At UC San Diego, transportation is a broad system of interconnected modes that includes over 42 shuttles operated by Transportation Services, mass transit operations by the Metropolitan Transit System (MTS) and the North County Transit District (NCTD). This system services more than 4 million rides per year which is attributed to approximately 10,000 - 13,000 annual commuters that use mass transit to commute to and from campus. With a total student population in 2013-14 of 29,205, one out of every three UCSD students uses some form of alternative transportation to commute.

At UC San Diego, commuting, the campus fleet, and air travel, compose 25.4% of the campus GHG emissions. UC San Diego has an aggressive transportation program that encourages the campus community to use alternative transportation for commuting to campus. Alternative transportation options include carpools, vanpools, bicycling, walking, and public transportation such as buses and trains. UC San Diego runs campus shuttles around the campus and also to and from various institutions like the Scripps Institute of Oceanography, the two medical centers on East Campus and Hillcrest and off campus offices.

UC San Diego ran a free bus zone that provided free bus rides to any student, staff, or faculty with a valid UC San Diego identification from the early 2000s until 2014. The program granted access for all Metropolitan Transit System (MTS) and North County Transit District buses that serviced the UC San Diego Main Campus area, and for MTS buses that service the Hillcrest Campus area.

The “free” bus zone program is now transitioning into two separate programs, one that is funded for students by students and a separate program that currently has no dedicated funding outside parking subsidies for University staff and faculty. After years of extensive mass transit program subsidies, UC San Diego will have to find alternative funding sources beyond parking revenue in order to sustain the programs. Mass transit for the campus requires sustainable funding sources and due to the large increase in popularity and use, the overwhelming success of mass transit programs at UC San Diego demonstrated the need and effectiveness of subsidized alternative transportation programs.
SECTION 2: GOALS AND ACTIONS
ASUCSD MOVES annually outlines key goals for transportation that are outlined below for each category. The report has been organized into three sections: air & business travel, commuting & external programs, and finally campus infrastructure & internal programs. The ultimate guiding principle of this report will be to reduce and eliminate greenhouse gas emissions from transportation. Other principles that will be guide the goals and actions are affordability, efficiency, accessibility, safety and quality. A number of key emission reduction strategies and programs are identified and described in more detail below.

SECTION 2.1: Air & Business Travel
ASUCSD contributes to transportation largely through travel to conferences or meetings. Every effort should be made to reduce emissions from travel wherever possible. Video conferencing and telecommunications can be utilized and prioritized over in person meetings. This is not feasible to replace all in person meetings but could greatly reduce emissions of ASUCSD business travel.

SECTION 2.2: Commuting & External Programs
Summary of Goals: The UCSD Climate Action Plan and the UCOP Climate Neutrality Mandate are guiding the campus to come up with programs to reduce the percentage of commuters using single-occupancy vehicles (SOV) as well as the greenhouse gas emissions from SOV.
Progress in reducing the number of single occupancy vehicles used for commuting has been considerable. As recently as 2001, about 67% of commuters were using single occupancy vehicles to travel to and from the Main Campus; currently, only 42% of commuters are commuting via single occupancy vehicles to and from the Main Campus. Figure 7.1 shows the results of the most recent cordon count (Winter 2008) and shows the current modal split among all UC San Diego commuters from winter 2014 (including commuters from the Hillcrest Campus).

Figure 2.1: Transportation Modal Split for UC San Diego Commuters Winter 2014
SECTION 2.2.1: Mass Transit

The “free” bus zone provides unlimited rides on any North County Transit District (NCTD) or Metropolitan Transit System (MTS) route that touched either the main campus or Hillcrest medical center. Beginning in 2006, the free bus zone served approximately 357,974 rides per year and expanded rapidly. In FY 2007, there were 1,161,088 rides which translated to a 324% growth of the program in one year. In the following years, with the creation of new programs like the MTS “Superloop” service which began in 2010 there was sustained demand and increasing ridership through subsidies. UCSD Transportation Services was charged individually for each ride based on a fixed rate that adjusted over the years beginning at $0.87 per ride in 2006 and last adjusted in 2010 ending at $1.16 per ride which continued through to 2014.

In 2001 commuting the UC San Diego by shuttle or bus comprised only 4.4% of total commuting and in 2013 it grew to comprise 21.1% of commuting. This during this period the amount of financial subsidy provided by UCSD Transportation Services in the years 2007 to 2013 ranged from $659,000 to over $2.9 million in payments to MTS. The large increases can largely be attributed to the availability of transportation services available through the bus program and the external factors of gas prices (See figure 2.2.1). The “free” bus zone program grew to provide over 2.4 million rides in 2013 on MTS routes. 2014 ridership is projected to increase between 4-6%.

![Figure 2.2.1: San Diego Historical Gas Prices (US $/G)](image)

As illustrated in figure 2.2.1, the bus zone subsidy increased dramatically between the years 2006 and 2007 during the height of the regional gas price increases. Students and non-students alike flocked to the “free” transit that was being subsidized. The relationship between parking rates and transit rates can be illustrated in figure 2.2.2. This is a simplified example of how parking rate changes are inversely related to changes in transit ridership.
SECTION 2.2.2: Shuttles

In addition to MTS and NCTD transit buses, UCSD operates 8 additional shuttle routes with 42 shuttles. The Arriba/Nobel route of the City Shuttle commuter program provides another over 1.3 million rides annually to the local University City community. The downfall of these successful programs is the strain it puts on the parking revenues. Without additional sources of revenue, Transportation Services is unable to sustain continuous growth and successes of subsidized transit programs. Beginning in Fall 2014, all fee paying undergraduate and graduate students will have Universal Pass (UPass) that is the first Regional Pass of its kind in the San Diego Region. The program is funded by student fees as a result of a student initiated referendum that was voted into effect in Spring of 2014. The program was designed to last 5 years until the Spring of 2019 to coincide with the beginning of the Mid-Coast Trolley service. According to the campus GHG calculations all the combined transit programs result in a GHG reduction of 48,101 metric tons in Winter 2013 assuming that if the alternatives did not exist there would be 100% of emissions from single occupancy vehicles.

SECTION 2.2.3: Student Transportation Fee

In Spring 2014 undergraduate and graduate students voted to pass a referendum that established a fee of $49.96 per student per quarter for fall of 2014 through to spring of 2019. This fee provides a Universal Pass for all registered students that grants access to all bus and light rail routes in the San Diego region. This new program still needs to be implemented and will result in the establishment of the Student Transportation Advisory Committee (STAC). The main purview of this committee will be to allocate the funds generated by the student fund and to determine the allocation of any surplus funds as stipulated in the referendum.
SECTION 2.2.4: Light Rail Transit
The San Diego Trolley serves as the region’s light rail system. The Mid-Coast Corridor Light Rail Transit Project is a projected extension that connects the UCSD campus to the greater region. In 2014 the project is slated to be operational by early 2019.
The design of future trolley stations that are to be built on campus are currently in development. Students should play the largest role possible in advocating for the completion of this project and for student centered aspects of these stations. One station will be built in Pepper Canyon in the Sixth College neighborhood and the other will be built on east campus. The campus will need to work closely with SANDAG to achieve the best outcome on the station designs in order to facilitate use and success of this new project. Students can actively advocate and participate in this process. The retail space at each of the campus stations is yet to be determined. By connecting UC San Diego to the region’s light rail system, it will open up the campus and surrounding community to increased interaction. Students can experience the greater region like never before and it will ultimately change where UCSD students live, work and play.
Many facilities and positive aspects have been considered in the design of these stations. These include but are not limited to: bike parking, storage and ramps, sustainable energy solutions and student art spaces.

SECTION 2.2.4: Rideshare Programs; High-Occupancy Vehicles
The success of carpool and vanpool programs require marketing resources and effective technological innovations to make it effective. User friendly websites will go along way in ensuring the success of future programs. With the potential rise of gasoline prices, ridesharing may become more of a necessity and Associated Students should be prepared with the infrastructure set up and ready to implement if the need or demand increases in the future.
Car Sharing Programs at UC San Diego currently are run through ZipCar, Zim Ride and could potentially be established with Car2Go.
About 0.5% of the campus commuting is through vanpool. Typically, vanpools are used as a tool for commuters who live in regions that do not have convenient access to public transportation options. Offering vanpools in additional regions and publicizing the vanpool program could increase this percentage.

SECTION 2.2.5: Regional Bicycle Commuting Programs
*Improve bicycling programs. Bicycling could be increased by improving all the facilities and infrastructure related to bicycling at UC San Diego and in the general region. Additional bicycle lanes and safe bike paths, especially to avoid on-freeway riding, in the areas near campus could also increase the percentage of commuters cycling to work. Other bicycling improvements include end-of-trip facilities at UC San Diego, such as additional showers and secure bicycle racks and storage facilities. Commuter programs like Pedal Club can be continued.
UC San Diego can continue to play a large role in advocacy efforts for bike infrastructure improvement projects. Local agencies such as SANDAG and the City of San Diego have project lists that include projects to create dedicated bike lanes on the La Jolla Village Drive and Nobel Drive I-5 overpasses. Projects like these would improve the circulation between residential, commercial zones and campus.
Off campus bike sharing program (more information outlined in Section 2.3.4)
SECTION 2.3: Campus Infrastructure & Campus Programs

Summary of Goals:

Increase Transportation Connectivity & Circulation through improved infrastructure and programs.

SECTION 2.3.1: Regional Transportation Projects

There are various transportation projects that the UC San Diego campus is facilitating or participating in that address regional connectivity both on or surrounding the main campus.

**Gilman Drive Bridge:** This project has an expected completion date of 2016 and would provide a main connection between east and west campus by spanning over the Interstate 5. This project has the ability to improve campus vehicle circulation as well as provide access to the local University City community. It will provide a necessary and direct link for pedestrian, bicycle and vehicle traffic between the main campus and the medical research and teaching facilities located on the east campus.

**Voigt Bridge Direct Access Ramps (DAR):** This project will provide High Occupancy Vehicle lanes on Interstate-5 direct access to Voigt Bridge. The renovation would allow Voigt Bridge to accommodate for bicycle traffic as well incentivize increased carpooling to campus through an easy entry point.

**Genesee Avenue I-5 Interchange:** This project would eliminate the traffic congestion that occurs at this interchange during peak commuting hours.

**Gilman Drive Transit Hub:** Expected completion is Fall 2014. This will improve the transit center at the Gilman and Myers intersection to include street cut-outs for buses in layover and expand the space for bus pickups which will improve the flow of traffic. Dedicated bike lanes and bike storage are also a part of this project.

**Light Rail Transit Mid-Coast Corridor Transit Project:** Another planned service is extending the San Diego Trolley to the UC San Diego region via the Mid-Coast Trolley line. This new service would connect UC San Diego to the region’s light rail system, eliminating the need for buses to connect to the light rail system while increasing connectivity and reducing travel time.

**Coastal Rail Trail:** Completion of the Coastal Rail Trail through the UC San Diego campus along Gilman Drive. This would serve as a regional connection for bicycle commuting and would create a connection between northern San Diego County and the central and southern parts of the county.
SECTION 2.3.2: Parking
Students can help advocate and implement technological innovations of the campus parking system. Parking garage space counters, online permit purchasing, integration with web and mobile apps and fleet vehicles with license plate readers can innovate the parking system.

Garage space counters can display the number of available spots at the entrances to structures. If the lot is full it will reduce the frustration and emissions of vehicles by eliminating unnecessary trips through garages. This technology could be integrated into a mobile application that could display where parking is available. The purchasing of parking permits could also be moved online to help with the efficiency of parking and the permit would be attached to a license plate and would no longer be displayed. This will reduce the rate of citation error.

The future plans of development for the campus state that additional structures will convert all remaining surface lots to parking garages.
The planned east campus parking structure is a self sustaining model that should be studied and potentially replicated in the future.

SECTION 2.3.3: Campus Fleet & Fuel
ASUCSD MOVES will advocate for the elimination of all gasoline powered carts on campus as soon as possible. A campus wide uniform policy that addresses carts should also be developed.

In the year 2013 UC San Diego used 202,477 gallons of unleaded fuel a reduction of 6,900 gallons from the previous year (2012). 140,519 gallons of B20 biodiesel and reduction of 25,785 gallons from previous year (2012). In January 2014 the feed stock on the B20 biodiesel was switched over to waste grease which is collected from on campus kitchens sent to New Leaf biofuels which processes it back into biofuel (B20) which we then burn in our diesel fleet. Since January 2014 over 50,000 gallons of waste grease B20 biodiesel has been used.

Currently the fleet is comprised of 952 vehicles. 93 are hybrid, 48 are compressed natural gas(CNG) powered, 3 are Bi-Fuel (CNG and Unleaded Gasoline) powered, 20 are E85 Flex Fuel powered, 48 are B20 Biodiesel powered, 337 are non-full speed electric, 7 are full speed electric and 396 vehicles are unleaded gasoline powered.

ASUCSD MOVES can assist in the construction of a Hydrogen fueling station through the writing of grants.

More EV charging stations should be installed on campus to accommodate a growing use of electric vehicles. Implementing solar charging stations to either fuel commuter vehicles or campus fleet vehicles will decrease fossil fuel dependence. UCSD Transportation services has plans to purchase electric buses which could be fueled through electric charging stations.

Campus leaders can support or direct campus research into improving other alternative sources of fuel such as methane capture, hydrogen and algae biofuels. Continue to utilize kitchen waste grease for biodiesel.
SECTION 2.3.4: Bicycle Programs & Infrastructure

Goal outlined in the Climate Action Plan: Increase the percentage of bicycle commuting from 2.8% to 5% by 2018 and to 7% by 2020.

Infrastructure:

- Implement the priority projects outlined in the 2012 UC San Diego Bicycle and Pedestrian Master Planning Study².
  - Completion of the University Centers Bicycle and Pedestrian Improvements. The project includes the improvement of the Library Walk Bicycle Bypass and the Peterson Hill pedestrian and bicycle bypass. This plan is expected to be completed in early 2015. (see figure 2.3.4)

- Implementation of Planned Regional Bicycle Infrastructure Projects:
  - Gilman Transit Center expected to be completed in late 2014 with construction starting in early Summer 2014, will include dedicated bike lanes on Gilman Drive between Villa La Jolla and Myers Drive. Bike racks will also be installed with this project.
  - A class 1 bicycle lane will be constructed as a part of the Genesee and Interstate 5 interchange project. The path will be elevated and bypass Genesee Avenue. Anticipated construction start date is Fall 2014. This was a partnership between the University and Caltrans.
  - Gilman Drive Bridge will include dedicated bike lanes to connect east and west campus and will also provide a flat connection to the University City community and residential areas. Anticipated construction start date is Fall 2015.
  - Completion of the Coastal Rail Trail through the UC San Diego campus along Gilman Drive. This would serve as a regional connection for bicycle commuting and would create a connection between northern San Diego County and the central and southern parts of the county. main project area should include sections of Gilman Drive from Voigt Drive to the I-5 connection.
  - Voigt Bridge will be replaced around the year 2017 and dedicated bike lanes will be included in the project.
  - Hopkins Lane Bicycle Improvements will reconfigure parking lot 309 to provide adequate bike and pedestrian access.
  - Gilman Drive bicycle lanes will be installed between Myers and Osler Lane.
  - Currently a section of the Campus Loop Road that is not planned to be improved is the section between Pangea Drive and Muir College Drive. This should be advocated for by students because it is a low cost improvement project that involves repainting.

- Installation of bike repair stations (BRS) on campus. Three student funded BRS were purchased by the Student Sustainability Collective(SSC) in early 2014 as a pilot program and are due to be installed shortly. More BRS could be included across campus to accommodate increased bicycle use depending on the success of the pilot program. The potential costs of replacements for tools and constant monitoring of these stations will fall under the responsibility of the SSC and MOVES. The locations of the BRS are:
- Rimac
- Geisel Library
- Gilman and Myers intersection

- Install long-term secure bike storage across campus and in parking garages. Transportation Services are already planning on purchasing and installing these facilities in Gilman Parking structure with anticipated construction to begin in fall 2014. A project manager has been assigned and completion of this project can be expected by the end of the next academic year. More long term storage facilities are needed to accommodate the need for students to leave their bikes on campus overnight or over summer.

- Bicycle rack capacity should be constantly monitored either through student interns or the parking department. Bike capacity should constantly be expanded so that there is never a shortage of racks. In Fall 2013 the main campus had 2,807 total racks with a capacity of 6,975 bikes.

- Establish a campus-wide bicycle infrastructure and safety policy. Currently no uniform policy exists to prescribe a required ratio of bike racks for different building types on campus or a policy that designates who maintains racks or who is responsible for installing new racks.

- End-of-trip facilities should be readily accessible to promote healthy and hygienic bicycle commuting. Facilities such as showers and locker rooms are needed to accommodate increased numbers of bicycle commuters.

**Programming:**

- Implement a bike sharing program. There are many options for a potential program. It can be both intra-campus and able to connect with the regional bike sharing program run by the City of San Diego or the local community. This program should also consider connecting to local shopping centers and residential areas in order to improve commuting to campus. The ideal model for a bike sharing program is a roaming low capital program that uses wireless technology to administer the program. This will need to be a collaboration of MOVES, the SSC and the University. Students should be able to run the program through positions in the MOVES commission.

- Establish AS sanctioned safety campaigns with videos and supplies. Helmets, lights, and other safety equipment should be provided to all students to increase safety and reduce bicycle related accidents.

- Transition towards effective bicycle traffic education classes to replace the citation punishment for traffic violations. Work with the UCSD Police Department has already established the groundwork and working relationship to continue this dialogue.

- Update the ASUCSD Bike Committee Summer 2013 Report and pursue those projects.

- Creation of new campus tradition called UCSD Bike Day where pedestrian and vehicle traffic is limited for a bicycle race.
*Increasing the use of other modes of active and non-motorized transportation should coincide with increased programs and funding for bicycles. This includes but is not limited to pedestrians, skateboards or scooters.
*Anything that is not outlined in this section of this report may be found in the ASUCSD Undergraduate Bike Report 2013.
http://as.ucsd.edu/docs/UCSDUndergraduateBikeReportFinal_AS.pdf

SECTION 2.3.5: Housing

Achieve 50% residency of eligible undergraduates for Campus Housing and increase housing for graduate students.

The current Long Range Development Plan (LRDP) calls for the campus to build new housing so that 50% of eligible students may be housed on campus. Additional housing has the advantage of reducing the need for additional parking and transportation services, but adds GHG emissions and other impacts at each new building. However, increasing housing capacity is generally viewed as a positive strategy for reducing transportation impacts as well as the total footprint for the region. As of Fall 2013 the capacity for on campus undergraduate student housing was 9,372 beds and with an undergraduate population of around 23,000 approximately 40% of eligible students live on campus. The LRDP is due to be updated by 2020 and this creates the opportunity to evaluate the on campus housing opportunities and the impacts and offsets associated with this approach. Although commuting transportation needs will be reduced as a result of more on campus residents, the impacts on climate and emissions of an on campus resident should still be considered.
SECTION 3: CHALLENGES
There are many challenges that transportation faces at UC San Diego in order to reach climate neutrality by 2020.

SECTION 3.1: Technology
There are many existing technologies that can greatly reduce GHG emissions such as electric vehicles or biodiesels, however these technologies are still being refined and developed. UC San Diego can devote research prowess to developing and refining new alternative fuel technologies that accomplish the goal of reducing the campus impact on the climate.

SECTION 3.2: Parking
Another challenge in assessing commuting data is the possibility of commuters parking in the surrounding community and using the transit system as a second trip. These first trips currently cannot be accounted for and do not reflect in the current numbers. One way around this is to continue to transition away from automobiles that have a high dependence on fossil fuels. The fuel standards for vehicles should continue to be improved in order to reduce emissions of transportation overall.

SECTION 3.3: Funding
Funding will always be the greatest challenge for transportation and the most affordable modes of transportation do not always take preference over the more expensive forms of transportation. Convenience of mass transit programs will always be a significant barrier to new ridership transitioning away from automobile use, expanding the services and infrastructure when possible on campus will help improve convenience and use of transit programs.
Student fees is an option that is already being utilized as a source of funding, however there still remains the challenges of developing a summer transit program for students and finding funding for UC San Diego staff, faculty and affiliates that were formerly covered under the free bus zone and will no longer have free access to the transit system.
The best model to achieve in the future will be a hybrid model of partially subsidized transit that will be supported by user fees.

SECTION 3.4: Advocacy
Another key challenge is that public transportation decisions are outside of UC San Diego’s control. Campus leaders will need to work with other agencies and groups to expand public transportation to the area in a responsible fashion. A stronger partnership should be cultivated between the campus and the two regional transportation agencies MTS & NCTD and the two major government bodies that most affect transportation infrastructure SANDAG & the City of San Diego. This strengthened partnership will continue to yield alternative forms of funding and creates new opportunities for UC San Diego. All members of the campus community could form a transportation advocacy group that could effectively advocate for projects.
SECTION 3.5: Organization
The University needs to reorganize the decision making that happens in regards to transportation. The decisions are currently decentralized and not controlled by any one entity. Budgets for transportation are not in direct control of auxiliary services. This should be addressed through the reorganization of committees.

SECTION 4: MOVES RECOMMENDATIONS
The next steps for ASUCSD MOVES are to negotiate the details of the new transit program for students between MTS, NCTD in collaboration with UCSD Student Affairs, Resource Management and Planning and Transportation Services. The next year will be formative for bike sharing and ASUCSD can take the lead in supporting the establishment of improved bike infrastructure. This can be a completely student run enterprise that can have high visibility and impact on campus. The parking system will need to continue to be innovated and new online programs for ridesharing can be explored. A.S. has a unique opportunity to prepare to be the campus leader in transportation advocacy and programs. All of the goals and actions outlined in this report have a place for student input and participation. It takes time, dedication and awareness to make sure that student voices are being heard and adequately represented in campus decisions involving transportation. Communication with key administrators and maintaining the relationships that were established by the MOVES commission staff in the past year will be essential in the continuing success of student work in the realm of transportation.
Sources:
1. https://drive.google.com/?urp=https://www.google.com/_/chrome/newtab?espv%3D2%26ie%3DU&authuser=0#folders/0B23Kq24kgisXaERhSFFJJeUhLbW8