of CO_2 per mile. Divide the result by the average number of persons in a carpool.

Level of Difficulty: Low to Moderate

The time required to conduct the analysis will depend on the ease of gathering the necessary data points. If the necessary data is readily available, the analysis could take as little as 20 hours. In subsequent years once the methodology is established, the time required should decrease.

Cost: Low

The cost will depend on if the campus administers the survey and conducts the analysis themselves or if an outside consultant is hired. If a consultant is hired to administer and analyze the survey, it may be more cost- effective to have them conduct the GHG analysis. If an outside consultant is hired the cost could range from $5,000 to $7,000.

Key Considerations:

- When selecting a methodology, campuses with Climate Action Plans (CAP) should use the methodology utilized in their CAP. Campuses without a CAP can use the methodology outlined here.
- The design of the transportation survey will influence how easy it is to obtain necessary data such as total mileage travelled on each mode.

4. Total daily mileage by mode **x** pounds per CO2 per passenger mile = Total Pounds CO2 per Day
5. Total daily mileage by mode **x** number of regular school days per year = Total Annual Passenger Miles
6. Total pounds CO2 per day **x** number of regular school days per year = Total Tons CO2 Per School Year

Measure B (Optional): Average Vehicle Ridership (AVR) targets

Average vehicle ridership is the ratio of students and staff to vehicles arriving at the campus. The higher the AVR at a campus, the more students and staff there are in relation to the number of vehicles, which means more students and staff are riding together, using transit, biking or walking, or even working from home. This measure utilizes mode split data in order to calculate AVR. AVR targets will vary by campus due to the availability of alternative transportation options. This measure will enable campuses to monitor the effect of TDM and parking programs on reducing the number of campus affiliates who are driving alone to campus (*Goal 1: Encourage the Use of Non-Auto Modes*).

Mode split data collected in the transportation survey will enable campuses to calculate their AVR. To calculate AVR:

1. Calculate the total number of survey respondents who drive alone. Calculate the total number of survey respondents who carpooled or vanpooled by the size of their carpool or vanpool (i.e. total number of respondents in two person carpools, etc).
2. Divide the total number of drive alone responses by one. Divide the total number of carpoolers or vanpoolers for each size category by the size of their carpool or vanpool. For example, if there are a total of 100 survey respondents in a two-person carpool divide 100 by 2.
3. Sum the results from step two. This is the total number of vehicles.
4. Divide the number of survey respondents (all modes) by the number of vehicles to calculate AVR.

Level of Difficulty: Low

The time required is approximately 8 to 10 hours.

Cost: Low

Given the low level of difficulty, it may make most sense for a campus to calculate AVR to reduce costs. If a consultant is used for the transportation survey, this calculation could be included in the survey analysis. If an outside consultant is hired, the cost could range from $1,000 to $2,000.

Key Considerations:

The design of the transportation survey will influence how easy it is to obtain necessary data such persons per vehicle.

Metric 2 (May be Required by CEQA): Vehicle Trips

By measuring the number of vehicles entering and exiting a campus at major entry points through the day, campuses can monitor the effect of TDM and parking programs on reducing the number of affiliates who are driving to campus (*Goal 1: Encourage the Use of Non-Auto Modes*). In addition, this can help identify the peak period of travel to and from campus. Understanding travel patterns and peak periods is important as parking facility and roadway capacity is often governed by the peak demand. Spreading vehicle trips more uniformly throughout the day allows

existing infrastructure to be utilized more efficiently. Another benefit of this metric is that it requires less staff time than measuring the campus mode split or AVR which require a transportation survey to be conducted.

There are several methods for tracking vehicle trips. The most suitable method will depend on the needs of the campus. For both methods, data should be collected annually and at the same time each year.

The first option, which requires the least amount of oversight and staffing, is to conduct a trip survey by mode and time of day, including identification of campus affiliate type (commuter student, resident student, faculty, staff, visitor), mode choice, and trip timing.

The second option is a cordon count to determine the number of vehicles entering and exiting the campus, typically in 15 minute segments. Usually, this type of surveying is performed over one or more 24-hour periods. The advantage of this method is that it is relatively inexpensive and does not require any in-field staffing. The disadvantage of this method is that it is not possible to differentiate between the types of vehicles that are entering and exiting campus such as carpools and the number of persons in each vehicle.

The third option, conducting a parking lot cordon count, can be used if an entire campus cannot be isolated for a cordon count. This option can be conducted at certain parking lot driveways and the counts can then be factored up to represent campus-wide trip generation.

Level of Difficulty: Low to Moderate

For hose counts, the time investment is minimal, as the counts are done electronically. For a trip survey, the amount of labor needed will depend on the level of analysis chosen by the campus.

Costs: Low to Moderate

The cost is determined by the methodology used. The cost to hire an engineering firm to conduct a hose count is relatively inexpensive, ranging from $500 to $1,500 depending on the number of intersections and the timeframe. A trip survey can cost $5,000 or more.

Key Considerations:

- The Traffic Manual provides a more detailed description of traffic data collection.
- San Francisco State currently conducts a cordon count every 3 years, however for most campuses, a hose count will likely be sufficient.

Metric 3 (Optional): Participation Rates

Tracking participation rates in the TDM measures and parking permit programs offered can help campuses determine which strategies are continuing to see growth and are the most popular. This information can help direct marketing efforts and target funds to oversubscribed programs. It also enables calculations of cost-effectiveness. Metrics to track the efficacy of specific TDM measures include:

1. Total TDM/transportation measure costs
2. Cost per trip
3. Cost per participant
4. Opportunity costs for any resources devoted to parking facilities
5. Potential for spillover parking in adjacent neighborhoods
6. Cost-effectiveness (measured in marginal or average costs)
7. Participation rates
8. Parking demand (including bicycle parking)

Level of Difficulty: Low to High

The time required will vary greatly on the number of programs being tracked as well as how much coordination is required between departments to gather data. Extra time will be required for tracking measures such as bicycle parking demand which require in the field observations.

Cost: Low to High

It is likely easiest for a campus to track participation rates internally since most TDM programs are typically administered by a campus, excluding transit services. If a campus chooses to conduct a comprehensive parking demand analysis then hiring an outside consultant may be valuable.

Key Considerations:

Tracking participation rates and other evaluation metrics is a key role for a TDM coordinator. If a campus does not have a TDM coordinator, ideally one staff person would be responsible for collecting and compiling relevant data from different departments and tracking this data over time.

Each of these metrics can be useful in developing the most efficient blend of TDM and parking investments. The case study below describes UC San Diego's experience in applying the program cost-effectiveness metric to both increase alternative mode use and keep costs to a minimum for all users.

Case Study: University of California, San Diego (UCSD)

In 2001, UC San Diego conducted a parking and transportation study to evaluate the impact of UCSD's planned parking program at campus build-out -- both in terms of potential costs and ability to meet parking demand. The goals of the study were:

- Maintain a sufficient supply of parking and effective transportation services to provide excellent access to campus
- Maintain the financial integrity of the parking and transportation system
- Maintain affordable parking and transportation costs

One of the primary focuses of the study was to consider alternative parking construction scenarios and associated programs of alternative transportation strategies suitable for UCSD over the next ten years. The alternative parking scenarios explored the feasibility of utilizing TDM strategies to reduce future demand for parking thus reducing the need to construct additional parking facilities as the campus population grows over time.

Prior planning work conducted by UCSD as part of their campus master plan planning process found that, assuming no changes in mode split, UCSD would need about 21,000 parking spaces by 2020; a gain of 7,000 parking spaces from its existing supply. Based on this analysis, UCSD's initial plans were to build 13 parking structures on the main campus over the next 20 years, which would have added 11,500 parking spaces and displaced 3,075 parking spaces. The University of California requires that parking at UC schools be a "self-financed" activity. This means that parkers must finance the cost to construct, administer, plan, and maintain the parking supply. In order to finance the construction of 13 parking structures, parking permit fees would have needed to increase by 15% to 30%.

Building on the prior planning work, the 2001 study compared the cost of constructing 13 new parking structures to the cost of investing solely in TDM strategies and transportation alternatives as well as a mixed program of TDM and parking structures. The study compared the marginal costs of accommodating affiliates driving to campus versus using alternative modes. The analysis found that the cost to accommodate a person driving alone and parking in a garage is $2,175 per year.

Two alternative parking construction programs were then evaluated. The first anticipated construction of six garages over ten years, while the second program would construct four garages over ten years. For each of these programs a complementary TDM program was developed to reduce parking demand such that there would be sufficient parking supply. The analysis found that under both of these scenarios, the average cost per trip reduced through TDM strategies was $894, less than half the $2,175 cost to accommodate those same trips with parking spaces.

Since the completion of the parking and transportation study, UCSD has invested both in building some structured parking as well as in expanding their TDM programs, and has raised parking fees to help cover the costs of both. By investing in TDM and raising parking fees, UCSD has experienced a significant increase in the use of non-auto modes of transportation. The findings of a 2008 transportation survey showed that the percentage of commuters using single occupant vehicles to reach the La Jolla campus has dropped from 66% in 2001 to 49% in 2008, a 25% decline in the drive alone rate over seven years.

MEASURING SUCCESS

A key component of any TDM program is monitoring and evaluation since TDM programs are only as effective as the degree to which they can be measured and refined. Due to the wide variation in the characteristics of campuses within the CSU system, each campus should determine the specific methodology to be used to evaluate the performance of a TDM program in relation to accomplishing campus TDM goals. Of particular note, measuring an increase in peak hour trips from a baseline may be of benefit in understanding if traffic goals are met through the TDM program, while preserving the ability of the campus to accommodate academic programs and student access.

Another option to measure success encompasses collecting at a minimum mode split data to establish a baseline from which campuses will be able to track the effects of their TDM program. Under this option, the next step is to utilize the data to determine to what degree the TDM program is "succeeding" in achieving the campus' goals and objectives.

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APPENDIX A

TDM Best Practices

A. BEST PRACTICES

Image from Nehrams2020, Wikipedia Commons

This appendix includes several best practice case studies of colleges and universities that have recognized the capacity, economic, and environmental advantages of balancing transportation needs and investing in alternatives to the automobile. Since transportation programs have varying degrees of effectiveness in limiting vehicle trips based on the context of the academic institution, the best practices below are divided into the five campus types discussed in Chapter 3 of the main report. There are five programs described within each campus type that have been selected and prioritized based on their effectiveness for that given setting. For example, the presence of campus housing and amenities is designated as a primary means of reducing driving in an exurban context, given its proxy as a mixed use environment in a largely single use setting, while it is relatively less effective in an already more integrated urban context.

It should be noted that the purpose of these case studies is to illustrate the sorts of programs that have been effectively implemented by other campuses in similar area types. The campuses themselves are not intended to be identical to those in the CSU system. However, as the settings of various universities below, particularly those in less transit-accessible areas, are very similar to those of the CSU system, strong lessons can be drawn concerning the specific measures taken to ensure programmatic success.

CAMPUS TYPE #1: URBAN

Program #1 – Parking Pricing

Case Study: Massachusetts Institute of Technology (MIT)[1]

Parking permits

The MIT campus is roughly 1.25 miles long with many of its parking facilities located on the west side of campus, experiencing low levels of demand. Realizing this, the University implemented a zone-based parking permit pricing system. The University encourages an evenly distributed parking demand by offering discounted remote parking for the Westgate lots, which are located one-half mile from the center of campus or a ten-minute walk. The goal of the graduated parking

[1] Interview with Larry Brutti, Operations Manager, MIT Parking and Transportation, April 11, 2012.

rate system is to manage parking while keeping the walking time from the parking location to an office to ten minutes or less, where possible.

Student Parking Permits

Only non-first-year undergraduates and graduate students are eligible for parking permits. First year undergraduate students are not permitted to bring a car on campus. Students may apply for resident, commuter, carpool, and occasional/evening permits. However, residential permits are only valid in specific locations associated with the student's area of residence. Discounted permits are offered to commuter students and carpoolers who park in the remote Westgate lots. A campus shuttle serves the Westgate lots at seven to ten-minute headways during peak hours and 20 minutes off-peak hours. Occasional and evening permits are available with a baseline $60 permit fee, plus a $5 per day fee for the first twelve uses in a month and $12 per day for the remaining days in the month. The occasional user fee is tracked on the member's ID and posted to their university account, each time they swipe in and out of a parking lot or garage.

Some exceptions to the parking fee structure are "Economy Student Resident Permits" granted to graduate students who live near the Westgate lots and request to be eligible for the same rate as economy parkers. This has been conducted on a trial basis for the last two years, but is not yet posted to the permanent fee structure.

Figure A-1 Student Parking Rates

Type of Parking Permit	Annual Fee
Student Resident	$1,074.00
Student Commuter/Economy Parking	$700.00
Student Carpool	$383.00
Occasional/Evening Parking	Sticker: $60.00 Day Rate: $5/day for first 12 uses in one month; $12/day for remainder of days in month
Replacement Stickers	With old sticker: $10.00 Without old sticker: $40

Employee parking

MIT offers employees a variety of commuter parking permits based on the frequency of parking needed as well as the proximity to the campus. A 35% discounted Economy Regular Commuter permit is offered to those who wish to park remotely and walk or shuttle to campus. Discounted parking permits are also provided for carpool/vanpool parking permits at half the regular commuter rate. Occasional and evening parking permit rates follow the same fee structure for students and faculty and staff.

Figure A-2 Employee Parking Rates

Type of Parking Permit	Annual Fee
Regular Commuter	$1,074
Economy Regular Commuter	$700
Carpool/Vanpool Parking	$537
Occasional/Evening Parking	Sticker: $60 Day Rate: $5/day for first 12 uses in one month; $12/day for remainder of days in month
Economy Occasional Parking	Sticker: $60 Day Rate: $2.50 for first 12 uses in one month; $12/day for remainder of days in month
Retired Faculty Parking	Prof. Emeritus with Compensation $1,074 Prof. Emeritus, No Compensation, $180

In total, MIT manages 4,200 spaces with the University selling a total of 8,000 permits in 2011-2012 (for students, faculty, staff, and contractors). MIT's parking pricing demand management strategy is coupled with a transit subsidized pass. Market-rate parking costs about $3,000/year per space, which leads the University to subsidize parking at a rate of 65%, whereas their transit subsidy is limited to 50%. The University's aim has been to achieve equilibrium between the two subsidies, but the continuously increasing costs of parking, especially since the construction of two campus parking structures, have made it difficult to curb the parking subsidy. Instead, MIT is now looking to increase the transit subsidy to balance demand.

The parking pricing program has had a noticeable effect on demand with the ratio of full-time parkers to occasional parkers currently at 2,500: 2,000 where as there were only roughly 1,000 occasional parkers five years ago. Today, of the 10,000 students at MIT, only 4.2% (420) have parking permits, compared to 25% who have subsidized transit passes. Several years ago, over 1,000 students were parking on campus, but travel behavior is shifting as both the cost of parking and shuttle services for students increase. The University commute mode split survey of staff, faculty and commuting students from two years ago showed an even split between those driving to campus, those using public transit, and those walking or biking.

In looking ahead to the demands for land on the campus, MIT predicts that the parking fee structure is likely to change again in the future to eliminate economy parking because much of the central parking will be developed and the current economy lots will become the standard parking areas for the University.

In addition to the campus parking supply, there are external factors which impact the University's parking pricing management program, namely the City of Cambridge's Residential Parking Permit program and the 200 free spaces on Memorial Drive along the river. These free waterfront spaces are usually filled to capacity at all times, except for street cleaning and snow removal.

Program #2 – U-Pass

Case Study: University of California, Berkeley (UCB)

Class Pass Program

All registered students at UC Berkeley are eligible to receive a Class Pass. The Class Pass enables students to ride AC Transit local and Transbay buses and Bear Transit shuttle routes free of charge. The Class Pass is a sticker that is affixed to a student's UC Berkeley student ID card that is shown when boarding the bus. The Class Pass is funded by a $68 portion of every student's registration fees each semester.[2]

The Class Pass program, which began as a pilot program in 1998, has had a profound effect on the campus' mode split: the overall student transit mode share has grown from 14% in 1997 to 27% in 2008, while the student drive-alone share fell from 16% to 7% during the same period. That is, the percentage of students who drive alone to campus has declined by more than half. The vast majority of the growth in student transit mode share occurred due to increasing student use of AC Transit. According to the most recent survey of student commute patterns, 20% of UC Berkeley students now commute by AC Transit.[3] The Class Pass program now serves more than 6,900 student commuters. In the 2009-2010 academic year, the campus paid AC Transit $4,787,300 for the Class Pass program.

AC Transit Bear Pass Program

Similar to the Class Pass program for UC Berkeley students, the AC TransLink Bear Pass provides UC Berkeley faculty and staff with unlimited rides at a deeply-discounted price on AC Transit buses. This includes routes serving the Transbay Terminal in San Francisco, the Night Owl service from San Francisco to Berkeley, and the Dumbarton Express service from the Fremont BART Station to Stanford University. All faculty, staff, post-doctorates, visiting scholars, and other select UC employees are eligible to participate in the AC TransLink Bear Pass program, even those campus affiliates who also purchase parking permits or pre-tax BART tickets. The annual 2010-2011 price of the TransLink Bear Pass is $408, which can be paid monthly through *payroll deduction for a monthly fee of $34*. The Pass is valid from the date of purchase through June 30 each year.

In Fiscal Year 2009-2010, AC Transit charged UC Berkeley $448,000 to cover the 11,574 faculty and staff who are eligible for the Bear Pass program. In addition, the Parking & Transportation Department incurred other expenses to manage the program in the amount of approximately $3,000, creating a total cost to Parking & Transportation of $451,000 for the Bear Pass program. Faculty and staff participating in the Bear Pass program paid $339,000 in fees to receive their passes, resulting in a 25% subsidy.

[2] UC Berkeley. 2012. Class Pass for Students. http://pt.berkeley.edu/pay/transit/classpass
[3] UC Berkeley 2008 Housing &Transportation Survey.

Program #3 – Bicycle and Pedestrian Amenities

Case Study: Portland State University[4]

On-Campus Bike Shop

The PSU Bike Hub is a one-stop campus bike shop specifically designed for students, faculty and staff. The shop offers tools, guided assistance for students to learn basic to advanced bike maintenance skills, and member discounted rates on repairs, parts, and merchandise. The PSU Bike Hub is also the place where students manage their bike parking permits.

Secure Permit Parking & Outdoor Parking

The University offers four long-term biking facilities on campus with access controlled entry and limited spots. Each area has surveillance cameras to record all entries and exits. Permits cost $15 per term or $45 for the year. Students also benefit from access to basic maintenance and air pump tools at the parking stations, as well as vending machines for other small accessories. The permit parking areas offer a total of 232 parking spaces across several structures, each with a range of 14 to 86 spaces. The campus also offers hundreds of outdoor bike racks throughout the campus. A limited number of bike lockers are also available to the biking community on campus, rentable through the City of Portland's Bike Program.[5]

BIKE to PSU Challenge

The annual *Bike to PSU Challenge* in May is the University's major annual push in the year to encourage bicycle commute to campus. The program is aimed at student participation although faculty, staff, and local residents are also invited to participate in the challenge. The project website, *biketopsu.com*, allows participants to see live statistics highlighting the number of riders actively logging trips, total teams, miles logged, pounds of CO_2 saved and calories burned. Last year, over 800 participants and 100 teams logged trips on the website, totaling some 83,000 miles.

Bike Rental Program

PSU's new bike rental program, VikeBike, aims to address one of the major barriers to biking on campus – the initial cost of purchasing a bicycle. The program offers students a refurbished bike at a rental cost of $45 per term during the fall, winter, and spring terms. The rental program includes lock and helmet accessories, a bike parking permit, and access to the Bike Hub center for fix-it-yourself and bike repair services. As the program is relatively new, the University is marketing it and testing the uptake with seasonal summer students and interns. In 2012, PSU will be tying the VikeBike Program to the Commute Challenge and making rental bikes available free for one month for students who do not own a bicycle.

The introduction of the bike shop in 2004 has had a noticeable impact on bike mode split, tripling it from 4% in 2003 to the current 12% level (see Figure 4-3). The University increased capacity of the bike shop in 2010, expanding it from 200 square feet to 1,000 square feet, which helped increase membership from 300 to about 1,300-1,400 users.

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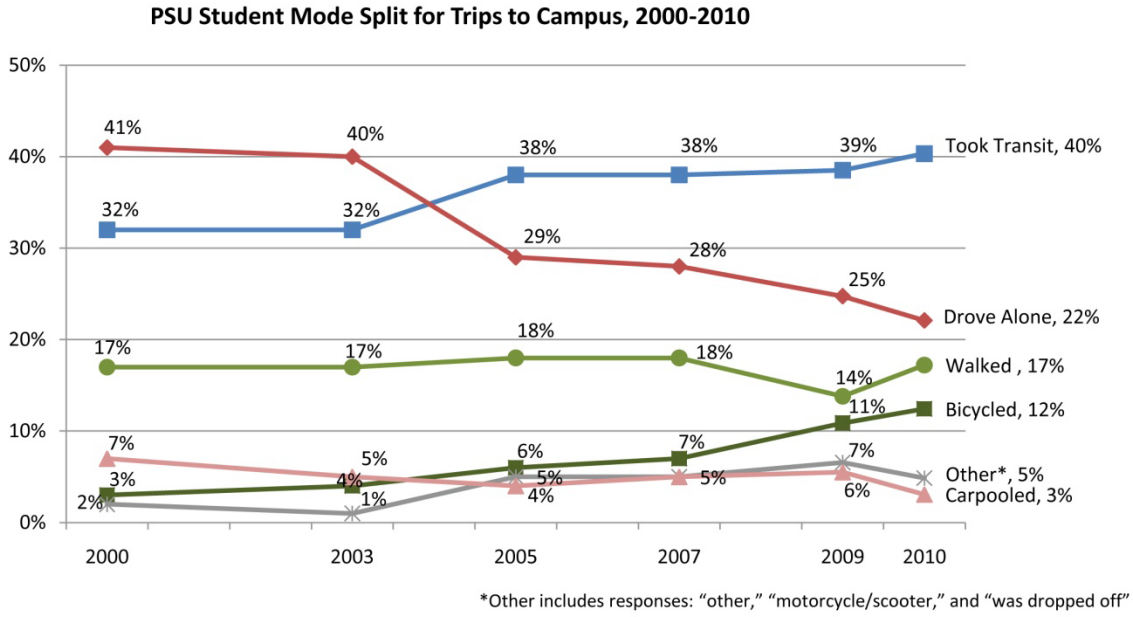
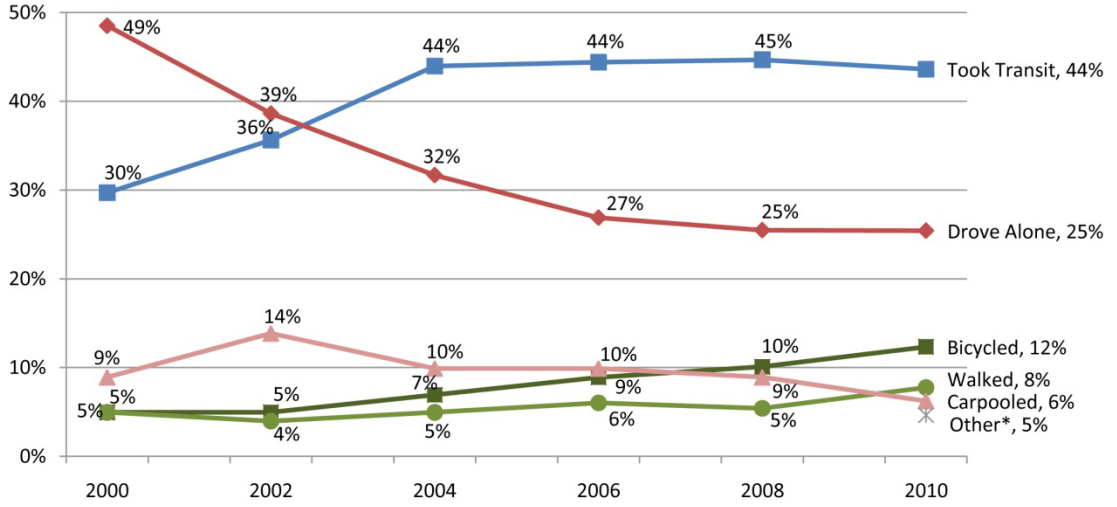
[4] Interview with Ian Stude, Portland State University, Transportation Options Coordinator, April 12, 2012.
[5] Portland State University. 2012. Bicycling for Students. http://www.pdx.edu/transportation/bicycles

Figure A-3 PSU Transportation Mode Split, 2000-2010



*Other includes responses: "other," "motorcycle/scooter," and "was dropped off"



*Other includes responses: "other," "motorcycle/scooter," and "was dropped off"
Prior to 2010, these options were not available to respondents, although trips by motorcycle and scooter (less than 1%) were included in drive alone trips.

Program #4 – Campus Housing and Amenities

Case Study: Georgetown University, Washington, DC

Housing[6]

Over 5,000 undergraduate students live on Georgetown University's main campus. All first-year and sophomore students under age 21 are required to live on campus unless granted an exemption from the Office of Housing Services. Exemptions may be granted because the student lives locally with immediate family, because of a medical condition, or because the student is married or must live with a dependent. All full-time, unmarried undergraduate students are eligible to live on campus as space is available, and in 2011, 65% of all undergraduates lived on campus. By having all first-year and sophomore students living on campus, and other students living nearby, the number of vehicle trips to the University is limited.

Students are guaranteed two years of housing and may request housing for their junior and senior years. The University has four residence halls for first-year students and nine residence areas dedicated to sophomores, juniors, and seniors.

Housing options include traditional single, double and triple rooms, apartments, and townhouses. There are four apartment complexes, 10 residence halls, and 66 townhouses at Georgetown. Since there is a heavy demand for apartments and townhouses, upper-class students who are eligible for housing are given preference for these spaces.

Within the residence halls, students may apply to live in a Living and Learning Community (LLC). The LLC program brings faculty, staff, and students together around common themes to help students develop academically and personally. Current options include Living Well; Justice and Diversity in Action; Muslim Interest Living Community; Culture and Performance; and Global Living Community.

Georgetown does not provide on-campus housing for graduate students, but the District of Columbia and surrounding areas offer many living options.

Housing Selection Process

First-year students apply for housing online and may select their roommates through the Campus Housing Roommate Matching System (CHARMS) or by completing a Living Preference Questionnaire which allows staff to match students with similar living habits. It is not possible to select a particular residence hall.

Juniors and seniors may enter a lottery to determine eligibility to participate in housing selection for the following year and the order in which roommates may choose a room or apartment. If the number of juniors and seniors entering the lottery is greater than the number of spaces available, a wait list will be developed. Students who remain on the wait list are often offered on-campus housing prior to the end of the spring semester.

[6] Sources: Georgetown U Housing Policies http://housing.georgetown.edu/academic/index.cfm?fuse=policies; College Board, https://bigfuture.collegeboard.org/college-university-search/georgetown-university

Program #5 – Carsharing

Case Study: University of California, San Francisco (UCSF)

City CarShare provides faculty, staff and students with carshare options for University business or personal use. All UCSF departments are eligible for a discounted departmental membership with City CarShare to be used by UCSF staff for work-related purposes. Additionally, UCSF faculty, staff, and students may sign up for personal memberships at a discounted rate. Spouses, roommates, or significant others may be added to an affiliate's account to create a family account. The annual membership fee is $25; the standard use fee is $5/hour and 40 cents/mile.[7] The University encourages carshare use by providing free parking to UCSF-based City CarShare vehicles at any UCSF facility permitted parking areas.

UCSF has 20 main locations across the San Francisco peninsula. CarShare pod sites are conveniently located at seven of the 20 main campus locations, including Mission Bay, Parnassus, San Francisco General Hospital, Laurel Heights, Mission Center Building and Mt. Zion (see Figure A-4). City CarShare provides 150 car share pod locations all over the Bay Area, thus adding flexibility for trip planning and reducing demand for personal car ownership.

Figure A-4 UCSF Campus Map

[7] City CarShare. 2012. *UCSF*. http://www.citycarshare.org/plans-pricing/universitiescolleges/ucsf/

Case Study: San Francisco State University (SFSU)

Zipcar provides carsharing travel options to students, faculty, and staff at San Francisco State University. Unlike UCSF, which has a variety of campuses and satellites, SFSU possesses a more centralized campus and thus only offers Zipcars at two locations: on the main campus and in a residential neighborhood just north of the University. However, Zipcar is a national company offering members access to 200 vehicles in the San Francisco Bay Area and access to the full Zipcar fleet across major US cities. Students receive a discounted membership of $15 per year, and can choose from hourly or daily rental rates.

SFSU only monitors the current number of students in the program as the registration for a discounted membership requires the University's verification. There are 1,314 students and 155 faculty and staff members as of 2012.[8]

Case Study: Portland State University[9]

In January, 2012 Getaround launched at Portland State University (PSU) and in the following month they launched in the City of Portland. Getaround is a car sharing community which helps people rent each other's cars. Renters have access to a large selection of vehicles, while car owners set their price with a low of $3 per hour and $15 per day, and determine who can rent their vehicle and when. Insurance is included with every rental and there are no sign-up or annual fees.

PSU has set aside 10 discounted reserved parking spaces for vehicle owners that are participating in the Getaround pilot program. Of those 10, five are currently being rented and three more are in the process of signing up. The five cars on campus range in price from $5 to $15 per hour and $35 to $60 per 24-hour day and include full insurance but not gas. Discounted parking spaces are offered only to PSU affiliates, but the vehicles can be rented by anyone who meets Getaround's criteria and whose rental request is approved by the owner.

In addition to these five owners, another 12 are sharing their cars in the PSU zip code. A number of other vehicle owners residing in the PSU zip code have signed up, but due to a study being conducted by the Oregon Transportation Research and Education Consortium (OTREC) in partnership with the City of Portland and funded by the Federal Highway Administration, which is offering new owners a $300 incentive to postpone renting their cars for six weeks so that baseline driving behavior data can be collected, there has been fewer than expected participants. Once the baseline period is over it is expected that there will be about 25 vehicle owners participating in the PSU zip code.

In the larger Portland area, several hundred vehicle owners have signed up to participate in the Getaround program and most of them are participating in the OTREC study. There are approximately 10 renters signed up for every owner.

To promote the program, Getaround is conducting on-campus tabling events, and distributes flyers at cafes and via a range of on-campus clubs. They also recently initiated an "Evangelist" program under which students earn referral credits by telling their friends about Getaround. In addition, Getaround offers students and employees a $25 initial free trip coupon when they join. PSU has also been helping promote Getaround by distributing flyers to students, faculty and staff

[8] Interview with Patricia Tolar, April 19, 2012. SFSU Parking and Transportation, Transportation Coordinator, April 18, 2012.
[9] Email communication with Ian Stude, Portland State University, Transportation Options Coordinator, May, 2012.

on campus, and providing links to Getaround on various web sites. PSU TAPS sent several emails to PSU students, faculty, and staff announcing the pilot program.

Given that the program just recently launched no data on levels of usage is available yet. In addition it is too early to measure the success of the program; however, PSU feels that based on the peer reviews of on-campus owners' vehicles, Getaround will fill an important niche in their TDM program particularly with students due to its peer-to-peer structure and ability to further reduce the need to bring a car to campus. The University expects that the number of cars being offered by commuters and on-campus residents will continue to increase over time, especially once potential participants aren't being "held back" by the OTREC study.

Given that this program is in the initially stages at PSU, there are several areas where the program will be tweaked to better meet the needs of the University. Getaround is currently building a "closed network" functionality, which will limit the on-campus network to campus affiliates, enabling owners to make their vehicles available only to other PSU members if they so choose. Getaround is also developing a function to enable departmental billing for employee use of Getaround vehicles for business-related trips.

Getaround has offered to install free carkits in all PSU pilot project participant vehicles, which will make the Getaround rental process more convenient for short-term, spontaneous rentals. This will enable greater use of commuter's vehicles which are typically only available for short, daytime trips as compared to vehicles owned by on-campus residents which are typically available for longer trips. Currently only one on-campus vehicle has a carkit installed.

CAMPUS TYPE #2: INNER SUBURBAN

Program #1 – Parking Pricing

Case Study: University of California, Los Angeles (UCLA)

UCLA has a tiered parking system that differentiates between students and other users. All UCLA faculty, staff, and employed graduate students are eligible to apply for an employee parking permit. Undergraduate and graduate students can apply for student parking permits, which are assigned according to a point system. Students accumulate points based on class standing, commute distance, employment, dependent children, and professional school obligations; carpools are given the highest priority, with permits distributed to those with the highest number of points. The cost of permits varies from $204 per quarter to $375 per quarter, depending on time of access (e.g., daytime only, or evening and weekend only, or both) and location (some permits limit users to certain areas). Clean fuel vehicles receive a discount ($162 per quarter for individuals and two-person carpools, $99 per quarter for three-person carpools) as do zero-emission vehicles ($99 per quarter).

UCLA's system of parking pricing helps the institution limit vehicle trips to campus. Prior to 2006, UCLA had a voluntary agreement with the City of Los Angeles to cap the number of daily vehicle trips to and from campus at 139,500. Although the agreement expired, the campus continues to employ a variety of TDM strategies such as campus shuttles, a universal transit pass, provision of bike parking, carpool incentives, ridematching, and carsharing to lower the drive-alone rate to campus.

UCLA Transportation has conducted a cordon count each year since 1990 during the fall quarter to track the University's progress, counting the number of trips made in and out of campus by car and bus over the course of one week. In 2011, the number of vehicle trips to and from UCLA

averaged 102,027 per day, more than 3% less than 2010 and almost 20% less than its peak in 2003. Vehicle counts are lower now than when the cordon counts first began. These results have occurred even as both student and employee populations on campus experienced significant growth.

In addition, UCLA conducts an annual employee travel survey, required by the local Air Quality Management District. The information from the survey and the cordon count are published in a yearly "State of the Commute" report.[10] A key finding shows that the drive-alone rate in 2011 was roughly 53% for UCLA employees, and just over 25% for commuting students (not counting those who live on campus). This is in contrast to the drive-alone rate for all Los Angeles County commuters, which was close to 72% in 2010 (the most recent year for which data is available).

Case Study: Stanford University

Stanford University has had a well established and robust TDM program in place for the past ten years which has resulted in a reduction of the drive alone rate from 72% in 2002 to 46% in 2011. In the spring of 2012, the University expanded their existing TDM program by introducing the Capri (Congestion and Parking Relief Incentives), a program with the objective to reduce peak hour traffic in the area.

Employees with an A or C university parking permit are eligible to enroll in Capri. Once enrolled, drivers receive a unique identification tag that is placed on the inside of their windshield. Scanners installed at the 10 main campus entry points detect users who avoid the weekday 8:00 am to 9:00 am peak hour by arriving between 7:00 am to 8:00 am or 9:00 am to 10:00 am or avoid the evening peak hour of 5:00 pm to 6:00 pm and leave instead between 4:00 pm and 5:00 pm or 6:00 pm and 7:00 pm. The system automatically awards credits to those drivers who arrive or depart during the designated off-peak hours Monday through Friday. These credits can then be used for an online game that pays random cash prizes of $2 to $50. Accumulated rewards are disbursed monthly via Stanford's payroll or through bank deposits. Given that this program has only been in place for a few months it is not yet possible to calculate the exact impacts this program has had on reducing peak hour traffic.

Program #2 – U-Pass/Subsidized Transit

Case Study: California State University, Long Beach (CSULB)[11]

CSULB contracts with Long Beach Transit for the U-Pass, which provides free rides to all students, faculty and staff. This pass allows users to travel throughout the campus and City of Long Beach. The program began in 2008, providing an annual travel benefit, and has recently been scaled back for the pass to be valid only during academic terms.

The program costs $525,000 per year, which amount to 49 cents per ride. The U-Pass has been a highly successful TDM program, providing an average of 9,000 unique CSULB transit riders each month with over 1,000,000 free boardings annually and results in an annual reduction of over 5,000,000 pounds of CO_2. The University's transit pass has had a significant impact since it was introduced, increasing ridership, reducing vehicle miles traveled, and lowering annual pounds of CO_2, as shown in Figure A-5.

[10] http://www.transportation.ucla.edu/portal/pdf/2011StateoftheCommuteReport.pdf
[11] Interview and email correspondence with Elissa Thomas. CSULB Parking, Rideshare Coordinator, April 19, 2012.

Figure A-5 Long Beach Transit Ridership, VMT, and CO_2 Emissions

Year	U Pass	Long Beach Transit Annual Ridership	Long Beach Transit Ridership Annual VMT reduced	Long Beach Transit Annual Pounds of CO_2 reduced
2007-2008	No U-Pass	98,860	494,300	452,778
2008-2009	Implemented	783,835	3,919,175	3,589,964
2009-2010	Implemented	1,114,709	5,573,545	5,105,367

In addition to the student subsidized U-Pass, the University provides subsidized transit passes for University employees, including student employees who may need to commute longer distances through the Los Angeles County Municipal Transit Authority (MTA) and Orange County Transit Authority (OCTA) systems.

The MTA pass is subsidized at an annual rate of 65%, costing $315 instead of the standard $900 rate. The OCTA pass, which costs $150 for a 120-day Semester Pass, is fully subsidized. The full subsidy is offered as there are very few riders on the OCTA system, and they are typically either very committed to taking long trips on public transportation or have a greater financial need. Annual program costs are roughly equal: $5,000 per year for OCTA for very few users and about $8,000 per year for MTA. The University perceives these two subsidized transit programs as a key strategy for their growth. Investing in transit has proven to be more cost-effective, where the cost of one space in a parking structure is equal to 204,082 Long Beach Transit trips. At this rate, for the cost of five structured parking stalls, CSULB can cover the annual transit demand of the U-Pass.

Program #3 – Carpool and Vanpool Incentives

Case Study: California State University, Long Beach (CSULB)

Rideshare Rewards allow University employees (faculty, staff and student assistants) to accumulate $1/day in reward points for each day they walk, bike, carpool, vanpool, motorcycle, or drive a hybrid or electric vehicle to campus. The reward is also valid for each day of telecommuting or each day an employee does not travel to campus due to a compressed work week. The reward points can be redeemed at the University Parking Office for gift cards to local businesses (Lowe's, restaurants, and a bike shop) or transferred onto a University ID card for use at any of the on-campus shops.

The Rideshare Rewards Program has been in effect since 1989. There are currently 1,500 carpoolers alone in the program. The program requirements have recently changed to allow student University employees to receive rideshare points. The program is funded by Citation & Parking Revenue, with no capital costs, and an operating cost of $50,500.

Program #4 – Campus Housing and Amenities

Case Study: San Diego State University (SDSU)

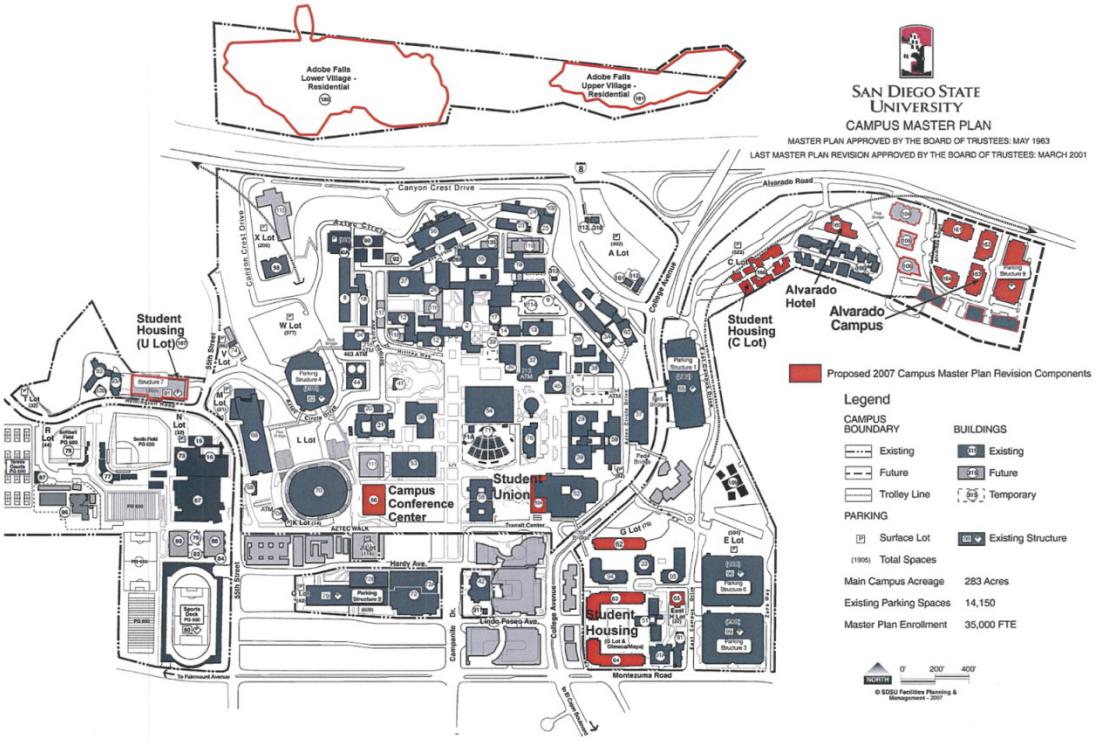
Housing

The 2007 SDSU Campus Master Plan predicts a gradual increase in enrollment of 3% over the next 15 years, increasing the enrollment of full-time students from 25,000 to 35,000 students. [12] The student population is presently about 30,000 (25,000 undergraduate and 5,000 graduate students).[13] By the end of the planning period, the University aims to house 100% of its freshman and 94% of its second-year students in University-owned housing on campus or in University-managed housing within walking distance. About 3,500-4,000 students and roughly the same number of faculty and staff currently live on campus, and the University has plans to continue increasing the supply of housing.[14]

The proposed 2007 Campus Master Plan primarily recommends adding student beds in the south-east quadrant of campus. In addition, a new mixed-use development planned at College Avenue and Montezuma Road would put student housing above ground floor commercial spaces. With housing values dropping, it is not financially feasible for the University to proceed with its plans to develop faculty and staff housing at Adobe Falls, just north of the campus along I-8 as originally planned in the Campus Master Plan.

[12] San Diego State University. 2007.*Campus Master Plan*. http://advancement.sdsu.edu/masterplan/2007/elements.html
[13] San Diego State University. 2012. Fast Facts. http://arweb.sdsu.edu/es/admissions/facts.html
[14] Interview with Lauren Cooper, SDSU Facilities, Design and Construction Director, April 19, 2012.

Figure A-6 Existing and Proposed Development, 2007 Campus Master Plan



Source: 2007 Campus Master Plan, SDSU

Figure A-7 Proposed Mixed Use and Student Housing Development

Source: 2007 Campus Master Plan, SDSU

Campus Meals and Cafes

There are four student dining plans, offering students the flexibility to choose between traditional meal plans or pay-as-you-go meal debit dollars. Students, faculty and staff can choose from 20 restaurants and markets across the campus. In addition, the Faculty and Staff Club serve as the hub for staff meals, with discounted breakfast and lunch meals for club members.

Other Amenities

The University is in the process of renovating its student union, originally built in 1968 and now the oldest in the CSU system. This project will provide new meeting/conference rooms, social space, food services, retail services, recreational facilities and student organization offices to accommodate the growing student population. The campus bookstore serves as the main commercial hub. The University also offers health, recreation, and cultural facilities.

Case Study: Stanford University

Housing

Stanford University is located in Palo Alto, 35 miles south of San Francisco and 20 miles north of San Jose, just a 20-minute walk from the Caltrain station and Downtown. The campus offers a variety of housing and amenities to meet the needs of students. Nearly all undergraduates and 50% of graduate students live on campus. Stanford provides a variety of housing options including housing for single undergraduates and graduates, couples without children, and students with children.

Campus Meals & Cafes

The University offers ten campus dining halls, ten campus Stanford-operated cafes, and several privately-operated cafes, open to anyone in the Stanford community including students, faculty, staff, affiliates, and guests. Only Row House dining halls are reserved for residents.

All undergraduates living in student housing are *required* to purchase a meal plan, except for students living in apartments. Thus, the majority of student meals are purchased on-campus, greatly reducing the demand on students' time and travel for meals. Graduate and apartment students, and staff and faculty may also purchase a meal plan, Cardinal dollars (with a 10% value added for affiliates), or a combination of these to either have their meals at one or multiple dining halls, or have the flexibility to eat anywhere on campus. For staff, the University offers a special Department Lunch Card to encourage staff to eat at any of the eight featured dining halls. Anyone from the Stanford community may purchase meals in cash from most eating establishments.

Other Amenities

Stanford offers shopping, banking, post office, athletics and recreation, health, religious, and cultural and social programming services and facilities directly on campus to cater to every student and affiliate need. Tressider Union serves as the central hub of student services and is open every day (except holidays) until 2 AM. The union includes banks, the bike shop, Tressider Express convenience store, and many services from hair cuts to FedEx printing.

Case Study: University of California, Los Angeles (UCLA)

Housing

UCLA has an overwhelming demand for campus housing. Currently, UCLA offers freshman guaranteed housing for the first three consecutive years with transfer students guaranteed campus housing for two years. The University has very limited housing for graduate students, student couples, students with children, and students with families through UCLA-owned University Apartments; currently 94% of freshmen live on campus compared to 23% of graduate students.[15]

The 2011-2021 Campus Housing Master Plan aims to offer guaranteed housing for all undergraduate students, for all four years. The University has several construction projects scheduled to run through 2013 to expand their bed capacity by 1,500 undergraduate beds and to renovate existing high-rise buildings. The University has made a complete transformation over the past 25 years from a commuter campus to a school with housing choices and an abundance of living amenities and support. Nearly all undergraduates live on campus (either at University-owned housing or private housing in Westwood) or within walking distance. Providing additional graduate housing continues to be a campus priority. From studies, the University firmly believes that "students who live on campus perform better academically, have more contact with faculty, and are happier with their college experience than students who commute."[16]

Meal Plans and Cafes

UCLA Dining Services offers a variety of dining options for students, faculty, staff, and guests. There are three to five eating establishments across each of the five main campus districts: Residence Halls, North Campus, Central Campus, South Campus, and Health Sciences, reducing the need for students to travel and maximizing their options from a light Jamba Juice to all-you-care-to-eat dining halls. The mainstays are the University's four all-you-care-to-eat dining halls and six cafes.

Other Amenities

Like many universities, UCLA offers shopping, ATMs, postal services, athletics and recreation, medical and pharmacy, and cultural facilities directly on campus to cater to every student and affiliate need. More than 15 campus shops offer students and affiliates all the essentials from computer and technology items to textbooks and general convenience items.

Program #5 - Ridematching Program

Case Study: California State University, Long Beach (CSULB)

CSULB has contracted with Zimride to provide online carpool ridematching services. Zimride has a website that combines Facebook and a proprietary route-matching algorithm to allow members to share seats in their cars or catch a ride. With this service, CSULB students, faculty and staff can find classmates and colleagues going the same way and share a ride to campus. Because Zimride

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[15]UCLA. 2012. *UCLA Student Housing Master Plan 2011-2021.* http://www.housing.ucla.edu/shmp/SHMP-2021-v1-19WEB.pdf

[16] UCLA. 2012. *Living on Campus.* http://map.ais.ucla.edu/portal/site/UCLA/menuitem.789d0eb6c76e7ef0d66b02ddf848344a/?vgnextoid=7120064a9a7d1010VgnVCM1000008f8443a4RCRD

uses the Facebook platform, drivers and riders can view other user profiles for common networks, interests, and friends before deciding to share a ride. Drivers offer rides, listing a price they would like people to pay so they can share their costs, and riders can respond or post a request for rides.

The incentive for users is that the service is free for them and it defrays their cost of travel by splitting transportation costs with other users. As an additional incentive, faculty, staff, and student assistants who carpool are eligible for Employee Rideshare Rewards.

The number of participants in the program is about 1,560. CSULB Sustainable Transportation Program operates the ridematching program with funding from the Citation and Parking Revenue. There are no capital costs; operating costs are about $14,000.

CAMPUS TYPE #3: SUBURBAN

Program #1 – Parking Pricing

Case Study: Simon Fraser University, Burnaby, Canada

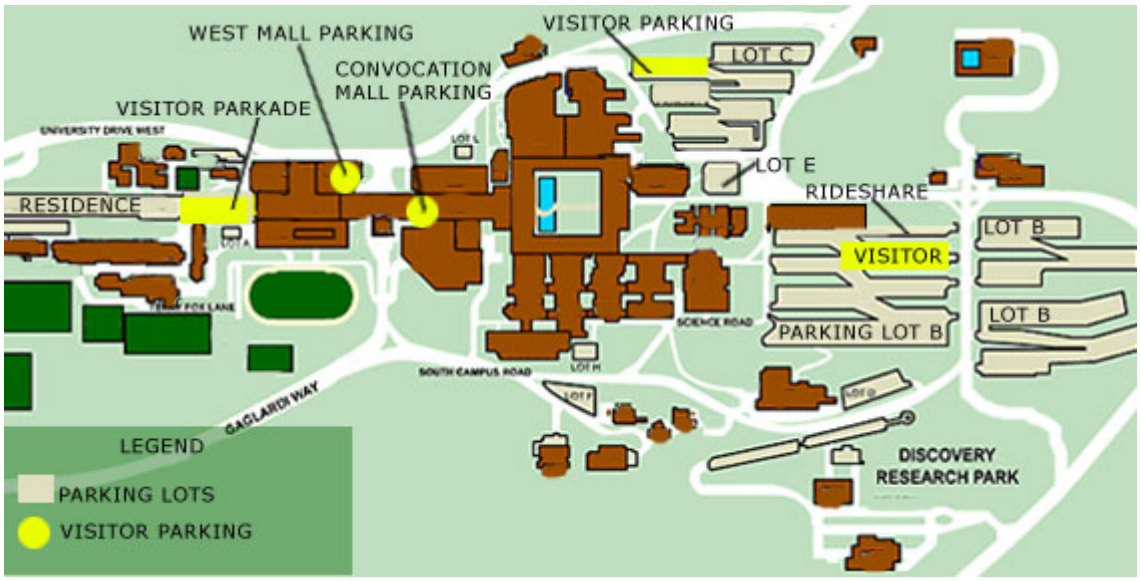
Simon Fraser University (SFU) is located seven miles east of Downtown Vancouver on Burnaby Mountain, which separates the university from the urban region surrounding it. SFU has 32,000 students and 2,500 faculty.[17] Burnaby Mountain Park surrounds the campus, providing access to biking, hiking, and running trails in the park's temperate rain forest. The University's parking management policy relies on parking pricing tiers based on the three desirability factors including proximity, covered versus uncovered, and reserved versus "search" stalls. Figure A-8 and Figure A-9 show the range of parking permit prices and a map of parking lot locations.

Figure A-8 Parking Pricing Structure

Parking Permit Types, 2010	Desirability Factor	Fee[18]
Tier 1 (Convocation Mall, West Mall, etc)	Reserved, indoor, close to campus	$131.64/month ($130.96/month CAD)
Tier 2 (Outdoor reserved)	Reserved, outdoor, close to campus	$111.65/month ($111.07/month CAD)
Tier 3 (A, B, C, D, E, H Lots)	Unrestricted, outdoor, close to campus	$91.65/month ($91.48/month CAD)
Tier 4 (G Lot)	Unrestricted, outdoor, far from campus	$52.54/month ($52.27/month CAD)

[17]Simon Fraser University. 2012. *General Highlights*. http://www.sfu.ca/facts/general-highlights.html
[18]Simon Fraser University Parking Services. 2012. Rates and Refunds. http://www.sfu.ca/parking/rates-refunds.html

Figure A-9 Parking Map[19]



SFU-Burnaby's goal is to provide students, and associated faculty and staff, with an acceptable Level of Service. Specifically, the University's Parking Management Plan (PMP) (completed in February 2006) sets a minimum Level of Service of 25% (1 parking space for every 4 campus commuters). This includes a long term goal of supplying and maintaining 5,800 parking stalls, an amount sufficient to serve the projected 2025 commuter student population of 23,000. A 2009 PMP plan update reported that lot occupancy averages 90%.[20]

The current parking fee structure at SFU is a result of comparable university parking types and fees, and other market alternatives. The parking fee is planned to increase 8% per year, including 3% for inflation to maintain a fee that is in line with the marketplace. Under the 2006 parking fee structure, approximately C$3,000,000 (US$2,795,000) was collected each year from visitor and reserved parking charges. The current fee structure, in conjunction with the possibility of expanded utilization opportunities, will increase the annual parking revenues to more than C$16 million (US$14,900,000) in 2025. The projected net present value for revenues through 2045 is approximately C$144 million (US$ 134 million).

Case Study: California State University, Fullerton

Parking Permit Fees/Types

Parking fees at CSU Fullerton are on a schedule to be increased gradually over the next few years. Student fees are shown in Figure A-10. Some staff fees are subject to collective bargaining; staff parking fees by semester are shown in Figure A-11. Daily parking permits, for visitors and occasional parkers, cost $8 per day.

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[19] Simon Fraser University Parking Services. 2012. Parking Map and Directions.
http://www.sfu.ca/security/print/Parking/map.html
[20] Simon Fraser University Parking Services. 2009. Parking Management Plan Update.
http://www.sfu.ca/content/dam/sfu/parking/Announcements/January_2009_Board_Submission_and_Approval.pdf

Figure A-10 Schedule of Student Parking Fee Increases[21]

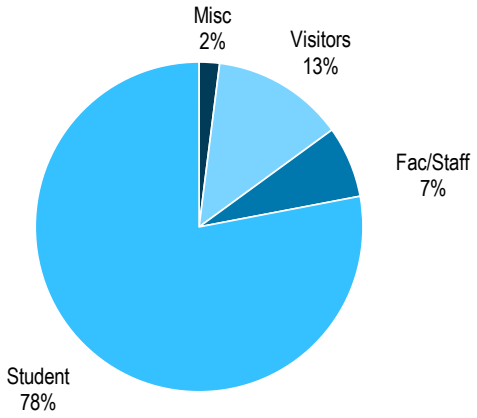
Student Semester (Fall and Spring)
$162 per semester for spring 2009
$220 per semester beginning July 1, 2010
$229 per semester beginning July 1, 2013
$236 per semester beginning July 1, 2016

Figure A-11 Staff parking fees by semester[22]

Purchase Date	Teaching Associates, Non-Represented	Units 1,4,6,8,10	Unit 3	Units 2,5,7,9	Motorcycle
1/20/12	$144.00	$54.00	$59.35	$58.10	$75.00

Most parking revenue comes from the sale of student, faculty/staff, and daily parking permits. The distribution of parking permit revenue according to permit type (student, faculty/staff, visitor and miscellaneous parking fees) for fiscal year 2008 – 2009 is shown in Figure A-12.

Figure A-12 Parking Permit Revenue, July 1, 2008 to June 30, 2009



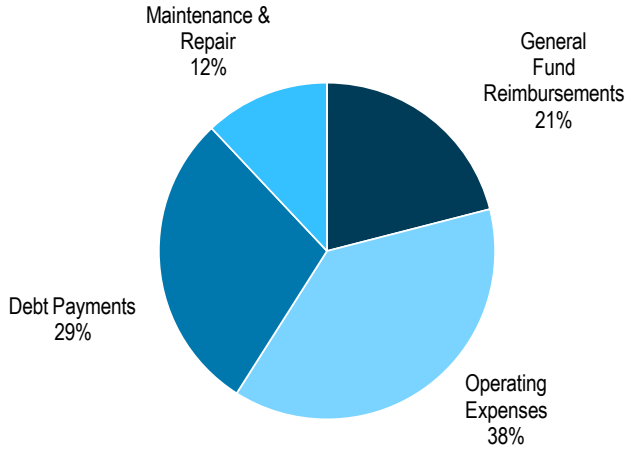
CSUF parking fees for the fiscal year 2008-2009 were allocated as follows:

- 38% of total revenues for operating expenses, which includes department employee salaries and benefits; operating expenses such as utilities (electricity and water); street sweeping and trash collection.
- 29% of total revenues for annual debt service payments.
- 21% of total revenues to reimburse the General Fund for services provided by state-funded departments, such as University Police, and administrative and financial services.

[21] Source: http://parking.fullerton.edu/Parking/FeeIncrease.aspx
[22] Source: http://parking.fullerton.edu/

- 12% of total revenues for facilities maintenance and repair, such as repaving and restriping parking lot surfaces.

Figure A-13 Parking Expenses, July 1, 2008 to June 30,2009



Some of the parking revenue is also used to fund the agreement between the University and Orange County Transportation Authority (OCTA) to provide transit passes to the university community. In addition, several campus programs offer incentives for people not to use parking permits. The carpool reimbursement program (described below) pays members of carpools not to drive, and if they don't have a permit they are paid more. A transit reimbursement program also supplements the local transit available on OCTA with reimbursements for regional transit trips.

Program #2 – U-Pass/Subsidized Transit

Case Study: California State University, Fullerton

Fullerton's University ID card ("Titan Card") allows faculty, staff, and students to ride any OCTA bus for free. The program is paid for out of parking permit revenues, and costs $420,000 per year. OCTA service is somewhat limited with four of its lines accessing the University. OCTA's service area is also confined to Orange County. For employees and students who travel from farther away, the school offers transit reimbursements. These payments are also tied to parking use to add further incentive for people not to drive so that reimbursements are higher for people who limit their use of parking. For example, students and employees who do not have a parking permit can receive 100% reimbursement of their monthly transit costs, up to $75 for bus or $120 for rail. These reimbursements cover regional services not supplied by OCTA and the U-Pass. Students and employees who have a parking permit can still receive reimbursement, but only up to 25% monthly, $19 for bus or $30 for rail. Participants track their use of transit and submit a copy of their pass each month, and receive a reimbursement check in return.

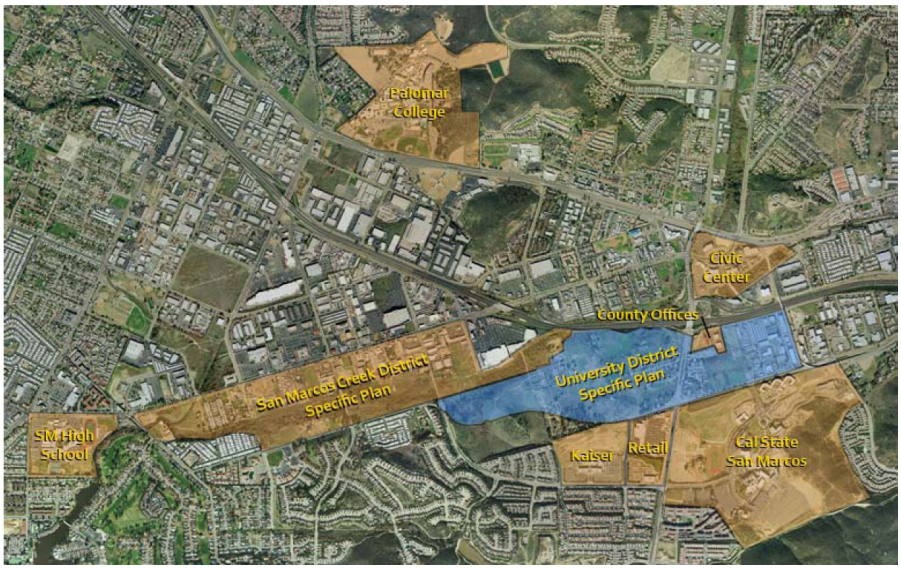
Participation rates are moderate with about 3,000 unique riders tallied during peak months. With more than 35,000 campus affiliates, this does not represent a large share, but given the ubiquitous car culture and relatively sparse transit service, CSU Fullerton considers it a fairly successful outcome.

Program #3 – Campus Housing and Amenities

Case Study: California State University, San Marcos (CSUSM)

In a suburban context like CSU San Marcos', leveraging in-fill development opportunities around the campus can be a very effective way to provide student housing and reduce travel demand. This is particularly relevant in contexts where there is available vacant land near a campus, and where this land is owned by a few land owners. In San Marcos, the University, City and community stakeholders worked together to craft a master plan for a mixed-used development adjacent to the university. The proposed University District is a 194-acre planned development in the heart of San Marcos, adjacent to the campus.

Figure A-14 University District Aerial Context Map



Source: City of San Marcos, University District Specific Map, 2009

Figure A-15 University District Major Landowners

Source: City of San Marcos, 2009

The mixed-use development will include residential, retail, and dining uses and was carefully tailored to include housing and retail services for student, faculty, and staff needs (Figure A-16).[23] In addition, the specific plan envisions a "strong emphasis on pedestrian movement and mass

[23] City of San Marcos. 2009. *University District Specific Plan.* http://www.san-marcos.net/index.aspx?page=328

transit" given the target user groups. The University participated in the Specific Plan Development process and was a key stakeholder in shaping the development standards for student housing so that students living at the University District could park their cars on campus. Thus, no parking would have to be provided for those units (Figure A-17). This collaboration with the City to develop the parking standards, effectively eliminated redundant parking, and made the inclusion of student housing units more financially viable for the developer.

Figure A-16 University District Rendering

Source: City of San Marcos, 2009

This development will help the University achieve its goal of providing more quality housing within walking distance. Currently, the University hosts 10,000 undergraduates and graduate students, with only 40% of freshman and 10% of all university undergraduates living on campus.[24] The CSUSM Master Plan anticipates a full build-out capacity of 25,000 students, accessible housing and amenities will continue to be a pressing need.

[24] City of San Marcos. 2009. *University District Specific Plan.* http://www.san-marcos.net/index.aspx?page=328

Figure A-17 University Flats Development Standards

University Flats: Parking Requirements	
Residential Units	
Minimum Requirement	1 space per unit
Live Work Units	
Minimum Requirement	1 space per unit if the unit is less than 2,000 square feet 2 spaces per unit if the unit is greater than or equal to 2,000 square feet
Student Housing	
Minimum Requirement	Parking for students is not required within the *University District*. Students living within student housing may park their cars at the University.
Non-Residential Uses	
Minimum Requirement	2 spaces per 1,000 square feet of leasable space
Allowed Locations	
Parking for all uses may be provided on-site, on-street adjacent to the site, or within an off-site shared and/or public parking facility.	
Transportation Demand Management (TDM)	
Refer to Chapter V – Transportation|Circulation for more information on parking requirements related to TDM measures	

Source: City of San Marcos, 2009

Program #4 – Carpool and Vanpool Incentives

Example: California State University, Fullerton

In order to reduce the drive-alone rate to campus, CSU Fullerton offers several incentives for people joining carpools or vanpools. Employees are paid $1 per day for every day they carpool to campus, as long as their carpool group owns only one parking permit. This works as a further incentive to carpool, as the members of the carpool without parking permits would have to pay for daily parking permits out of pocket. If the group has more than one permit, they are still paid for carpooling, but only 50 cents per day. Faculty and staff without parking permits can also receive a vanpool subsidy, up to $120 per month if they do not own a parking permit. If they choose to keep their permit, they receive a smaller subsidy of $30 per month.

Participants in the incentive program must register, identifying their fellow carpool members, and then submit monthly tracking forms showing which days they carpooled. These are matched to the forms of other participants to double check their veracity, and then checks are processed and distributed.

Program #5 – Ridematching Program

Case Study: California State Polytechnic University, Pomona[25]

Cal Poly Pomona encourages ridesharing for both students and faculty and staff for its largely commuter campus. The ridematching program has been in place for three years. Participants provide their contact details, including their home address and university ID card to the Rideshare Office. Participants then receive a tailored list of others living in their specific zip code seeking to carpool to campus. The program is mainly in place for campus commuting—not special trips—and the ride matching database captures the commute shed of students, faculty and staff from the Valley, Santa Clarita County, Orange County, San Bernardino County, and Los Angeles County. The University chooses to maintain two separate lists, one for students and one for staff, to avoid possible liability issues.

The University incentivizes affiliates to participate in the ridematching services by making it free with participants gaining access to priority spaces in three lots on campus (C, J and F lots). A vehicle must have a valid Cal Poly parking permit to be eligible. Any vehicle that approaches the Student Rideshare Booth with two or more persons is eligible for the free, daily Rideshare Pass distributed between 7 AM and 3 PM, Monday to Friday. The Rideshare Pass must be displayed on the dashboard accompanied by a regular parking permit to be valid. Any student with a valid Cal Poly parking permit may park in student rideshare spaces after 3 PM to make efficient use of parking spaces.

Students who live in the Village or Residence Halls, or within a one-mile radius of the campus, are not eligible for the Rideshare Pass. Students are also not supposed to pick up other students from surface lots on campus to obtain a Rideshare Pass. Disregard for the rules can lead to a citation of $106, student discipline from Judicial Affairs, and permanent dismissal from the Rideshare program.

The number of students who receive a Rideshare Pass changes day to day and quarter by quarter with the ebb and flow of students on campus, with fall being the peak period. In the fall, there are 6,000-7,000 Rideshare Passes issued per month. This results in at least 12,000 to 14,000 students carpooling per month, if not more. Off-peak, this number drops to 3,000 Rideshare Passes. The University does not monitor the number of students and faculty and staff who solicit ridematching services, but it closely monitors the number of Rideshare Passes on a monthly basis and checks the occupancy of the rideshare spaces on an annual basis to manage supply.

[25] Interview with Donna Cerna, Assistant to the Rideshare Program, Cal Poly Pomona, April 27, 2012.

CAMPUS TYPE #4: EXURBAN

Program #1 – Campus Housing and Amenities

Case Study: Kennesaw State University, Kennesaw, GA

Figure A-18 Kennesaw State Parking and Shuttle Campus Map

Kennesaw State University (KSU) is a public university that is part of the University System of Georgia. Located 20 miles north of Atlanta, KSU lies on the northern fringe of the metropolitan area, with relatively limited transit and non-auto mode access.

For much of its existence, KSU has been almost exclusively a commuter student school. However, in 2002, the University launched its first residence program. Since that time, KSU has grown to four apartment communities on campus: KSU Place, University Place, University Village, and the University Village Suites. The University now has over 3,000 students living on campus since its first housing opened, all within a ten-minute walk of the heart of campus. In fall 2012, KSU is expected to open an additional residential building, increasing the number of residential students to 3,500.

For those students who cannot live on-campus due to high demand, the University offers a housing registry service to match students, faculty, and staff searching for housing or roommates. In addition to residences, KSU also offers a host of dining services to allow affiliates to eat on campus without the use of a car. These include seven different cafeterias and restaurants.

In order to facilitate movement to and from campus residences, as well as to commuter parking lots, the University recently introduced a new shuttle system funded by a student parking fee of $20. The shuttle system was introduced as a cost-effective approach to accessing residential units and remote commuter spaces and thereby helps avoid having to construct an additional parking structure, which would result in higher parking permit fees. Currently, the University's enrollment of roughly 23,000 students is served by almost 8,000 parking spaces, many of which are located in less convenient areas better served by a shuttle.

Program #2 – Carpool and Vanpool Incentives

Case Study: California State University, San Bernardino (CSUSB)

CSUSB offers a number of incentives to encourage walking, biking, carpooling and vanpooling. As a financial incentive, the University offers $2 per day in gift cards. Previously, the University offered free Omnitrans bus passes, but during the 2011/2012 fiscal year, the University purchased free transit passes for all students, faculty, and staff (with contributions from nine communities

surrounding the campus) and as such, free passes have become a moot issue. The free transit program costs $300,000, with an uncertain funding stream and it is not known whether the program will continue.

In addition, carpools and vanpools are eligible for preferential parking in spots that are closest to the main building. Carpool stickers are issued to employees who are registered carpool participants with stickers displayed on the group's parking permit. Students who do not work on campus, but wish to park in the preferred spots, can drive past the main kiosk, where attendants verify that there are at least two people in the car, and issue a stamped card allowing them to park.

Parking permits cost $5 per day, and anywhere from $82 to $104 per quarter, depending on staff category. Carpools do not receive a discount, but drivers and passengers can split the cost of the permit among themselves.

Additional incentives to avoid driving alone include six free parking passes per calendar year for employees who bike or walk to campus, and three free parking passes for registered vanpool participants. The University maintains an online ridematching service to facilitate carpool-matching within the CSUSB community. Program enrollees can also take advantage of the Guaranteed Ride Home program for emergency rides home if they have walked, biked, carpooled, or taken transit to work. Lastly, Commuter Services hosts an annual luncheon to recognize and appreciate program participants.

There are currently 400 registered participants in the alternative commute program, which is reserved for staff, faculty, and students employed on campus. Since many of the incentives are taxable gifts, they are not offered to students who do not work for the University.

Program #3 – Ridematching Program

Case Study: University of Central Florida (UCF)

UCF uses Zimride to connect drivers and passengers for potential carpools or one-time trips. The service is free to students, staff, and faculty, and is limited to members of the UCF community, although users can choose to include other community groups, such as other colleges, to extend their search for rides or passengers, if they wish. The UCF Zimride website includes useful tips, such as carpool etiquette (be on time!) and a chart showing average operating costs per mile to help people decide how to split costs (see Figure A-19).

Figure A-19 Average Operating Costs per Mile

Vehicle Size	Gas	Maintenance	Tires	Cost Per Mile
Small Sedan	8.21 cents	4.26 cents	0.61 cents	13.08 cents
Medium Sedan	10.54 cents	4.51 cents	0.87 cents	15.92 cents
Large Sedan	11.51 cents	4.92 cents	0.82 cents	17.25 cents
Average	10.09 cents	4.56 cents	0.77 cents	15.42 cents

The program costs the University roughly $12,000-$14,000 annually, and is specifically adapted to the University's requirements, including services such as marketing, website service, and support. UCF's department of Parking & Transportation Services and the Student Government

Association jointly fund the program. In the two years the program has existed, it has had a total of 2,760 users, with 163 of them joining in the last 90 days. See Figure A-20 for some of the statistics tracked by the system.

Figure A-20 UCF Zimride Statistics

Metric	Count
Cumulative Users (since 01/07/2010)	2760
New Users (last 90 days)	163
Ride Postings Currently Active in the System	374
Cumulative Posts (since 01/07/2010)	2130
One-Time Posts	1092
Commute Posts	1038
New Posts (last 90 days)	204
One-Time Posts	147
Commute Posts	57
Average Matches Per Post	13

In addition, UCF pays Zimride to provide a calculation of environmental benefits. Figure A-21 show the monetary and greenhouse gas savings from the Zimride program.

Figure A-21 UCF Green Initiatives through Zimride

Results (01/07/2010 to 03/28/2012)	Savings
User Cash Saved	$694,913
Miles Saved	1,263,479
Gallons of Gas Saved	49,548
Pounds of CO2 Emissions Saved	961,235
Grams of Volatile Organic Compound (VOC) Emissions Saved	535,715
Grams of Nitrogen Oxides (NOx) Emissions Saved	679,751
Pounds of Carbon Monoxide (CO) Emissions Saved	13,898
Grams of Particulate Matter (PM) Emissions Saved	275,438
Grams of Sulfur Dioxide (SO2) Emissions Saved	89,707

Program #4 – Parking Pricing

Case Study: Wellesley College, Massachusetts[26]

Wellesley College is a small liberal arts college of 2,500 students. The College's primary parking demand management strategy is to restrict freshmen from bringing cars onto the campus and pricing upperclassmen parking permits. Although the parking management structure at the College has not been adjusted in the last 15 years, current supply continues to exceed parking demand on campus, with almost a full level of a 565-space parking structure not being used. By simply blocking on-campus parking access to freshmen, the College has been able to maintain parking availability without permit price increases. Revenue for 2011-2012 was roughly $51,300 which is applied to the College's general fund.

Student parking

Student parking permits are provided in order of priority, whereby faculty and upperclassmen gain access to the most convenient lots and sophomore and juniors must park in a single dedicated lot at all times, further away from the center of campus. Seniors from all the various residences must park at a separate priority lot dedicated for seniors and in a parking structure shared with staff. In addition, seniors can park in staff parking lots after 4:30 PM through 2 AM during the week and anytime during weekends (up to 6 AM Monday morning). Furthermore, commuter students also have a dedicated lot.

A total of 395 student permits were sold in 2011-2012 (141 seniors, 54 commuters, 160 juniors and sophomores, and 35-40 special permits for a dedicated juniors/seniors lot), equaling roughly 16% of the student body. This suggests that the pricing program encourages students to rely on public transportation or alternative means of transportation.

Figure A-22 Parking Permit Fees

Parking Permit Type	Fee[27]
Resident student	$135/year; $75/6 months
Commuter	$100/year; $60/6 months
Faculty and Staff	Free

Faculty and staff

Faculty and staff parking is provided in the shared 565-space parking structure and on two faculty dedicated lots. Parking is free for faculty and staff.

Program #5 – Shuttle Service

Case Study: California State University, Monterey Bay (CSUMB)

In past years, CSU Monterey Bay paid the regional transit agency, Monterey-Salinas Transit (MST), to create a "free fare zone" so members of the campus community could ride any regularly

[26] Interview with Frank Urban, Wellesley College, Police Officer and Transportation and Parking Coordinator, April 11, 2012.
[27] Ibid.

scheduled MST bus on campus without paying a fare. The University independently operated a shuttle service that consisted of two vans to provide internal campus circulation. Starting August 2011, the University eliminated the vans and the "free fare zone" and instead pays MST to operate two trolley shuttle loops (the "Otter Shuttle") on campus. As part of its agreement with MST, any student, staff, or faculty member with a valid ID can ride any MST route for free throughout its system (the MST service area stretches from San Jose to Paso Robles).

CSUMB pays $87 per hour for each trolley and determines how many hours it should run with the free transit for campus community members remaining in place whether the campus decides to operate one shuttle or two. In fiscal year 2011-2012, MST operated two trolley shuttle vehicles 12 hours per day, 5 days per week year-round. However, in fiscal year 2012-2013, service may be reduced to 10.75 hours per day during fall and spring semester in an attempt to "right size" the services and save money. Late-night, winter break, and summer session services were not well used in this first year, and may be eliminated or reduced. The CSUMB two-shuttle system (including UPass) in fiscal year 2011-2012 cost $484,352. A two-shuttle system (including UPass) in fiscal year 2012-2013 will cost $398,706; a one-shuttle system (including UPass) will cost $205,000.

Funding comes in part from student fees, which are distributed according to a formula created each year by the Student Fee Advisory Committee (SFAC). In 2010-2011, the SFAC paid $313,000 into the service, the University corporation contributed $75,000, and a one-time reserve contributed another piece of funding. Long-term SFAC funding remains uncertain, so routes and frequencies are revisited each year.

A regular monthly pass on MST costs $150 per person per month. Negotiations with MST have included the possibility of paying solely for a universal pass at a cost of $139 per student per year. Under the current arrangement, costs average roughly $80 per student per year. The benefits of the program are two-fold. First, MST experiences higher ridership, which may make it eligible for more federal funding. For the University, MSUMB adds a 10% multiplier to what it pays MST for ADA-required transit services on campus, which eliminates the need for the University to keep an extra vehicle or to operate ADA services itself.

It should be noted that the TDM program at CSUMB is required as part of a legal settlement with the surrounding community, which sued the University in regards to its traffic impacts when it first opened. The University conducts traffic counts twice a year and submits a report once a year as part of the settlement. CSUMB also compares ridership counts over time on the trolley, but as this is a new service, there is currently insufficient data. Counts currently are made manually, but beginning in 2012-2013, the University will introduce new ID cards that will be used as swipe cards on all MST services, to facilitate tracking campus community ridership numbers.

Trolley ridership is currently lower than anticipated, however there are likely several reasons for this. First, the service is relatively new and transit ridership takes a certain amount of time to reach higher levels. Second (and more importantly), parking on the CSUMB campus is plentiful (.73 spaces per capita, more than double any other CSU campus), close to every building (so there is little incentive to avoid driving), and inexpensive ($12/month) with union contracts preventing the raising of parking prices or eliminating any currently available parking (with contracts having just been renewed for roughly eight years). With driving being prioritized and subsidized at these levels, it is very difficult to encourage transit or other sustainable mode use.

CAMPUS TYPE #5: RURAL/COLLEGE TOWN

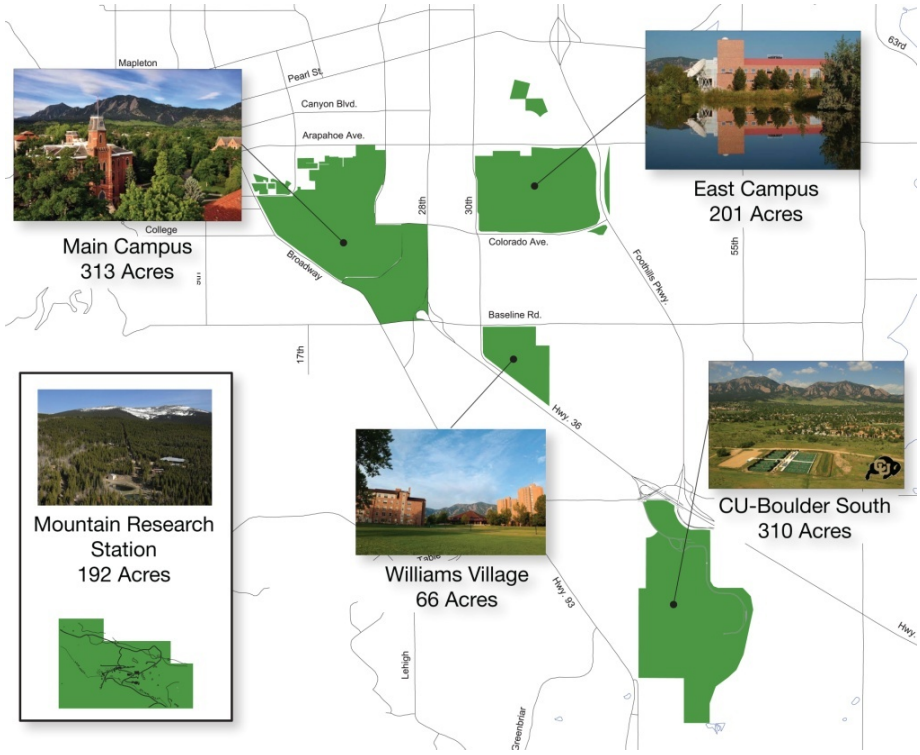
Program #1 – On Campus Housing and Amenities

Case Study: University of Colorado, Boulder

Campus Housing

The University of Colorado, Boulder is located outside of Denver in a town largely influenced by the University. The University itself has functioned as a residential campus since the 19th century, intended to house both students and faculty, and nurture academic and cultural exchange. The residential parts of the campus are spread out over three districts: Main Campus, Williams Village, and East Campus, all within walking distance or within one-half mile of the Main Campus. The residential land use makes up 135 acres or 23% of the campus. Figure A-23 and Figure A-24 show the campus maps and residential land use distribution around campus.

Figure A-23 University of Colorado, Boulder Context Campus Map



Source: University of Colorado at Boulder 2011 Campus Master Plan

Figure A-24 University of Colorado, Boulder, Residential Land Uses

Source: University of Colorado at Boulder 2011 Campus Master Plan

With the rising cost of housing and increasing number of students, campus housing has become limited primarily to freshman students as the University requires them to live on campus. In 2011-2012, 96% of first-year students lived on-campus, with married students, and students who live at home with parents or guardians allowed to opt out.[28] Comparatively, the target for upper division student on-campus housing is 20% and only 12% of faculty live on-campus, leading upper division students, faculty, and staff to rely primarily on private sector housing. Many of upper division students, faculty, and staff are pushed to find more affordable housing options further from campus around Boulder County and in the northern metropolitan area.

The financial burden of construction has been the main obstacle to increasing the housing supply. Undergraduate fees for room and board are used to achieve a target of 20% on-campus housing for upper-division students. The University is exploring public-private partnership opportunities to provide more housing for families and graduate students across residential university communities near the campus with a unique identity, each with 200-300 apartment units.[29] University projections suggest that within the next ten years, 1,000 to 1,100 graduate and family units need to be added to meet demand. The aim of this is to curb travel demand and keep members of the University community close to campus.

[28]University of Colorado at Boulder. 2011. *Campus Master Plan 2011.* http://www.colorado.edu/masterplan/plan/For%20Web/Section%20IVforWeb.pdf
[29] http://www.colorado.edu/masterplan/plan/For%20Web/Section%20IVforWeb.pdf

Campus Meals & Cafes

All students may purchase dining plans, which can be used at any of the campus housing dining locations. Students can choose from five residential dining halls. Smaller "satellite" cafes and dining areas are located in several buildings around campus. The University Memorial Center (UMC) hub caters to the University and Boulder community with a variety of commercial catering options and restaurants. Grab-and-go facilities and mobile street food vendors provide added flexibility for all campus members and guests. The University has spent the last ten years making significant improvements and modernizing the Main Campus cafeterias. As the campus continues to grow, the Campus Master Plan outlines the aim to expand and modernize other residential dining areas to keep students dining on campus.

Other Amenities

With more than 12,000 visits per day to the UMC, it serves as the main campus hub for shopping, eating, student activities, and entertainment. The University offers additional campus amenities including banking, shopping at the CU Book Store, recreation, health and mental health, child care facilities, copy centers, and cultural amenities (museums and galleries) for members of the campus community including students, faculty, staff, and in some cases, family members and retirees.

Program #2 – Bicycle and Pedestrian Amenities

Case Study: University of California, Davis[30]

The Davis community, including the UC Davis campus and the adjacent city, is known for its bike-friendly design and amenities. The Davis community was recognized with the highest distinction of Platinum Bicycling Friendly Community by the League of American Bicyclists in 2005. This is the result of the City and University working to promote bicycling for transportation and leisure for the past 40 years.[31] Bicycling has been encouraged as a primary mode of transportation to campus for students, faculty, and staff, with estimates of 15,000 to 20,000 bikes in use on campus on fair weather days.

UC Davis' biking amenities include numerous bike racks, bike lockers, commuter shower facilities, and bike maintenance stations across the campus. The unique design standards at the University require bike parking at every destination, compared to most universities which include limited peripheral parking. This "universal bike parking" standard naturally makes biking the mode of choice on the campus.

Additionally, the Associated Students Bike Barn offers bicycle maintenance classes and provides do-it-yourself bike maintenance facilities, tools, and advice. Bicyclists are encouraged to buy bike licenses on campus. Bicyclists can sign up for passes to access campus shower, towel, and locker facilities when they arrive for school or work each day.

The bike mode split for the campus reached 40.2% in a 2009 survey. By user group, this represented an increase in bicycle use by undergraduates and faculty from 2008, but a decrease by graduate students and staff. Overall, the biking programs and facilities are successfully maintaining bike mode split. See Figure A-25 and Figure A-26 for survey details.

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[30] UC Davis. 2011. UC Davis Bicycle Plan. 2011.
http://taps.ucdavis.edu/bicycle/resources/BikePlanUCDCampus2011.pdf
[31] Ibid.

Figure A-25 Commute Mode Results for UC Davis, 2007/2008 to 2008/2009

Figure 1. Overall mode split 2008-09

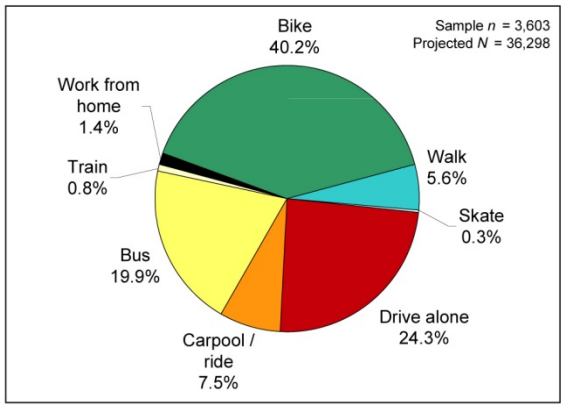


Figure 2. Overall mode split 2007-08

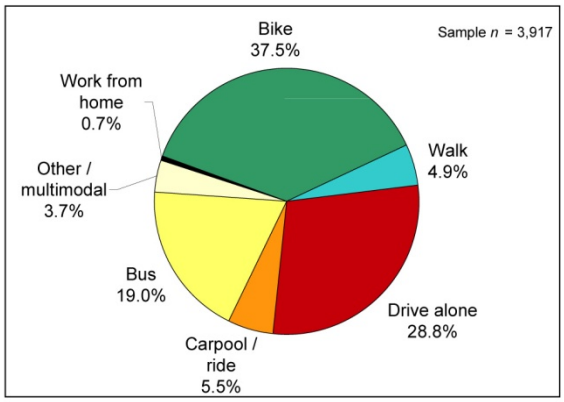


Figure A-26 Change in Commute Mode Results for UC Davis, 2007/2008 to 2008/2009

Table 1. Change in mode split, 2008-09 versus 2007-08

Role group	Bike	Drive alone	Carpool	Bus	Walk	Work from home
Undergraduates	5.4%	-4.7%	-0.7%	1.5%	1.4%	n/a
Grad students	-4.4%	4.7%	0.2%	-0.6%	-0.8%	n/a
Faculty	0.6%	-1.8%	-0.3%	0.8%	1.0%	0.2%
Staff	-0.5%	-3.3%	4.5%	1.1%	-0.5%	0.9%
Overall	2.7%	-3.0%	0.5%	0.9%	0.7%	0.8%

Statistically significant difference with $p < 0.1$ in a two-category χ^2 test of the frequency of those using this mode versus those using any other mode in 2007-08 versus 2008-09.
Statistically significant at $p < 0.05$.

Source: UC Davis Transportation and Parking Services and Institute of Transportation Studies. 2009. *Results of the 2008-2009 Campus Travel Survey.*

Program #3 – Shuttle Service

Case Study: University of California, Santa Cruz (UCSC)

The UCSC campus consists of over 2,000 acres of land on a sloping hillside site above coastal Santa Cruz. While development is constrained to about 500 acres, the campus entrance lies more than a mile from the central campus with elevations varying from 400 feet near the entrance to about 800 feet near the central campus. Furthermore, several deep canyons traverse the campus from north to south. All of these factors make pedestrian travel strenuous.

The UCSC Campus Transit system, in place since the 1970s, currently provides on-campus transit services to a) move commuting students from two remote lots on the periphery of the campus to the central campus and b) move students, staff and faculty internally around campus. While public transit provided by Santa Cruz Metro Transit District (SCMTD) also traverses the campus, the two systems generally complement each other—with one providing cross-campus transit and the other providing commuter transit on- and off-campus.

Every student pays a Transit Fee, part of which pays for the free on-campus shuttles. Campus Transit operates four routes:

- The Loop, running from 7:25 AM to 11:30 PM Monday through Friday, 6 AM to 10:40 PM Saturdays, and 6 PM to 11:20 PM Sundays
- The Upper Campus route from 7:40 AM to 7:55 PM Mondays through Fridays
- Two nighttime routes, the East and West Night Core Routes, from 6:30 PM to midnight Saturday and Sunday, and from 7 PM to midnight Monday through Friday.

The Transportation and Parking Services department also operates Night Owl, a late-night bus service between campus and downtown Santa Cruz, exclusively for UCSC students, staff, and faculty. Night Owl service operates every 45 minutes from 11:45 PM to 1:15 AM Sunday through Thursday, and every 20 minutes from 11:30 PM to 2:50 AM on Friday and Saturday nights. This service had previously been provided by SCMTD, but was cancelled due to service reductions in September 2011.

In 2010-2011, the Campus Transit system transported 2.2 million passengers. While intended for cross-campus travel, the Day and Night Shuttles accommodate at least three groups: commuters reliant on the two remote parking lots; other commuters who arrive by non-SOV modes (carpool, vanpool, public transit, bike, or on foot); and the large population of nearly 8,000 residential students, staff, and faculty.

Program #4 – Parking Pricing

Case Study: University of Colorado, Boulder

Distance and Frequency Based Parking

The University of Colorado, Boulder's parking pricing structure is based on the distance from the main campus and frequency of use. There are four parking tiers with the main campus providing highest cost parking, peripheral lots being mid-priced, unpaved lots being low-priced, and remote lots with shuttles being the most discounted option—costing only one-quarter of the central parking option for both students and staff. Shuttles serve the remote parking lots on weekdays from 6 AM to 7 PM. Student parking permits are available at each distance rate and can be purchased for a semester term, the academic year, or for 5, 8 or 10 week periods in the summer. Figure A-27 shows the student permit rates for 2011-2012.

Figure A-27 Student Permit Prices, 2011-2012

2011-2012 Rates	Remote/Shuttle Rate	Low Rate	Mid Rate	High Rate (in Central Locations)
Semester Rate	$46.75	$114.75	$144.50	$174.25
Academic Year Rate	$93.50	$229.50	$289.00	$348.50
Summer Semester Rate				
5 Week		$33.75	$42.50	$51.25
8 Week	N/A	$54.00	$68.00	$82.00
10 Week		$67.50	$85.00	$102.50

Faculty and staff can choose any of the distance-based permits. Additionally, they can select from a variety of frequency permits. The short-term permit is available at various time increments.[32] An evening permit is also available. Discounted "CHIP" Permits are available to Eco-Pass permit holders who drive to work once a week; staff who drive twice or more per week are required to buy a standard long-term permit.[33] Carpoolers may choose from any of the location- based permits and divide the fee among the users. Part of the permit application process for staff requires starting the application with the department's Parking Liaison. Liaisons work with the Parking and Transportation Services office to manage permits for the lots immediately adjacent to that department's buildings. Staff who are not able to apply for a permit next to their building may choose from any of the other locations available.

Figure A-28 Faculty and Staff Permit Prices, 2010-2011

2010-2011 Rates	Remote Lot	Unpaved Lot	Peripheral Lot	Approximate Lot
Long-term, all times of the year	$11.75/month	$31.00/month	$39.25/month	$46.75/month
Short-term permits, available at daily and weekly time increments	$7.75/day $11.00 (campus affiliates)/week $22.00 (all others)/week			
"PM" evening parking permits	$23.50-$32.75/month according to location price			
CHIP Permit (for those who commute by car up to twelve times a month)	$5.25/day			
Carpool Parking Permit	Fee divided among carpoolers, according to location price			

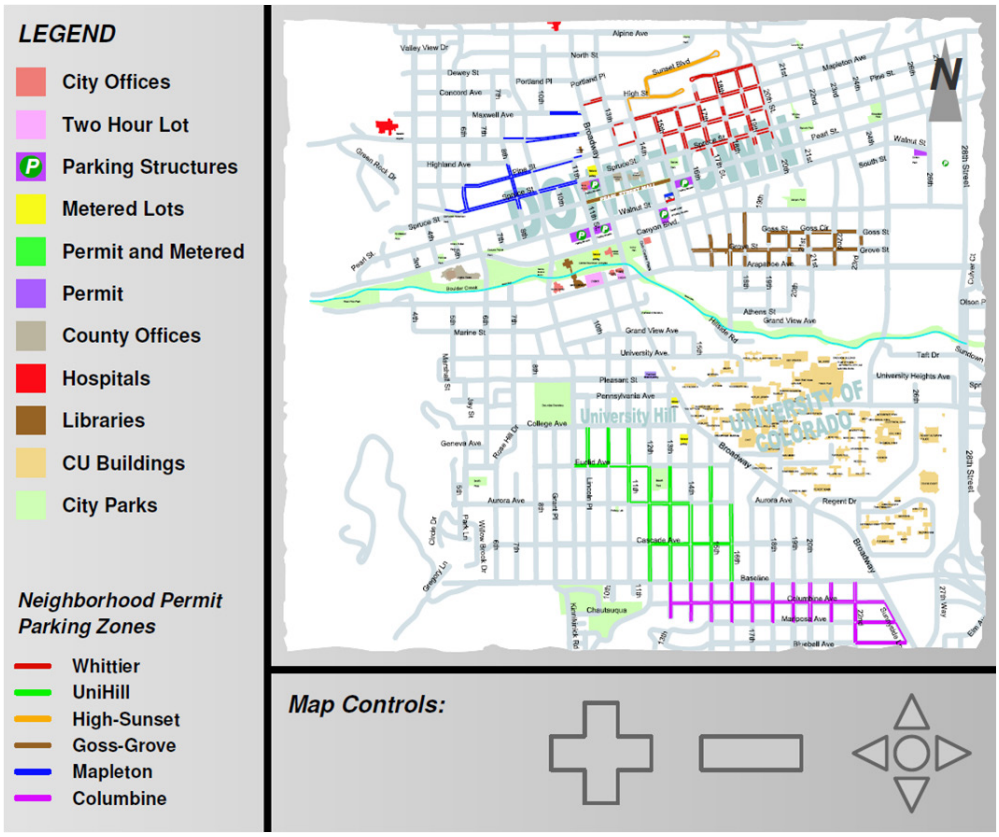
[32] University of Colorado at Boulder. 2012. *Faculty and Staff Permits.* http://www.colorado.edu/parking/parking/permits/facstaff.html
[33] University of Colorado at Boulder. 2012. *Eco Pass.* http://www.colorado.edu/parking/commuting/bus/ecopass.html#CHIP

Residential Parking Permit (RPP) Program

In order to reduce the opportunities for University affiliates to park for free in nearby neighborhoods, the City of Boulder has a Residential Parking Permit Program with six eligible areas. Figure A-29 shows the three neighborhoods that are next to the university on the north and southwest sides, within one mile from the center of campus.

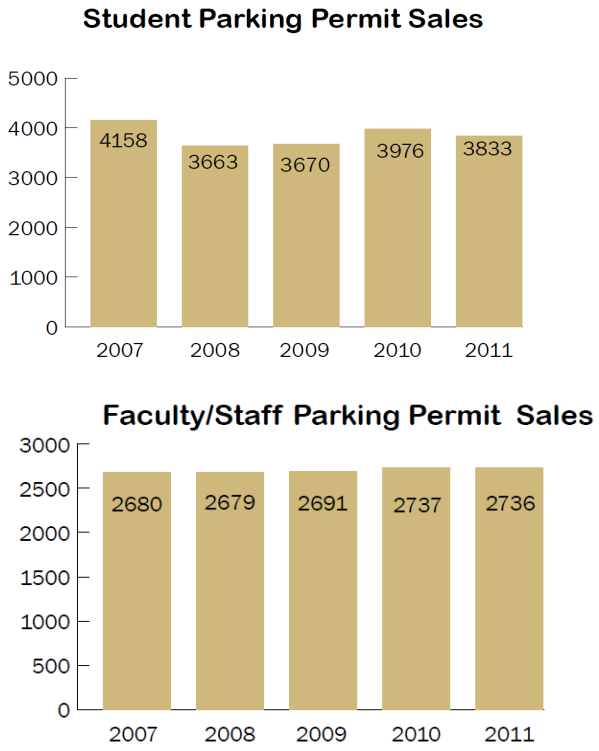
To assess the effectiveness of their parking management policy, the University uses student lot counters each year. The University has about 10,000 faculty and staff and 30,000 students and only 11,000 spaces available. These occupancy studies help the Parking and Transportation Services (PTS) office gauge how many permits can be sold given the number of spaces available. Of the spaces available, the PTS office only manages 7,470 spaces. In 2011-2012, student permits accounted for 51% (3,833 permits out of 7,471 managed spaces) of the managed parking supply compared to 24% for faculty and staff (2,736 permits out of 7,471 managed spaces).[34] See Figure A-30 for details.

Figure A-29 Neighborhood Permit Parking Zone Map



[34] University of Colorado at Boulder, Parking and Transportation Services. 2011. *Annual Report.* http://www.colorado.edu/parking/aboutus/documents/2011AnnualReport_001.pdf

Figure A-30 Student & Faculty/Staff Parking Permit Sales



In terms of the percentage of campus community members with parking permits, about 12% of students hold a permit, compared to about 27% of faculty and staff. These low figures reflect the reliance on alternative modes of transportation to, from, and around the campus. The University's parking demand management program works in conjunction with the subsidized transit passes, which are fully subsidized for all faculty and staff.

Program #5 – Ridematching Program

Case Study: University of California, Davis

UC Davis uses Zimride to create a rideshare and carpool community. The UC Davis Zimride community is private, with membership limited to students, faculty, and staff at the campus, which helps create a sense of community and safety among users. The user-friendly online format has proven to be popular with students. Students primarily use the system to arrange rides home during holiday breaks, while faculty and staff more frequently use it to establish regular commute carpools. Zimride carpools have access to priority discount carpool parking on campus.

Members do not pay for the service. Instead, UC Davis's Transportation and Parking Services pays about $2,500 per year to Zimride. Very little management is required, and the University's main task is promotion of the service to those interested in carpools and to students just before holiday breaks.

There have been a total of 2,870 registered users of the system since it launched in August 2009, and between January and March 2012, 285 new users registered, with 384 active posts (ride connections waiting for responses). It is challenging to track performance data for the system,

since people do not use the network to report rides, so only information about posted rides is available. UC Davis has requested more data from Zimride, and the company is developing a method by which users can pay for rides through its website, which will make more data available. However, the system works primarily as a first connection for users; once people connect, it is likely that they set up their own arrangements for future rides without using Zimride. Thus, the implications of the system are larger than what can be tracked. The UC Davis Transportation Services Department advertises that 1,795,897 miles have been posted by its users as shared miles, and estimates that these saved trips saved a potential 1,366,290 lbs of CO_2.

Case Study: California Polytechnic State University, San Luis Obispo

Cal Poly offers a variety of benefits to employees through its Rideshare Program. Membership in the Cal Poly Rideshare Program automatically registers the employee for the regional Rideshare Program[35], which provides services including ridematching, Guaranteed Ride Home, and the Lunchtime Express. Each employee is entitled to four guaranteed rides home per year, covered by regional TDM funding. In 2004, approximately 20 employees utilized that service, but has now decreased to six rides per year. In all, approximately 400 staff and faculty were enrolled in the program in 2012 with about 120 vanpool participants.[36] The Lunchtime Express, a shuttle service traveling to participating restaurants in San Luis Obispo, and which is fully subsidized by those restaurants, is free to students as well. Students may pay a fee to make use of the other services.

In addition to the services described above, staff and faculty can receive a 15-cent per day stipend on days they do not drive alone to work. This stipend is obtained through membership in the Rideshare Program and completion of a monthly report card, marking the days an alternative commute mode was utilized. The stipend is deposited into each individual's Campus Express Card account, which can be used to purchase food and other goods on campus.

[35] TMA Ride-On, www.ride-on.org, and San Luis Obispo Regional Rideshare, www.rideshare.org
[36] Interview with Cal Poly Commuter Access Coordinator Susan Rains

APPENDIX B

Sample Transportation Surveys

CAL STATE POLYTECHNIC UNIVERSITY, POMONA

EMPLOYEE COMMUTE SURVEY

ridelinks

Cal State Polytechnic University, Pomona
Employee Commute Survey

Please complete your company's required commute survey. Your participation helps beat gridlock and improve air quality. Your personal contact information is confidential.

Site ID: ***4351***

Survey: ***16 April, 2012 to 20 April, 2012***

First Name

Last Name

Home Zip Code

Miles to Worksite (one way)

Division

-- Select --

If you don't know your Division, click on **Division Info...**

Employee/Bronco ID #

Work Phone

Area Code **Number**

909

Work Email

If you don't know, or don't have a campus email address, one will be automatically generated.

Type of Employee

○ **Faculty** ○ **State Staff** ○ **Student** ○ **ASI** ○ **Foundation**

Please Note: A *Commute Mode* must be selected for ALL 5 days. **Commute Mode Info...**

Day	Date	Commute Mode	Time You Began Work
MON :	Apr 16	-- Select Commute Mode --	
TUE :	Apr 17	-- Select Commute Mode --	
WED :	Apr 18	-- Select Commute Mode --	
THU :	Apr 19	-- Select Commute Mode --	
FRI :	Apr 20	-- Select Commute Mode --	

Submit

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Survey Questions?

Contact: David Flores
Phone: (909) 869-3233

Hybrid is not considered a Zero Emission Vehicle for Rule 2202.

Special Work Schedules

OFF - Not Scheduled to Work: Refers to the days you are not scheduled to come to campus to work.
Non-commuting: Refers to one who is working outside Southern California. Students may never choose this option.
Telecommute: Refers to one who works a full day at home or a satellite work station.
Other: Refers to Jury Duty, Military Duty, Maternity Leave, Bereavement Leave, Long-Term Medical/Disability Leave, Administrative Leave. Select time you would have reported to work that day.
Vacation: Refers to paid vacation. Select the time you would have reported to work that day.
Sick: Refers to paid sick time due to illness. Select the time you would have reported to work that day.

Information below is ONLY for employees on *official compressed work week.*

Compressed Work 3/36: Work 3 days, 12 hours each day. TWO days off.
Compressed Work 4/40 or 4/10: Work 4 days, 10 hours each day. ONE day off.
Compressed Work 9/80: Work 9 days, 80 hours.

Contact your survey representative or Rideshare for questions on compressed work schedules.

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SAN FRANCISCO STATE UNIVERSITY, TRANSPORTATION SURVEY

SF State Transportation Survey

Survey Home
About the Survey
Contact

SF State Transportation Survey

Please complete this survey about your commute journey to and from SF State's main campus at 1600 Holloway on April 27, 2011.

General Information

1. What is your primary affiliation with SF State?

- ○ Freshman
- ○ Other undergraduate
- ○ Graduate student
- ○ Staff or Administrator
- ○ Faculty
- ○ Visitor/contractor
- ○ Other

2. Are you full-time or part-time?

- ○ Full-time
- ○ Part-time
- ○ Not applicable

3. On average, how many days a week do you come to the SF State main campus at 1600 Holloway?

4. Where do you live?

- ○ On campus
  - Specify dorm/apartment
- ○ Off campus
  - Specify zip code

4A. What do you spend on average per day-round trip-to commute to and from SF State? (Please round to the nearest dollar)

Your Trip to Campus

The following questions are about your trip to the main campus at 1600 Holloway. You will be asked to describe your trip by indicating the mode of transportation used for each segment of your trip - whether you walked, bicycled, drove or took public transit. After describing each segment, you may skip ahead to the next question.

Describe your trip *to the main campus on Wednesday, April 27, 2011*.
If you used more than one mode of transportation, please start with the first mode.

5. Select your first mode of transportation from the links below:

Walk, Bike, or Other Self-Propelled

- Walk
- Bicycle
- Other

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #6

Public Transportation

Public Transportation

- Muni

  Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

- BART

  Specify BART Start Station

  Specify BART End Station

- SF State Shuttle
- Caltrain

  Specify Caltrain Start Station

  Specify Caltrain End Station

- Other bus provider than Muni (e.g. AC Transit/Golden Gate Transit/SamTrans)

  Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #6

Private Vehicle

Private Vehicle-Based Travel

- ○ Drove alone
- ○ Dropped off
- ○ Motorcycle/moped
- ○ Car/vanpool

I was the:

- ○ Passenger
- ○ Driver

Number of people in the car/vanpool on Wednesday, April 27:

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

6. What was your second mode of transportation to campus?

- ○ None, I only used the previously chosen mode to get to campus

If "None", skip to Question #9

Walk, Bike or Other Self-Propelled

- ○ Walk
- ○ Bicycle
- ○ Other

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #7

Public Transportation

- Muni

  Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

- BART

  Specify BART Start Station

  Specify End Station

- SF State Shuttle
- Caltrain

  Specify Caltrain Start Station

  Specify Caltrain End Station

- Other bus provider than Muni (e.g. AC Transit/Golden Gate Transit/SamTrans)

  Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question#7

Private Vehicle-Based Travel

- Drove alone
- Dropped off
- Motorcycle/moped
- Car/vanpool

  I was the:

  - Passenger
  - Driver

  Number of people in the car/vanpool on Wednesday, April 27:

  Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

7. What was your third mode of transportation to campus?

- None, I only used the previously chosen modes to get to campus

If "None", skip to Question #9

Walk, Bike or Other Self-Propelled

- ○ Walk
- ○ Bicycle
- ○ Other

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #8

Public Transportation

- ○ Muni

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

- ○ BART

Specify BART Start Station

Specify BART End Station

- ○ SF State Shuttle
- ○ Caltrain

Specify Caltrain Start Station

Specify Caltrain End Station

- ○ Other bus provider than Muni (e.g. AC Transit/Golden Gate Transit/SamTrans)

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #8

Private Vehicle-Based Travel

- ○ Drove alone
- ○ Dropped off
- ○ Motorcycle/moped

- [ ] Car/vanpool

I was the:

- [ ] Passenger
- [ ] Driver

Number of people in the car/vanpool Wednesday, April 27:

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

8. What was your fourth mode of transportation to campus?

- [ ] None, I only used the previously chosen modes to get to campus

If "None", skip to Question #9

Walk, Bike or Other Self-Propelled

- [ ] Walk
- [ ] Bicycle
- [ ] Other

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #9

Public Transportation

- [ ] Muni

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

- [ ] BART

Specify BART Start Station

Specify BART End Station

- [ ] SF State Shuttle
- [ ] Caltrain

Specify Caltrian Start Station

Specify Caltrain End Station

- [ ] Other bus provider than Muni (e.g. AC Transit/Golden Gate Transit/SamTrans)

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #9

Private Vehicle-Based Travel

- [ ] Drove alone
- [ ] Dropped off
- [ ] Motorcycle/moped
- [ ] Car/vanpool

I was the:

- [ ] Passenger
- [ ] Driver

Number of people in the car/vanpool Wednesday, April 27:

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Parking

9. Did you park on the street or in a parking lot?

If you did not drive or carpool to campus, skip to Question #13

- [ ] Parking lot/garage/driveway
- [ ] On the street

10. Where did you park when you came to the main campus on Wednesday, April 27?

- [ ] On Campus
- [ ] Near Campus
- [ ] Near Daly City BART station
- [ ] Near another BART station
- [ ] Park & Ride lot

- [ ] Other

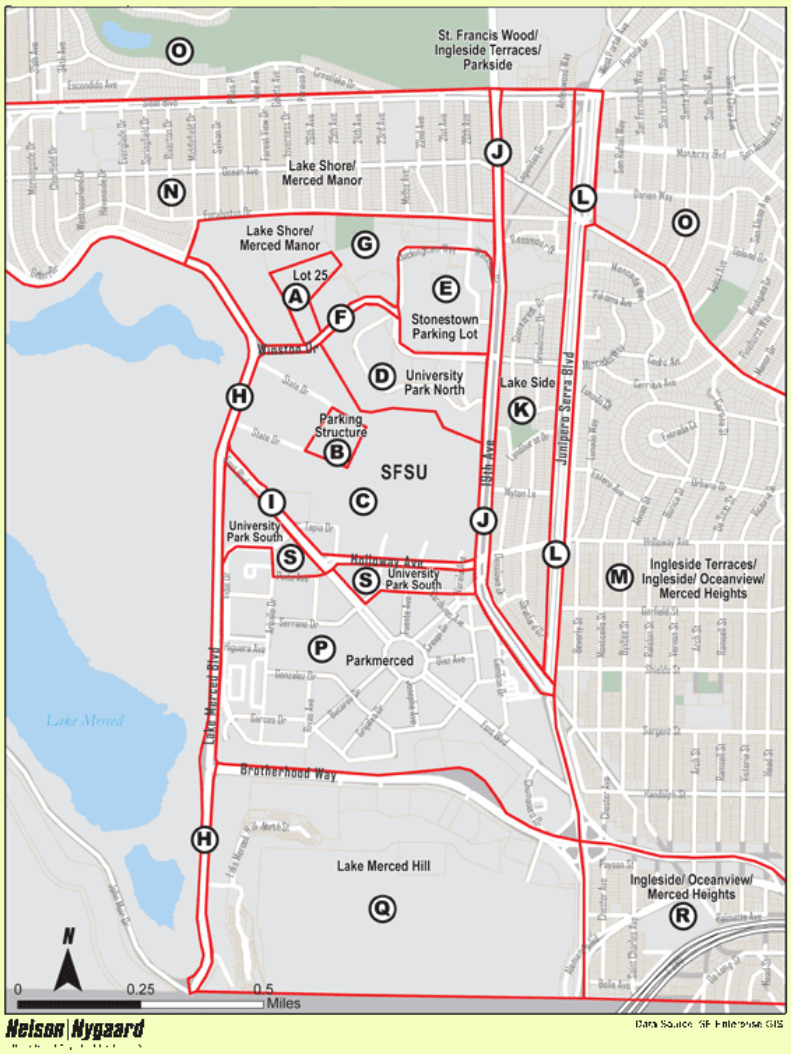
If Other, _____

11. Please choose a zone where you parked.

If you did not park on or near campus, skip to Question #12

Enlarge SF State Parking Zones Image (New window)

SF State Vicinity



- [ ] A: Lot 25
- [ ] B: SF State Parking Structure
- [ ] C: SF State Campus, aside from Parking Structure or Lot 25
- [ ] D: Buckingham Way
- [ ] E: Stonestown Galleria Parking Lot
- [ ] F: Winston Drive
- [ ] G: Lake Shore /Merced Manor
- [ ] H: Lake Merced Boulevard
- [ ] I: Holloway Avenue or Font Boulevard

- J: 19th Avenue
- K: Lakeside
- L: Junipero Serra Boulevard
- M: Ingleside Terraces/ Ingleside/ Oceanview/ Merced Heights
- N: Lakeshore/ Merced Manor
- O: North of Sloat Boulevard
- P: Parkmerced
- Q: Lake Merced Hill
- R: Oceanview/Merced Heights
- S: University Park South

12. How much did it cost you to park on Wednesday, April 27?

- Free
- Less than $1
- $1-$2
- $2-$4
- $4-$7
- $7-$10
- More than $10
- SF State Semester/Yearly Parking Pass

12A. Which of the following programs, if any, would encourage you to commute to campus via a mode of travel other than a single-passenger automobile?

Please rank your first, second, and third choices.

First Choice: Select Choice

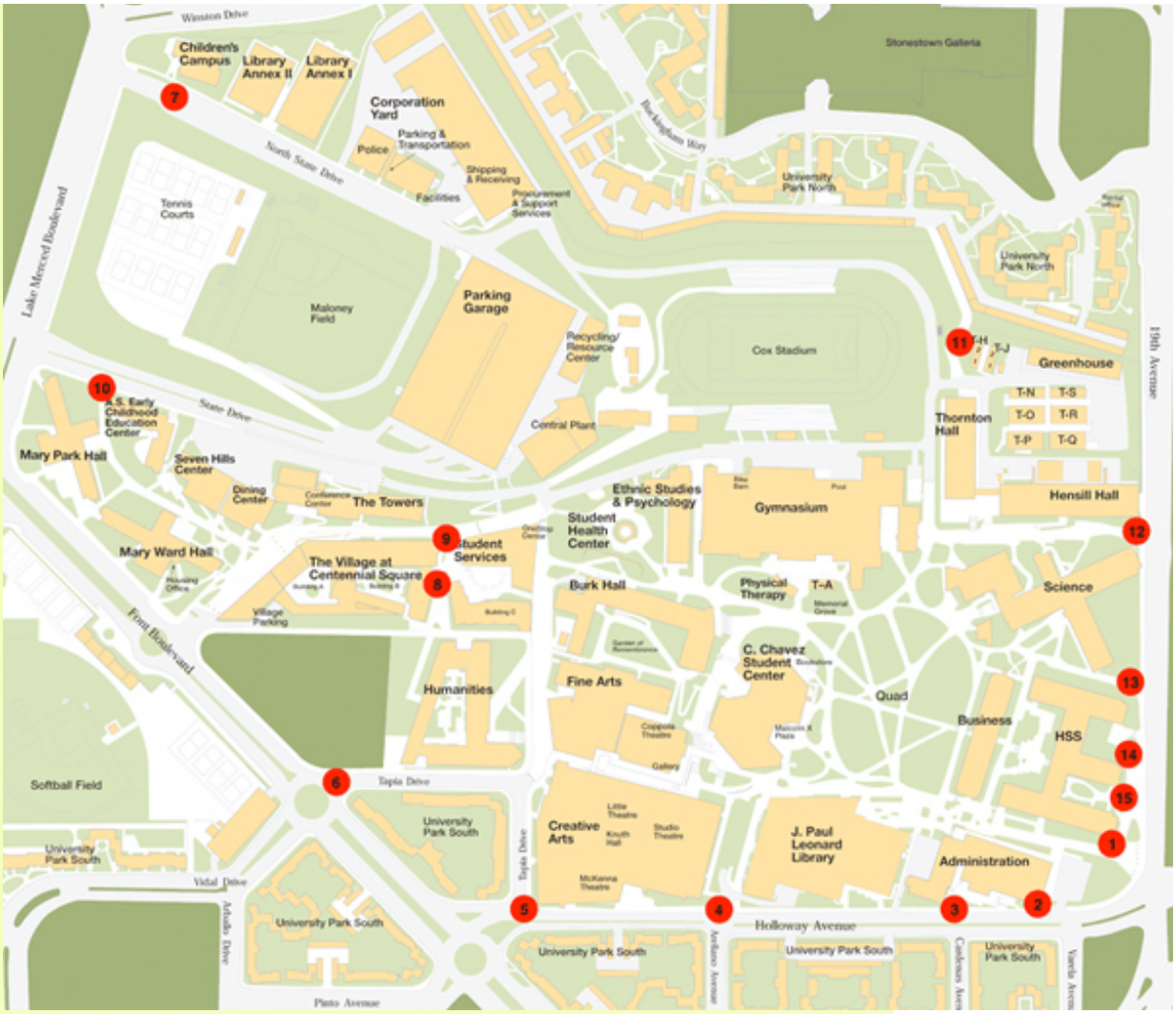
Second Choice: Select Choice

Third Choice: Select Choice

Time & Location

13. At what time did you arrive on the main campus Wednesday, April 27?

14. Choose from the following 16 locations where you entered the campus core on April 27.



Enlarge SF State Entry Points Image (New window)

- 1 - Main entrance on 19th Ave and Holloway Ave
- 2 - Pathway between ADM and Lot 2
- 3 - Entrance at Administration Building on Holloway Ave
- 4 - Entrance on Holloway Ave at Creative Arts Building
- 5 - Entrance on Tapia Drive at Creative Arts Building
- 6 - Entrance on Tapia Drive at HUM
- 7 - Entrance on North State Drive from Lake Merced Blvd
- 8 - Junction between The Village and SSB
- 9 - Junction between The Towers and The Village
- 10 - Entrance on State Drive from Lake Merced Blvd
- 11 - Entrance at the bike path near Thornton Hall
- 12 - Pathway between Hensill Hall and Science Building
- 13 - Pathway on 19th Ave between Science Building and HSS
- 14 - Entrance at HSS on 19th Ave (shuttle stop)
- 15 - Entrance at HSS on 19th Ave (coffee stand)
- 16 – Entrance at stairs on Winston Drive
- None of the above

Your Trip from Campus

The following questions are about your trip from the main campus. You will be asked to describe your trip by indicating the mode of transportation used for each segment of your trip—whether you walked, bicycled, drove, or took public transit. After describing each segment, you may skip ahead to the next question.

15. Did you use the same means of transportation when you left the campus on April 27?

- ○ Yes
- ○ No

If "Yes", skip to Question #20

16. Describe your trip from the main campus on Wednesday, April 27, 2011.

If you used more than one mode of transportation, please start with the first mode below (e.g. if you drove to BART or walked to the bus stop).

Walk, Bike or Other Self-Propelled

- ○ Walk
- ○ Bicycle
- ○ Other

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #17

Public Transportation

- ○ Muni

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

- ○ BART

Specify BART Start Station

Specify BART End Station

- SF State Shuttle
- Caltrain
  - Specify Caltrain Start Station
  - Specify Caltrain End Station
- Other bus provider than Muni (e.g. AC Transit/Golden Gate Transit/SamTrans)

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #17

Private Vehicle-Based Travel

- Drove alone
- Dropped off
- Motorcycle/moped
- Car/vanpool
  - I was the:
    - Passenger
    - Driver
  - Number of people in the car/vanpool Wednesday, April 27:

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

17. What was your second mode of transportation from campus?

- None, I only used the previously chosen mode to get to campus

If "None", skip to Question #20

Walk, Bike or Other Self-Propelled

- Walk
- Bicycle
- Other

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #18

Public Transportation

- ○ Muni
  - Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles
- ○ BART
  - Specify BART Start Station
  - Specify BART End Station
- ○ SF State Shuttle
- ○ Caltrain
  - Specify Caltrain Start Station
  - Specify Caltrain End Station
- ○ Other bus provider than Muni (e.g. AC Transit/Golden Gate Transit/SamTrans)
  - Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #18

Private Vehicle-Based Travel

- ○ Drove alone
- ○ Dropped off
- ○ Motorcycle/moped
- ○ Car/vanpool
  - I was the:
    - ○ Passenger
    - ○ Driver
  - Number of people in the car/vanpool Wednesday, April 27:
  - Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

18. What was your third mode of transportation from campus?

- ○ None, I only used the previously chosen mode to get to campus

If "None", skip to Question #20

Walk, Bike or Other Self-Propelled

- ○ Walk
- ○ Bicycle
- ○ Other

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #19

Public Transportation

- ○ Muni

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

- ○ BART

Specify BART Start Station

Specify BART End Station

- ○ SF State Shuttle
- ○ Caltrain

Specify Caltrain Start Station

Specify Caltrain End Station

- ○ Other bus provider than Muni (e.g. AC Transit/Golden Gate Transit/SamTrans)

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #19

Private Vehicle-Based Travel

- ○ Drove alone
- ○ Dropped off
- ○ Motorcycle/moped
- ○ Car/vanpool

  I was the:
  - ○ Passenger
  - ○ Driver

  Number of people in the car/vanpool Wednesday, April 27: [ ]

  Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) [ ] miles

19. What was your fourth mode of transportation from campus?

- ○ None, I only used the previously chosen mode to get to campus

If "None", skip to Question #20

Walk, Bike or Other Self-Propelled

- ○ Walk
- ○ Bicycle
- ○ Other

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) [ ] miles

Skip to Question #20

Public Transportation

- ○ Muni [ ]

  Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) [ ] miles
- ○ BART

  Specify BART Start Station

Specify BART End Station

- SF State Shuttle
- Caltrain
  - Specify Caltrain Start Station
  - Specify Caltrain End Station
- Other bus provider than Muni (e.g. AC Transit/Golden Gate Transit/SamTrans)

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

Skip to Question #20

Private Vehicle-Based Travel

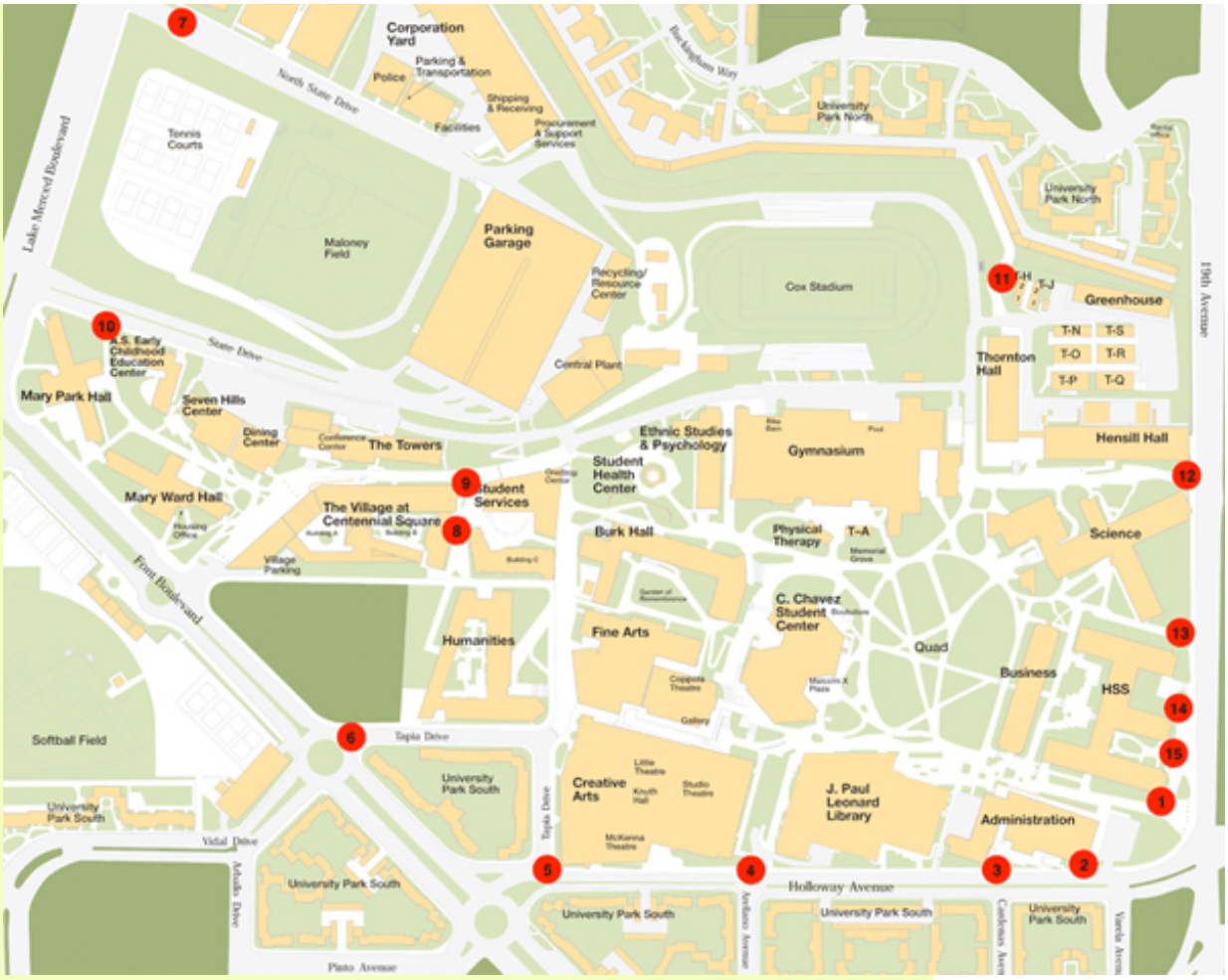
- Drove alone
- Dropped off
- Motorcycle/moped
- Car/vanpool
  - I was the:
    - Passenger
    - Driver
  - Number of people in the car/vanpool Wednesday, April 27:

Please estimate (in miles) the distance you traveled in this segment of your trip (for instance, if you traveled 1 1/2 miles, enter 1.5) _____ miles

20. At what time did you leave the main campus for the day on Wednesday, April 27?

00 AM

21. Please choose from the following 16 locations where you *exited* the campus core Wednesday, April 27.



Enlarge SF State Entry Points Image (New window)

- 1 - Main entrance on 19th Ave and Holloway Ave
- 2 - Pathway between ADM and Lot 2
- 3 - Entrance at Administration Building on Holloway Ave
- 4 - Entrance on Holloway Ave at Creative Arts Building
- 5 - Entrance on Tapia Drive at Creative Arts Building
- 6 - Entrance on Tapia Drive at HUM
- 7 - Entrance on North State Drive from Lake Merced Blvd
- 8 - Junction between The Village and SSB
- 9 - Junction between The Towers and The Village
- 10 - Entrance on State Drive from Lake Merced Blvd
- 11 - Entrance at the bike path near Thornton Hall
- 12 - Pathway between Hensill Hall and Science Building
- 13 - Pathway on 19th Ave between Science Building and HSS
- 14 - Entrance at HSS on 19th Ave (shuttle stop)
- 15 - Entrance at HSS on 19th Ave (coffee stand)
- 16 – Entrance at stairs on Winston Drive
- None of the above

Transportation Amenities

In an effort to encourage the use of public transit, SF State is exploring the possibility of offering a transit pass for our community.

22. A MUNI "Fast Pass," which permits the holder unlimited access on MUNI for one month, as well as BART travel within San Francisco, costs $70. If the university were to negotiate a reduced rate, what is the most you would be willing to pay to purchase such a pass?

- ○ $35 per month
- ○ $50 per month
- ○ $60 per month
- ○ I would not be interested in such a pass

22A. If BART and MUNI were to extend BART travel on the Fast Pass to include Daly City Station, what is the most you would be willing to pay to purchase such a pass?

- ○ $35 per month
- ○ $50 per month
- ○ $60 per month
- ○ I would not be interested in such a pass

23. Would you take advantage of a ride-sharing social networking tool such as Zimride if the university were to make such a service available?

- ○ Yes
- ○ Perhaps
- ○ No

24. Please provide any additional comments about transportation issues that relate to SF State.

Submit