



CSUN Sustainability Project

MBA Field Study Experience Graduate Project

CSUN Institute for Sustainability

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Any opinions, findings and conclusions or recommendations expressed in this publication are those of the authors and do not necessarily reflect the views of California State University, Northridge, the College of Business and Economics or the faculty thereof.



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1. Executive Summary

The CSUN Institute for Sustainability asked our team to research bike programs and to suggest ways to promote and increase bicycle ridership amongst freshmen living on campus. Our research analyzes 17 bike programs that have been implemented throughout the world and identifies the three most successful types of bike programs being used on college campuses today: bike raffles, bike rentals and bike sharing.

Using primary and secondary research we conducted a cost benefit analysis of these three types of programs through the lens of CSUN's own resources and environment. Weighing the advantages and drawbacks of each program, we created a decision matrix that identified that contracting a third party firm to implement a bike sharing program on the CSUN campus would be the most effective way of increasing bike ridership.

A third party bicycle sharing program allows students to check bicycles out from electronically monitored stations around campus for short time intervals to travel between locations dispersed around the university. The program will cost approximately \$245,280 to implement and offer 56 bicycles to not only freshmen but all students on campus. This bicycle program is scalable and demand for the program is forecast to grow at a steady rate and doubling by year five. A cornerstone to successfully implementing a bicycle sharing programs relies on an aggressive marketing campaign aimed at freshmen but having a collateral impact on a larger student demographic.

2. Introduction

In the past several years CSUN has taken great strides toward becoming a more sustainable campus. While the environmental movement has traditionally pushed for change from the bottom up, Southern California has never been strongly associated with the environmental movement and does not have as strong a tradition of environmentalism and conservation as its Northern counterpart. For this reason, the student environmental movement at CSUN has not had a strong presence on campus.

Fortunately, CSUN's administrative leadership has taken great strides in implementing sustainable practices throughout the campus. CSUN has implemented a campus-wide recycling program, a natural gas powered tram system, low flow urinals, a fuel cell power plant and created a permanent on campus organization dedicated to issues of sustainability.¹

To continue CSUN's path toward a more sustainable future, the Institute for Sustainability has begun turning an eye toward transportation. With transportation being the second largest contributor of greenhouse gas emissions preceded only by industry emissions, CSUN has begun to take steps toward curbing student's and staff's driving habits.² Instead of purely focusing on students/staffs environmental footprint while on campus, CSUN has begun to take a more holistic approach to environmentalism and begun looking at students commuting behaviors to school.

After conducting research into CSUN student's commuting habits to and from school using Geographic Information System for carbon footprinting, the Institute for Sustainability felt that with the right research, CSUN student's commuting habits could be curbed to mitigate their

harm to the environment through the burning of fossil fuels.³ One way of decreasing car ridership is to increase the amount of students commuting by bicycle to campus. The Institute partnered with the CSUN College of Business to conduct a preliminary analysis of campus bicycle commute programs.

The Institute for Sustainability identified a tentative goal of increasing bicycle ridership on campus through a CSUN sponsored bike sharing program. Because CSUN is a commuter school with the average student living 17.6 miles from campus it was unrealistic to target all CSUN students.⁴ We used freshmen living on the CSUN campus as our target market but our recommendations reach beyond that smaller population.

Through primary and secondary research we collected data from 14 bicycle sharing programs to measure their success. The bulk of these bike sharing programs were being run on college campuses within California. We also studied bike sharing programs located in densely populated cities in the U.S. and abroad. After studying both successful and unsuccessful bike share programs we compared and contrasted different methods of bike sharing and analyzed their results to choose what our research pointed to as the best bicycle sharing program for CSUN students.

3. Current Transportation Options for CSUN Students

Before even beginning our research on bicycle sharing programs, we conducted a survey and analysis of all commuting methods currently offered to CSUN students and staff. We wanted to take a snap shot of the current transportation environment to strengthen our understanding of student commuting before jumping into our bike sharing research.

3.A. Metro Buses

Los Angeles Metro bus stops are located at every major street intersection all around the CSUN campus (see Figure 1). Walking from these bus stops to the center of the CSUN campus takes approximately 11 minutes by walking at a moderate pace. CSUN currently offers no incentives or subsidies to the students or staff to encourage the use of public transportation.

Bus passes can be purchased at the Associated Student Ticket Office in the CSUN Courtyard for the full price of \$75 a month. Metro offers discounted bus passes to undergraduate and graduate students taking 12+ units for three consecutive months by offering them a monthly pass for \$36. A Regular one way bus fare costs \$1.50.⁵

3.B. The Bike Compound

There is currently one bike compound located inside parking structure B5. The bicycle compound is a fenced off area where bikes are more secure. To enter the compound one must have a code. The bike compound was paid for by campus quality of life fees. The CSUN Police Department plans to build two additional bicycle compounds in the next year. The first of these two new compounds will be built parking structure G3 while the next compound will be built in parking structure G5. Both of these two new bike compounds will be paid for through surplus funds generated through parking revenue.

The new bicycle compounds will be subsidized by a small additional fee from students interested in using the bike compound. If a student would like to use the compound, they will pay a one-time \$7 fee that will grant him/her 4 years of access to the bike compound. Upon paying the \$7 fee, students will have the entry key embedded into the magnetic strip in their

driver's license. Once magnetized, their driver's license will allow them to enter the bicycle compound.

Due partly to it being new and partly to a lack of marketing, the bicycle compound is not well known amongst students. The police department has talked about launching a marketing program where they will hang informational cards on people's bikes all around campus informing them about the compound.

Students have requested that additional bike racks be installed around campus closer to classroom buildings. While the Police department is sympathetic to the needs of bikers they also must weigh pedestrian safety. By installing more bike racks in central locations, they will inevitably draw more bikers to ride on centrally located pedestrian walkways. To balance the needs of bikers and pedestrians, they came up with the bike compound idea. By sprinkling bike compounds around campus, students can get close to where they need to be without getting in the way of pedestrians.⁶

3.C. The CSUN Tram

In 2002 CSUN began offering tram service to CSUN students. The CSUN tram is in operation Monday thru Friday from 6:30am to 2:40pm. The tram makes one loop every 15 minutes from the dorms to the top of campus. Each tram can carry a maximum of 57 passengers with one power car and one trailer. The tram was revamped in 2004 from an old bus shuttle to a more environmental friendly vehicle powered by propane. Some of the benefits of using the tram include shorter travel distance by using campus roads leading to shorter round trip times

and more trips per hour. Open air cars permit faster passenger loading and unloading. Roll down curtains accommodate for varying weather.

In the past the tram has been unreliable due to constant mechanical failures. The tram became so unreliable at one point that students stopped taking it. Tram service was suspended the first half of this semester due to continuing maintenance issues. In the past month the tram has had its engine re-gearred to handle higher RPM. Since the modification, the tram has been more reliable. While CSUN owns three trams, only one of them is carrying passengers at any given time. The extra two trams are used when one of the others breaks down. The tram has its highest ridership around 12pm.⁶

3.D. Passenger Buses

There are currently two diesel fueled passenger buses transporting students around campus and from the Metro station. Each bus can transport a maximum of 28 passengers. One bus transports students and staff from the Metro to school while the other bus drives around campus in a loop. Both of these buses use fossil fuels. This shuttle service is managed by a third party company. The immediate fiscal cost of running these two passenger buses is less expensive than operating the electric trams. The bus drivers are paid slightly less than the tram operators. Thus far these buses have been more reliable than the tram. The Metrolink shuttle that transports students to and from the Metro station has been very popular and is currently at capacity.⁶

4. Market Analysis

Universities are becoming conscious and concerned on how their actions impact the planet. They are researching and adopting programs that will assist in making their campuses greener. There are currently over 90 American universities that have adopted some kind of bike sharing program for their campus.⁷ Universities are seeing the shifting of prospective students' behaviors to eco-friendlier ideals. Students are even beginning to look at sustainability as one of the factors when searching for a University to attend. In the hope of riding the green wave of sustainability, universities have been looking for ways to get students to not drive to school. In addition the environmental benefits, Universities tend to be short on physical space and adding parking lots requires money. The extra congestion of cars creates frustration to students who are trying to get to class on time and everyone else on the campus.⁸ Currently, 83% of CSUN students commute to school by car.⁹

One large hurdle to reducing the amount of students driving to school is that information about these alternatives is not easily accessible. Students would need to be actively looking for an alternative to find information. Their transportation alternatives and the details of those programs are not widely known. By CSUN incorporating a Bike Program one of the major obstacles/challenges that they face is coming up with a strong marketing platform to gain momentum.

5. Target Market

We chose to center our research on first year freshmen students living on campus. The population size is a great sample size in the testing and adoption of this program. The freshmen

have a lot to gain from utilizing a bike share program due to their housings proximity to the central campus. With the average CSUN student living 17.6 miles from campus, targeting a bicycle program at this larger demographic is not realistic. Students living on campus through could use bicycles to get to class quickly without driving or having to wait for the tram. Freshmen are more susceptible to new programs because they have not habituated to the schools car commuting culture.

Freshmen are exposed to lots of mandatory information as they are transited to college living. Freshmen tend to be more price sensitive and constantly looking to pinch pennies by saving on gas. Having alternatives that could save them from buying a parking permit or gas will alleviate some of their financial strain.

The entire student population of CSUN is 31,300 with he entire freshmen population made up of 7,218 students. As of September 2010, there were 2,731 students living on campus. 1,886 of those students are freshmen. There are an additional 95 students plus their spouses and children living in family housing. There are 1,055 parking spaces in housing but only 730 are designated to students. Of those 730 students living on campus utilizing the housing parking lots, approximately 30% of them drive their cars from the housing parking lots to the main campus at least once a week. This makes the population of our target demographic approximately 219 students.¹⁰

The freshmen population is a great target group to expose and market a new bicycle program to. The population size is a great sample size in the testing and adoption of this program. The freshmen that live in the dorms would benefit greatly from this program. A bicycle program would allow them to get to class more quickly without having to drive to

campus. It would be easier to encourage freshmen to try the program because they are new to the college experience.

Freshman are exposed to lots of mandatory information because they are continuously being helped in their transition to college living. Because they live on campus, it is a mode of transportation that can be easily accessed with the proper placement. Freshmen are also a population of students that are looking for some type of financial relief. Having other options of transportation that do not involve purchasing parking permits or gas would alleviate some of their financial strain.

6. SWOT Analysis of a CSUN Bicycle Program

The goal of this project was to assess the opportunity of implementing a bicycle program at CSUN. We utilized the SWOT analysis to give us a good insight of CSUN's internal and external environment. The SWOT analysis would assist us in assessing if the strengths and opportunities of incorporating a bicycle program at CSUN would offset the threats and weaknesses. The following paragraphs give you a breakdown of the SWOT.

6.A. Strengths

Established Bicycle Programs: Some of CSUN's strengths in implementing a bicycle program are that there are many existing programs that may assist in making implementation easier. Having programs that have been established in many universities will assist CSUN in learning some of the pros and cons of what worked in some universities and what did not. CSUN could use that information in adapting a program for their campus or they could just adopt an existing program that would make an excellent fit.

Institute for Sustainability: The Institute for Sustainability on campus is well established and well defined organization that can assist in supporting the bicycle program. The Institute for Sustainability has many events that are gaining the attention of students in its mission to promote programs related to sustainability. CSUN has a population of student and faculty who are promoting ways to make the campus sustainable. Their purpose is to educate people in their community to meet their daily needs without compromising the ability of future generations in meeting their needs. The support from this organization would be a plus in promoting this program campus wide.

Good Size Population of Freshmen: CSUN has a group that has a need. Freshmen are looking for easy ways to get to campus and to save money. CSUN has the ability to track freshmen behavior and the accessibility to promote the bicycle program at different events.

Bicycle Compounds: The bicycle compounds have been established on campus and they assist in establishing the message that the campus supports ridership. Individuals who ride their bikes to school are given some peace of mind that they have a safe place to park their bikes. In many campuses theft is a huge issue and CSUN already has a program that alleviates the stress of theft. Therefore, CSUN has already begun to develop a bicycle culture.

Staff Already Adopting their own Bicycle Program: An interest in bikes as an alternate form of transportation already exists. The maintenance staff currently has their own bicycle program, in which they use bicycles to get across campus. This is another target group that has a need and can benefit from using a bicycle program. Staff is another population that can be targeted in the future.

6.B. Weaknesses

Cost Associated with Implementation: Establishing a bicycle program can be very costly. Hiring a third party to implement the program, buy the bicycles, and market the program are all new costs the campus would have to incur. Also, individuals will need to be hired to support the day-to-day operation of the program.

Implementation of Other Green Transportation has not Worked: The tram, bus, and carpool programs for alternative transportation have not been very successful. The tram breaks down frequently and not many students do not about it or how use it. Buses do not come into campus and students are not aware of the carpooling options.

Commuter School: CSUN is a commuter school with the majority of the population who drives to school. Students live close by and rather drive to school because of work or other after school engagements. 1,886 of 7,218 freshmen live in the dorms and of those 1,886 students 730 can obtain parking permits. They are also not taking advantage of other forms of transportation.

Marketing of Greener Transportation has not been Working: There are no set marketing options that provide information to students about greener forms of transportation. There are different websites but the links are hard to find and have minimal information. Information is not easy accessible, fully detailed, or comprehensive. Other than the websites there are no other forms of marketing for transportation on campus.

CSUN does not have many Bike Lanes: The school has minimal bike lanes. The school would need to spend some money on creating/dedicating bike lanes so that riders could ride freely and safely.

6.C. Opportunities

Reducing the Construction of Parking Structures: If the bicycle program is successful, CSUN would not need to build new parking spaces. The money spent on parking structures could be used for other resources. Students would have an alternative to get to campus, which should reduce the need for parking structures.

Recognition: Many universities are getting recognition for being greener campuses. Universities are gaining more exposure and gaining interest among incoming students. Some universities are also getting grants, in which they have used to keep their bike programs going.

Gaining Interest of other Students: Initially targeting the freshman population could lead to gaining the interest of others. The increasing visibility of the program and word of mouth promotion would attract more students to the program. Student would see how easy and quick it is to get to the next class. The campus bicycle culture could be further established, which would reduce the congestions. Staff also needs to get across campus so they may also be interested in using the program.

Adopting other Greener Programs: If the bicycle program were to be successful it could lead to other great programs that would make the campus greener. Greener options mean lower costs to the campus that they could use for other resources.

6.D. Threats

Freshmen are Disinterested in the Program: Students can really resist the program and prefer to drive. Changing the culture of the students preferring to drive to campus could be harder than we expected. Students could reject the whole program and not see the benefits.

Funding: CSUN will not get approval for the development of the bicycle program because they do not find a need for it. The school could determine that they do not have the funding at this time for a program like this.

6.E. Conclusion

The strengths and opportunities around a CSUN bicycle program outweigh the weaknesses and threats. CSUN has a solid foundation and a growing culture that would benefit from a bicycle program. Some of the threats like lacking good marketing techniques and being a commuter school are all things with the proper steps that can be overcome and improved. Although adding a bicycle program can be very costly, the reducing of parking structures and the recognition of the school outweighs the cost.

6.F. SWOT Analysis

Internal	
Strengths	Weaknesses
<ul style="list-style-type: none"> Established bicycle program Institute for sustainability Good size population of freshmen Bicycle compounds Staff already adopted their own bicycle program 	<ul style="list-style-type: none"> Cost associated with implementing a plan Implementation of other greener transportation has not worked Commuter school Marketing Bike lanes

External

Opportunities

- Reducing parking structures
- Recognition
- Interest of other students
- Adopting other greener programs

Threats

- Freshmen do not appeal to program
- Funding

7. Research Scope

After researching dozens of bike programs in the U.S. and abroad, we narrowed our sights on three different programs that all serve to promote bike ridership. We looked at several 14 different Colleges in the United States to see how they tackle the problem of lowering the amount of students that commute to campus by car. After examining the plethora of bicycle programs we saw three distinct groups emerge:

1. Bike raffle
2. Bike rental
3. Bike sharing

While these three categories share the same goal of promoting bicycle ridership the costs, approaches and implementation used to get the students to ride the bikes vary significantly between programs.

8. Bicycle Raffle Program

8.A. Case Studies

We studied the Green Bike Shop at Pomona College in Southern California. In the past five years, that bicycle shop has fixed bicycles belonging to students and staff of the Pomona College free of charge, to promote ridership.¹¹ More recently, they have started giving out bikes to a lucky number of students who participate in their raffle. Every semester, they have approximately 200 students who sign up for the raffle to compete for about 100 refurbished bicycles the Green Bike shop has to offer.¹² To accumulate enough bicycles to give away, the shop collects abandoned bikes from all over campus and refurbishes them to good operating condition.¹³

The shop is open for two hours per day Sunday through Thursday. It staffs five paid mechanics who are also students at the college.¹⁴ The mechanics are paid with funds from the school's Sustainability Department. The money to fund the shop itself comes from the Associated Students of Pomona College for a total budget of about \$1,200 a year.¹²

In the event that the repair takes a longer amount of time, the Green Bike Shop has some loaner bikes in stock. To check a loaner bike out, all the student needs to provide is their ID number as collateral. Another service that the shop provides is scheduled bike-fixing workshops. These workshops are intended for students to learn how to fix their own bikes and promote a culture of ridership. There are about 40 semi-repaired bicycles set aside for this purpose.¹²

8.B. How it works

There are many bicycles left around campus at the end of each school year. With the help of CSUN Parking Enforcement, those bikes are liberated from the bike racks and then donated away to other organizations in need outside of campus. Instead of giving the bicycles away, CSUN could gather them in the aforementioned bike shop and separate them into three categories: for refurbishing, for parts, and for scrap value. Those bicycles that end up being brought back to good operating condition should then be given away to the students, most likely in a form of a raffle that takes place at the beginning of each semester.

8.C. Risks

- Not having enough interest in the program and thus losing money to people being idle at the shop
- Liability for selling a broken/sub-par bike to a student who then hurts themselves as a result
- Running out of funds
- Not having enough bikes in collection to make a reasonably sized lot for the raffle
- Not being able to perform a repair for a student in a timely manner
- Having a hard time acquiring the parts needed for a repair

8.D. Benefits

- Low cost to CSUN
- Low cost to the students – virtually free
- Easy and convenient for the students
- Repair shop is available nearby
- Keeps campus clean of unwanted bikes
- Potential for offering students work-study credits on campus

8.E. Cost

If we replicate the Pomona case study and hire five people for two hours per day for five days a week, it would cost \$400 per week, or about \$20,000 a year in wages alone. Since we cannot put a monetary value on the hopefully increased number of bike riders on campus as a result of setting up a bike shop, we cannot estimate the amount of value the shop would bring as opposed to the costs it will incur. Given that an increased number of bike riders is going to benefit the university, environment, and campus life for a better future, we believe that the costs of running the bike shop is a small price to pay in comparison--but only if it generates an adequate amount of interest via promotions, exposure, and word-of-mouth marketing.

9. Bike Rental Programs

Bike rental programs have been established in universities across California. Though the majority of universities have developed the bike rental programs in-house, we questioned if an in-house program would be the best alternative. CSUN has the option of developing a bike rental program in-house or outsourcing the program to a third party rental service. A summary of the strengths, weaknesses, and costs of each option will be analyzed to deduce the better choice as to how the on-campus bike shop would be managed.

The strengths and weaknesses of each system are summarized in In-House verses Third Party Comparison in the Appendix, which explores some of the most essential factors to consider when implementing a new system, including system control and labor. The weaknesses of the in-house option often mirror the strengths of the third party, and vice versa.

System control is a major consideration because it states who will be responsible for developing and maintaining the system. One of the great benefits of developing the system in-house would be that the school can retain the control of the system, its operation, and its profits. The school would be able to ensure that the operation is run to CSUN standards while retaining complete oversight of rental pricing and terms. However, controlling the operation will also open the university up to the risks and liabilities of running such a business.

Should CSUN decide to grant a separate rental service control of the bike shop, the school would cede the bulk of responsibility for the operation. The third party, likely an existing local bike shop, would fully control the shop time, labor force, and operations system. The third party bike shop manager would have discretionary power to commit to a vendor and its products, which would make it difficult for the university to switch vendors quickly if unsatisfied with the vendor's performance. Nonetheless, this is a minor concession when compared to the experience and expertise that a third party would bring to the program.

Labor is another aspect in which the two options differ greatly. The benefit to the school in choosing an in-house program is that it would be able to create jobs for students. Not only would this provide valuable business experience to undergraduates at CSUN, but the bike rental campaign would gain more exposure through word-of-mouth from the student employees and their friends. However, the university would need to recruit, hire, and train the labor force to handle both the direct customer interactions as well as technical issues, such as repair and maintenance of the bikes. The initial process for the labor would be timely and costly as the students are taught these technical tasks.

This would not be the case with the third party rental service, whose most valuable intangible asset is bicycle expertise. Already well-versed in both rental operations and bicycle mechanics, a third party bike specialist would save the school from the need to train students in bike repair and general maintenance. Not only will that save on otherwise costly startup training as the bike rental program is first implemented, but it would also eliminate the need for new labor training sessions in each subsequent school year. With a labor force comprised entirely of students, an in-house rental program would likely experience much more employee turnover as student-employees graduate and leave CSUN.

Both options have benefits and drawbacks, so it is best to let the deciding factor in this comparison be the cost. The third party has established relationships with suppliers, which allows them to get bikes and parts at a lower cost than the university could achieve. The bike shop already has tools and knowledgeable employees to maintain the bicycles, whereas CSUN would need to buy tools and provide training for an in-house shop. The total in-house cost is illustrated in Table 1. Both programs would require the same dedicated storage and operational space and, though the school may not be able to directly capture the profits from the rentals, it could at least rent the required space to the third party as an additional source of revenue. Also, with proper contract language, CSUN can effectively release itself from the legal liabilities of the bike service if control is granted to the third party, allowing the school to save on potential litigation costs.

Therefore, due to the decreased costs, reduced start-up investment, and general staff expertise, it appears that the prevailing choice is to outsource the program to a third party.

9.A. History and Case Studies

Bicycle retailers, cities, and university campuses have all engaged in the business of daily or extended-term bike rental services. Initially, the primary demographic of bike rental services was tourists, and today most major metropolitan areas offer multiple bike rental locations. Eventually, universities began offering the bike rental service to students. University of California-Davis first offered a fleet of rental bikes through their Bike Barn in the 1980s.¹⁵

Another university that has seen a third party establish itself on campus is Campus Bike Shop at Stanford University in Palo Alto, CA. The bike shop has been serving the students of Stanford for over 60 years and has a great selection of new bikes and accessories, including Fuji, KHS and Shimano. The shop provides quick and quality repairs and has a large selection of rental bikes. The bikes are available for anyone on campus, such as parents, visitors, or attendees at one of the many Stanford special programs.¹⁶

All rental bikes are ready for on- and off-campus biking. The rentals come with a helmet (Giro or Bell), U-lock and, if requested, cable, as well as free flat-tire repair at the shop. Students can rent accessories such as a front basket, rear rack with basket, front light (with batteries), pedals, flat tire repair kit, fender set and child carrier. The shop is open Monday through Friday from 9 am to 5 pm and Saturday from 9 am to 3 pm. The shop offers same day, 24-hour, weekend, weekly, monthly, 3-month, and yearly rental.¹⁶

9.B. How it Works

The bike rental program would allow each customer to rent a bicycle for a time determined in the rental contract. Though staff, faculty, parents, and visitors to the campus would be able to rent a bike, the program's primary focus would be on student renters. Much like a

library book, the student would be granted temporary ownership of the bike with the hope that the bike becomes the student's main mode of local transportation. The students would have the freedom to select the term for which they would rent the bike and would pay according to a predetermined price scale. The student would return the bike to the bike shop when the rental term is over.

The suggested bike rental program would contract a local third party bike shop to handle the rental and repair of the bicycles. The third party would also be responsible for developing and maintaining the bike shop. The third party provides services with minimal investment from the other parties.

9.C. CSUN Implementation

The third-party bike shop would initially rent to 52 percent of the target population – students living on campus using motor vehicles for local transportation, which are roughly 219 students. The 52 percent would be significant enough to make an impact on the target without bombarding the campus with an excess amount inventory. Based on the population of 219 students, the program would initially require an inventory of 113 bicycles.¹⁷

In order to gain enough recognition to successfully reach the students, the store would be located on campus. Cycle World on 8627 Reseda Boulevard in Northridge, CA has already expressed interest in a partnership with the university to provide the bike rental shop to the students. The third party would require a 1,600 square foot space to fit the 113 bikes, as well as the repair and rental sections of the shop. The most logical location for the rental shop and storage space would be within the new recreation center on campus. Store hours will largely align with those of the student bookstore – that is, the store will be open longer hours at the

beginning of each semester when students arrive at campus and will look to begin their semester-long rental term. As demand wanes in the middle of each semester, the store will primarily function as a repair shop and may reduce its hours of operation. As the semester ends, the shop will again increase its hours to accommodate rental returns and standard maintenance.¹⁷

During the first week of school the bike shop would have 4 workers working 8 hours processing rentals at rate of 30 minutes per bike. Given the variability of demand and arrival rate, each worker should process roughly 12 bikes in a day. The first week goal would be 80 bike rentals, with the remaining 33 bikes being rented in the following weeks, perhaps for shorter terms, depending on demand. After a full semester of implementation, it is expected that demand will increase and inventory will be adjusted accordingly. Another benefit of contracting the third party is that when demand increases, the shop can react quickly and utilize its direct connection to suppliers.¹⁷

The geographic landscape at CSUN would allow the bike shop to rent cruisers, which are popular in beach cities and on other campuses (Cycle World would suggest the Globe Carmel model, see Figure 2). The Carmel allows a basket to be added on which the student could rent out as well. Each bike rental would come with a U-lock for added protection. The bike shop would rent related accessories, including bike helmets. More bike racks would not need to be placed around campus to prepare for the expected increase in bicycles, for bike racks are not at full utilization according to the Bicycle Commuting Assessment at California State University, Northridge report.¹⁸

Rental rates would vary depending on the usage time. The rental program would offer same day, 24-hour, weekend, weekly, monthly, one semester, and full academic year rentals.

The 24-hour rental would only be applicable Monday-Friday. The weekend rental would apply to bikes rented Friday or Saturday, with a return due no later than Monday at noon. The rental rates were based on 50 % of 2010 student semester parking permit and then altered accordingly to time of rental. The Rental Rates in the Appendix provides an example of possible rental rates for CSUN students. The rental cost takes into account the initial cost of the bike as well as average wear and tear during the rental term.¹⁹

Similar to renting a hotel room, the user would provide a credit card onto which the shop would hold a deposit, equal to the replacement value of the bike. A lost, stolen or damaged bike would be withdrawn from that deposit; otherwise the full deposit will be refunded to the user upon the bike's return. The fact that students would be able to take the bikes off campus for an extended amount of time makes the bike vulnerable to theft and damage, so the rental contracts will clearly state that the user is fully responsible for the bike until it is returned to the shop.¹⁷

9.D. Risks

As established prior, CSUN would be dependent on the third party. The university would incur high switching cost in the form of lost student participation momentum. If the university were not satisfied with the third party performance and would need to find a new vendor, the potential halt in the culture might alter the inertia generated. The university would also not have control of the operations time or types of bikes used. The university would need to trust the third party to operate in the student's best interest.

9.E. Benefits

All risks would be predetermined in the rental agreement and waiver of liability. The liability waiver would be a mandatory portion of the rental agreement and would release the

school and the third party from any liabilities or legal issues. The bike shop and the school would be indemnified and held harmless in the case of any accidents, damage, and theft involving the bicycles. See The Suggested Waiver of Liability in the appendix for our waiver adopted from other bike retailers.¹⁷

Once in the shop, students and other users would be required to show valid identification before selecting their bicycle and accessories and determining their rental term, pick-up and drop-off days. As the user reviews and signs the usage agreement, the payments and deposit will be charged to the user's credit card. Upon successful return of the bicycle, after any damages are assessed and reconciled, the user's deposit would be refunded to their credit card.¹⁷

The bike shop would offer other services, including bike sales, lock cutting, and repairs for bikes that are not part of the rental program. To further increase the number of students using eco-friendly bike transportation, the bike shop is willing to sell the student brand new bikes at the MSRP price or used rental bikes for sale at a lower cost once the shop has been established for a few years. The goal of the bike shop would be to conveniently offer an accessible alternative method of transportation to students. The bike shop would make renting a bike easy for students. The bike shop also would be able to scale to the increases and decreases to demand. Any changes to demand would be the shops responsibility and in best interest to increase or decrease. The bike would most importantly provide the rental service while requiring a minimal commitment from the university.¹⁷

9.F. Cost and Break Even Analysis

All of the costs incurred and all of the profits reaped should belong to the third party rental business. CSUN incurs no monetary gains or losses from having a third party rental

operating on campus, though the university could stand to profit on the on-campus storage and shop space leased to the third party. The school would still need to review the opportunity costs associated with providing this real estate space to the bike shop, as opposed to using the space for other school services/businesses.

In this case, CSUN's opportunity cost is zero because our school is self-sustained and has all of the necessary services already. Any potential income loss relating to the delegation to a third party as opposed to operating a bike shop, or other for-profit business, within the given space can be offset by the leasing of the storage/shop space to this third party. The opportunity cost would be what another vendor would do with a 1600 square foot space, but, given that the university has a goal of improving sustainable methods of transportation, the bike shop should be a desired vendor.²⁰

10. Bike Sharing Program

Bike sharing systems consist of multiple people sharing a number of bikes for short distant trips; unlike, bike rental programs in which bikes are rented for a long period of time. The bike sharing stations are strategically placed in locations that experience high traffic. This helps people rent a bike to use and drop it off at another hub station. The bikes are rotated all day between users making a bike available at all times to different users.

Technology is used greatly in bike sharing programs for a variety of reasons. One reason is to avoid bicycle theft. Bike sharing systems are now implementing tracking technology to track bike users. This makes the bike user accountable for the use of the bike. Technology is

also being used to show the availability of bikes in each hub location. Real time maps are implemented to show each user the location where bicycles are available for use.²¹

10.A. History and Case Studies

Bike sharing systems began as early as the 1960s in different parts of Europe.²² All these programs were created to provide the same service to bike users; the ability to share bikes among users for short one way trips. This idea to share bikes among multiple users has now expanded in different parts of the world. One example is the Bixi bike sharing program in Montreal, Canada. In May 2009 this program became the biggest bike sharing system in North America.²²

This was a program that was established along the city to encourage the community and tourist to use bikes as a mode of transportation in the city. This program has been a great success among the locals in Montreal. Bike sharing programs have become popular in Asia as well as in Australia.²² These are just some examples of countries implementing bike sharing programs in their cities. There are also currently different school campuses that are using these systems to encourage students to use bicycles as a mode of transportation on campus. Examples of such campuses are the UC Irvine, UC Berkeley, UC Davis and California State University, Long Beach to name a few.²²

The University of California at Irvine (UCI) currently has a very successful bike sharing program called ZotWheels. UCI won the state environmental award for having an innovative bike sharing program on campus.²³ ZotWheels bike share system was established in the fall of 2009. The purpose of establishing this program is to reduce the amount of driving students do on campus and make available a more sustainable mode of transportation on campus.²¹

The bike share stations are operated through technology ran from a server on campus. The user arrives to a station and swipes their ZotWheels membership card. The second step is to select the bike that the user will be using and third step is to press the eject button to get the bike. UCI has a real time map available to bike share users that shows the availability of bikes in each bike station. This shows the user bike availability before going to a station.

This type of system captures the users information once they swipe there card. It provides the user reminders through text messaging or e-mails depending on the choice of the user. Another capability of this system is that it provides administrators data on users and the ability to construct usage reports. These reports are useful to be able to determine, if the program is functioning and how it is evolving as time goes on.

The ZotWheels bike share program also has tracking technology. This tracking system helps prevent the bikes from being stolen or vandalized. It makes the user responsible for their rental. The technology used to be able to track the bikes is Radio Frequency Identification (RFID) technology.²¹ This is tracking technology that through electromagnetic waves it transfers information between the software and RFID device.

Irvine implemented four bike sharing stations in areas were the campus experiences high traffic. This program allows students, staff and faculty to be able to rent bicycles for three hour increments on campus. The user must register and obtain a ZotWheels membership card to be able to check out a bike. The user must fill out a register application, must take a bicycle safety course online and pay a \$40 annual fee.²¹ This membership allows the user to be able to use a bicycle as many times as it may need to throughout the year. If the user loses or damages the bicycle they must pay a \$200 fee. The program began with 24 memberships and at the end of

2009 the membership increased to 94. This shows that the program has been successful and it continues to grow.¹⁹

The parties involved in implementing the bike sharing program in UCI are the Collegiate Bicycle Company (CBC), Central Specialties and Miles Data. The CBC was created with the purpose to help universities establish a different form of transportation that is more environmentally friendly on campus.²⁴ They offer bicycle programs that are customized per school request. Together with Central Specialties and Miles Data they implemented the Bike sharing program at UCI. The Collegiate Bicycle Company provided the software needed to implement the bike sharing program as well as the established infrastructure at UCI.

10.B. How it Works

CSUN will mirror UCI's bike sharing program. CSUN would place the bike sharing stations at strategic locations where there is currently high student traffic. This type of program will allow CSUN to make bicycles available at all times for short small trips around campus. An automated bike sharing program like the one implemented by UCI consists of a three step check out process. Not only does a bike sharing program provide students another form of transportation, but an easy method to check out a bike; unlike, rental programs that take time for students to rent out a bike. Students want something that is accessible, fast and convenient.

10.C. Risks

One huge risk associated with implementing a rental bike program and a giveaway bike program at CSUN is theft and vandalism. The cost of this happening to CSUN will be associated with the price of replacing a bicycle. With the implementation of a bike share program with tracking technology CSUN does not need to worry about theft or vandalism. This type of

tracking technology will make the students accountable of renting the bike. Also, a bike sharing program only allows a student to rent a bike for a short period of time of three hours. This prevents students from taking the bikes to a far off location.

Another risk is that a bike sharing program is implemented, but nobody uses the bikes. The money invested on a program like this will be lost in this case. This is why it becomes very important to be able to have tools to monitor the usage over time of a program to see if it's working. A bike sharing system like the one in UCI provides you the tools to be able to monitor the usage of the bicycles on campus and see if the program is working. Depending on the data that CSUN gets it can help the school expand the program or improve the program if it is not being used.

10.D. Benefit

A bike sharing system will provide a lot of benefits to CSUN. It will provide an ecofriendly program for students to be able to use as a form of transportation. It helps the school reduce its carbon foot print in the environment. It can also help a school improve car congestion in parking lots by having freshman students ride bikes to school instead. It assists students by saving money in parking permits on campus as well. Not only that, but it is a great way to exercise!

The benefits to the initial demographic of freshman that live at the dorms will be great. Freshman currently often times drive to campus because it's convenient, it gets them to campus quick and their car is a readily accessible to drive. A bike sharing program will offer freshman that convenience and ease of use that freshman are seeking as a form of transportation to campus. Having a bike sharing hub at the dorms will make the bikes available to freshmen at all

times. Freshman living at the dorms will no longer have the need to drive their car to campus. This will also save the freshman utilizing the program gas money and wear and tear of their car throughout the years.

Additional benefits will be to make it accessible for students commuting to campus to be able to use a bike to ride on campus. If a student is arriving late to campus it can check out a bike very quick and use it to get to class on time. This will be an added benefit to commuters going to school at CSUN. Once, a student joins the program it is free of use throughout the school year. This program will also be available for Staff to use. It will give them accessibility to bikes on campus to get from one place to another.

10.E. Costs

All of the costs incurred and all of the profits reaped should belong to CSUN. CSUN incurs few monetary gains from having a bike sharing program on campus, though the university could stand to profit on the membership fees of \$40 per semester and \$200 fee for lost bikes. The initial implementation cost of the system is illustrated in Table 2. The majority of the cost incurred by CSUN will be from the hardware cost of the bike sharing station per port (56 bikes). The cost is \$179,200. The reason this cost is so high is due to the state of the art technology used in each station. The technology used in these sections is amazing. As, mentioned above these stations come with tracking technology and the ability to transfer information to the buyer of the usage of the bicycles. The benefits outweigh the cost. This is another reason why the software cost for this program is high as well, \$31,080. The school would still need to review the opportunity costs associated with providing this bike sharing program, as opposed to using the money for other school services/businesses.

In this case, CSUN's opportunity cost is zero because our school is self-sustained and has all of the necessary services already. The opportunity cost would be what another vendor would do with a space, but, given that the university has a goal of improving sustainable methods of transportation, the bike sharing program should be a desired investment.

11. Decisions Matrix

Benefits Provided by Each Choice:			
	Bike Raffle	Bike Rental	Bike Sharing
Inexpensive for CSUN	✓	✓	
Inexpensive for students	✓		✓
Staff expertise		✓	
Technological superiority			✓
Accessibility in many places			✓
Available year-round			✓
Self-advertising			✓
Uniform/custom bike design			✓

12. Recommendation

The decision matrix above breaks down our three bike programs that we evaluated: bike raffle, third party rentals and bike sharing program. The criteria used to measure each program were weighted equally across all three programs. Each check represents the benefits that each category will offer to CSUN. As you can see, the benefits offered by the bike sharing program outweigh the benefits offered by the raffle program and the rental program. Although, the initial investment to implement the bike sharing program at CSUN is higher than the bike raffle and bike rental programs, the benefits offered by the bike sharing program are much greater.

Therefore, we recommend that CSUN implements the Ecotrip automated Bike Share program from the Collegiate Bicycle Company. This is the program that UCI has successfully implemented and has had great response from the students. The program at UCI started with 24 memberships and within a year had grown to 94 memberships.

13. Implementation

We recommend that CSUN contact the Collegiate Bicycle Company to start the bike sharing program. The Ecotrip Automated Bike Share Stations include the technology that CSUN will need in order for the system to run smoothly. The Collegiate Bicycle Company is in charge of setting up the infrastructure at CSUN. The company will provide the necessary hardware and software that the school needs to run this program with the tracking technology that it offers.

The Collegiate Bicycle Company will work closely with CSUN to make sure that all the stations are implemented and are working properly. The Ecotrip system includes: automatic stations that lock and release bikes, stations that will accept bikes from another station in the system, it will function with membership cards, charge a fee if needed to students, send bike users text messages or e-mails, track all the bikes through RFID technology, it will send and communicate repair tickets to the maintenance team.

The system will also allow CSUN to run reports on transactions, users, availability of bikes in each station and usage reports. These reports will allow CSUN to monitor the success of the program. In addition, the stations can easily be relocated or expanded any time if need to.

We recommend that CSUN implement four single sided bike sharing stations to begin the program. CSUN should start by ordering a minimum of 56, three speed cruiser bikes. Each bike

station will contain 14 bikes. The bikes could be customized with CSUN colors (black and red) and include a picture of the school mascot imprinted onto each bicycle. Each bike should have a basket in the front as well. The bike share hubs should be located in four high traffic areas.

One bike station should be located at The Suites at University Park. The second bike station should be located at The Apartments at University Park, since both locations will target freshman. The third bike station should be located outside the Oviatt Library. The Oviatt Library is at the center of the campus and should also experience high student traffic. The fourth bike station should be located by the bookstore. This is another area that should experience high traffic, since the food court is located in that area as well.

We also recommend that CSUN have a membership cost of \$40 per year. This membership will allow each user to rent a bike all year round as many times as they need to. Having bike users register will also help CSUN keep track of the individuals that are using its bikes and make people accountable for any lost or vandalized bike. CSUN should also charge any user a fee of \$200 for any lost or vandalized bike. Any bike that is not returned within the three hours should be considered a lost bike. The user that checks out that bike will not be able to utilize its membership bike to check out any other bike.

13.A. Maintenance

The cruiser bikes that will be implemented at CSUN require very low maintenance. The bikes will require a tune up every two months after being purchased. After that the bicycles will only need a tune up one to twice a year. The Collegiate Bicycle Company recommends that CSUN contract with a local bicycle shop, or independent bicycle mechanics to perform routine maintenance. We recommend that minor checkups can be handled by work study students. This

is a cheaper route to take. The Collegiate Bicycle Company will assist CSUN in setting up any of these forms of maintenance forms. The Collegiate Bicycle Company will service any issues or send easy to install replacement parts. If the company needs to travel to the location for service there would be an hourly service charge. If it is a part that malfunctions, they will ship CSUN the replacement parts free of charge, as covered under an agreed upon warranty.

13.B. Cost

The total cost to implement this bike sharing program is approximately \$245,280 (Table 2). Please note that the price is calculated based on the bike sharing infrastructure recommended above. Also, the price may vary based on the final specifications made to the bike program. Furthermore, as mentioned above most of the cost of this program comes from the hardware and software used in the stations. The cost of 56 bikes is only \$28,000 from the total cost. As mentioned in our decision matrix the benefits that the bike sharing program provides outweigh the cost. This program will be a long term investment for CSUN that will provide a great option for transportation for students and staff.

14. Marketing Strategy

Our strategy for CSUN bike program will take one year to implement. We recommend that CSUN do the following to appeal and draw attention to the bike program:

1. Create a focused and identifiable product/service
2. Invest in advertising
3. Get sponsorships of student organizations (e.g., fraternities, sororities, etc.)
4. Invest in making current online marketing more efficient.

14.A. Phase One

The plan should be implemented around June a couple of months before the start of the academic school year. The success of the bicycle program will be heavily dependent on the marketing strategy. The first step to any successful program is having a focused and identifiable product/service. Having a clear understanding of what the goals and objectives will be the key in directing and measuring success of the program.

The mission statement provides the purpose of the program or why we exist.²⁵ We propose that the CSUN bicycle program mission statement should be, “To promote the health and well-being of CSUN students and the planet by encouraging the use of bicycles to travel across campus.” The vision statement takes it one step further and defines where the program wants to go.²⁶ We propose that the vision statement for the bicycle program be, “At CSUN Bicycles will be the preferred source of transportation for student and staff to get across campus.” Having the mission and vision statements clearly defined will be essential to the success of the program. The mission statement should be printed in all marketing literature pertaining to the bike sharing program. Being able to communicate why the program exists will be crucial in familiarizing students and staff with the program.

14.B. Phase Two

The second step will be to invest in advertising. Since the program is new, advertising is vital in communicating the messages as well as educating students. Since freshmen are the target market, informative advertising will be crucial. We propose the creation of informational pamphlets that will educate students about what the program is all about. The pamphlets should explain how the program works in a simple way that any student can feel comfortable using the

bikes. The benefits should also be stated and broken down by personal, financial, and environmental considerations. The last portion of the pamphlet should tell the student how to get started. The pamphlet should not be cluttered but be simple enough to draw students attention. It should a quick and informative resource that will grab a student's attention.

Another informative way to advertise is to have a third party attend a dorm event or have a booth when the school has their freshmen orientations. A booth could also be erected at a high traffic location during lunch hours. The booth could be located by a bike rack so that the representative could show how easy it is access a bike. Having students or staff from the Institute for Sustainability to assist could also be useful. The Institute for Sustainability already understands the benefits of a program like this. Poster boards showing the step by step check-out and check-in process by each bike rack will also be crucial in showing the students the ease of use.

After students are informed on how to access a bike, spending some time on pervasive advertising will also be important. For instance, the bike program could use comparative advertising by having posters that show the benefits of riding a bike vs. driving. The advertising persuades the students by drawing attention to the benefits. Ads on the website can also be placed to assist in drawing students' attention to the attributes of the program.

The last form of advertising that needs to be addressed is reminders and reinforcement advertising. After, you have educated the students on what the program is you have to remind them that they should use it. This form of advertising should probably be done the second semester. Adding posters, sending emails, texts, or placing things on the web that remind student would be beneficial. Requesting feedback from students that really like the program and

advertising their views would bring a personable peer view of the program. Since our target market is freshmen, there is more available to relay information and obtain feedback from because they spend a great deal on campus.

14.C. Phase Three

The third strategy will leverage fraternities, sororities or other student organizations. Freshmen are looking for organization to join and to see that these organizations are supporting this program would only draw more attention. One avenue that can be taken is to research and seek sponsorship of student environmental organizations. Organizations are always looking for ways to promote themselves in a positive light. Supporting a bike program could be very beneficial for organizations, because it would show that they are actively contributing to the community. Many student organizations seek awards and grants that require that organizations to state what contributions they have made. Organizations seek to find things to add to their applications to set them apart and show what a difference they are making.

14.D. Phase Four

The fourth marketing step would be to update the current website. Currently, it is very hard to find any form of transportation information on the CSUN website. In promoting a new bike program, it will be crucial for students to be able to find information about it quickly. Other universities have been very successful at implementing a bike program because their links are very user friendly. There is an ease of use and availability of information that makes students want to try the program. There are two ways that possibly can be used in creating a more attractive and effective website.

One avenue is to request the MBA IS class to assist in creating a website for the bike program. This can also be made into a project for some students. Another avenue is to make it a competition. Some schools departments have created website competitions to all campus students to create the next ultimate website for their department. They offer a prize and the recognition that their website was the best. Then it helped to recruit individuals that could maintain the website afterwards.

14.E. Marketing Mix:

Product: The product is a bicycle sharing program. It consists of four bike sharing stations that will have 14 individual bikes in each station.

Place: Two stations will be placed outside of the dorms. Another station will be placed by the Oviatt Library. The last station will be placed by the book store.

Pricing: There will be a membership cost of \$40 per year for each member. There will be a \$200 fee if the bike is vandalized or stolen.

Promotion: Advertising in all high traffic and high target market concentration areas.

14.F. Placement

Since our target market lives on campus, advertisement needs to be placed in the dorms. Since a rack of bikes will be placed outside the dorm area, it is important that students start learning about the program. By the bike rack a poster needs to be placed to show students how to access a bike and address other pertinent information.

New student orientation, homeroom and the convocation ceremony is a great opportunity to advertise the program. It's the first two events freshmen attend were they are getting their

information about the school. Possibly setting up a booth and having posters/pamphlets expose the students to the program. The third party that is in charge of the program is also willing to make visits. Having them at the booths or having a special event in the dorms can also be beneficial.

Setting up a booth the first two weeks of school around lunch time can also have impact. Giving students the ability to go ask questions and learn how the program works. Someone from the Institute for Sustainability can also be utilized to work the booths. Utilize the school newspaper the Daily Sundial to promote the program. The newspaper can be used to initially explain what the program is and in later semesters can be used as a reminder.

Website will also be of great help in starting of the program and explaining what it is and how it works. Key information about where the bikes are located, the cost, availability, and maintenance will be located in the website. Having a quick link set up on the school's main website would also be a plus. Emailing and texting can also be influential and very low cost.

Sales Promotion: For the first 100 student that register to the program will receive a free helmet and safety light.

Direct Marketing: Pamphlets/flyers will be placed in the freshmen mail box. Educating students of why the program is beneficial for students and its impact in trying to make a difference to the planet and future generations.

Sponsorship: Fraternities, sororities, and organization supporting the program can be very helpful. The initial goal is to get at least one organization to support the program and then to seek more.

14.G. Marketing Implementation and Budget

Table 3 illustrates the Marketing Implementation Schedule for Year 1. Implementation of the program should begin around summer time. The summer is the time when students begin to visit the campus or start looking for information on their first school year. The second semester ends around May so the marketing plan should encompass the whole school year. The first thing that should be worked on is the website. The website can be started one year before the program starts. The IS professors could be asked if they would offer the bicycle program as an option for students to do for a project. The second option which is a competition could also take place around this time. There it could be offered to during the spring semester as well. At that point, the manager of the program could decide which website does the best job of highlighting the program.

The Advertisement Campaign consists of the flyers, pamphlets, posters, and booths. The posters will be crucial to be placed all over school around the summer time and around the bike racks. Approximately, four information boards on how to access the bikes need to be placed at the four stations. About 40 poster boards will be placed around campus announcing the new bicycle program. These boards will be placed around campus by June when the summer session begins. In the fall, the 2,000 pamphlets and additional 20 posters will be placed around the dorms. The pamphlets will also be placed in the freshmen mail box. Around January (spring semester) an additional 50 will replace posters that announced the program and will now have positive peer evaluations of the program and have program details.

In September, it is recommended that booths be present at the Freshmen Orientation and Convocation Ceremony. At the Convocation Ceremony, the third party representative will be

present to expose incoming students to the program. It is a time to take advantage of providing that first exposure and impact students. It is this time that students are looking for any type of information to make their transition to college life easier. For the first two weeks of school, during the weekdays a booth can be outside around the food court promoting and showing students how to access the bikes. A bike rack will be around the bookstore/food court so that will be helpful.

14.H. Monitoring & Evaluation

Tracking the progress of your advertising campaign is crucial in assessing if you are marketing your product/service effectively. The following tracking devices can be used initially to see if your campaign is working.

Website: Having the website automatically count every time someone accesses the website is pretty easy to do and will provide you a good idea of the traffic.

Print Media: When initially any student signs up for the program, a question on the form can ask where they learned about the program. By tracking this, this information can highlight what form or forum of advertising is more effective. Adjustments can be made after that to make the advertising more effective.

14.I. Risks and Threats

The advertising campaign that is being recommended is very low risk. It is important to be mindful that it is a new program, which will have budget limitations. The cost of the program implementation is pricy and all forms of free advertising should be researched and utilized. Having sponsorships and seeking support from organizations is crucial to increase advertising by

exposure and word of mouth. By achieving those two things, it will help meet the main goal of maintaining advertising at a low cost. A lot of what is initially being recommended is the printing of posters, pamphlets, and flyers.

Initially to promote the program it will be very important to invest in these resources to get the word out. As time goes by, the need for that much advertising will diminish. However, different vendors can be looked at to get cheaper quotes for the printing requirement. The IS class creating the website is a wonderful way to get different options at no cost. Texting and emailing is another cheap way of promoting and reminding students of the program. There are many ways of promoting the program that will be cost effective. The importance of this campaign is getting the word out. In any new program the initial phase is the most crucial.

15. Growth Scenarios and Future Recommendations

This section will provide the forecast of bike sharing usage for the next five years. The forecast figures were taken from membership demand changes from ZotWheels over the past 15 months. See the appendix for Demand from ZotWheels over recent 15 month period for the membership increases. The data was translated using regression analysis and then forecasted using a linear trend and can be found on Table 4. We did not want to predict beyond five years because the historical data only permits an accurate short-term analysis and extending the forecast beyond this time frame could diminish its accuracy.²⁷

The first year will be based on the exact change on membership demand that UC Irvine experienced. The bikes placed on campus will account for 25 percent of the targeted population. In order to increase the bike usage from the target population, the stations will be conveniently

placed in highly visible and accessible locations, convenient to typical starting and end points for intra-campus trips. The program would begin with four stations of 14 bikes: two bike locations will be placed near student housing on the North Campus, and the other two would be placed by the bookstore and by the library on the South Campus. The library is located in the center of campus, providing an area of high student traffic. The bookstore also generates traffic due to the fast food restaurants on campus. Figure 3 illustrate the location for the four initial bike share stations.

Years 2 to 3 would be focused on increasing membership. The four initial stations would be sufficient to supply the 140 projected members in Year 2, but in Year 3 the 196 members would outnumber the system convenience. Availability is essential to maintaining an operational system -- if the bikes are not available, the user will find alternative means of transportation, including reverting back to driving a car.

In order to maintain sustainability, the stations must adapt to the increasing demand. To do so, the university would need to increase to six stations by the end of Year 2, prior to the anticipated increase of memberships in Year 3. The locations are based on the popularity of student bike racks as determined in Bicycle Commuting Assessment at California State University, Northridge.¹⁸ The densest areas for potential bike traffic are near Sierra Hall and Redwood Hall and are illustrated Figure 3.

By the end of Year 4, the bike share system would increase to 252 members. Year 4-5 would be focused on adjusting to the increase in cycles. Also, by the end of Year 4 the university will need to consider the bike sharing programs effect on campus traffic flow. One suggested

adjustment would be the addition of dedicated bike lanes to pedestrian walkways. By the beginning of Year 5, the university would have 307 members and would require eight stations and 112 bikes to accommodate this demand. The two newer bike stations would be located near the University Student Union and Bayramian Hall illustrated on Figure 3.

One benefit of the bike share program over alternative programs is the fact there is little, if any, need for dedicated storage or shop space on campus. All bikes will remain in service and there will always be enough room at the strategically-placed bike racks to adequately store the entire fleet of bicycles. This program will also maximize the utility of each individual bicycle. Whereas in bike rental programs, a bike may remain dormant for long periods while the user to whom the bike is assigned is asleep, in class, or simply not in transit, with bike sharing this is not the case. Soon after a bike is placed on a rack after a trip with one user, another user will then use that bike to make his or her trip. The lack of stagnant bikes means that the university can purchase fewer bikes to meet the same demand.

Word of mouth will provide the future marketing for the bike share program. After the initial startup phase in Year 1, students using the bikes will be quite visible across campus and the program will promote itself. Surely, campus tour guides will boast of the bike sharing program's positive effect on CSUN's sustainability. Also, administrators and upperclassmen can brief potential users on the program during new student orientation, while current users can spread the word among their peers. Beyond that, there is no need for additional marketing past year 3 for the program.

16. Conclusion

We have identified and compared the three most successful types of bike sharing programs being used on college campuses today. Taking CSUN's capabilities, culture and environment into account, we identified that contracting a third party firm to implement a bike sharing program on the CSUN campus would be the most effective way of increasing bike ridership at the school. In addition to recommending a bike sharing program, we laid out an implementation process and marketing strategy to integrate this program into the school.

Because CSUN parking pays for itself and students pay for their own gas, we can not argue that reducing the number of students commuting to school will improve CSUN's balance sheet. In actuality, the bike program we recommended will cut into the school's budget. In the midst of an economic recession and deep budget cuts, investing in a bicycle program may not look great to the finance department. Sustainability is often an intangible asset. Improving the quality of life and health of students while lowering carbon emissions and pollutants, does not translate well to an Excel file or income statement. While the impact of this program may look unappetizing to accountants, it is none the less valuable.

Bike sharing will boost the schools image and brand equity by offering an innovative way for students to travel to class. It will differentiate and distinguish CSUN from the vast majority of schools around the world by allowing it to stand with some of the most environmentally progressive Universities in the Country.

CSUN exists to facilitate and disperse knowledge and ideas. The experience of higher education extends outside the classroom and is not only contained in lectures and textbooks.

Students learn through example and experience. By seeing sustainable practices woven into the schools culture and taking part in them, students will learn firsthand what it means to live a more sustainable lifestyle. CSUN is one of the most diverse Universities in the world with a heterogeneous population from across California supplemented by a massive international student demographic. This diversity gives CSUN a rare opportunity to disseminate sustainable practices throughout the world.

While CSUN's student culture has been slow to push for systematic change from the ground up, CSUN is blessed to have a talented team of committed individuals passionate about providing a more sustainable future for the university. The Institute for Sustainability has looked beyond the campus and begun to look at a much larger and holistic approach toward sustainability. We would like to thank you for offering our team the opportunity to work with your organization and we look forward to seeing the Institute for Sustainability's future success in providing CSUN with a sustainable future.

17. Endnotes

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18. Tables

Table 1: In-House Rental Shop Cost		
In-House		
Labor		
<i>Total Hours</i>	<i>Cost Per Hour</i>	<i>Total Cost</i>
Training		
64	8.5	544
Set-up Labor		
640	8.5	5440
Shop Labor		
672	8.5	5712
640	8.5	5440
Total Labor		17136
Bikes		
<i>Amount</i>	<i>Cost</i>	<i>Total Cost</i>
113	330	37290
Supplies		
Tools		4500
Tire Tubes		4000
Bike Lock		4000
Total Bikes & Supplies		49790
Total Cost		66926

Table 2: The Collegiate Bicycle Company Pricing		
<i>Hardware Costs</i>		
Bike Station (price per port)	\$ 3,200.00	\$ 179,200.00
Bike (price per bike)	\$ 500.00	<u>\$ 28,000.00</u>
		\$ 207,200.00
<i>Software Costs</i>		
Initial Software License (% of Hardware Cost)	10%	\$ 20,720.00
Annual Software License (starting Year 2)	5%	<u>\$ 10,360.00</u>
		\$ 31,080.00

<i>Other Conditional Costs</i>		
Installation (price per station)	\$ 1,000.00	\$ 4,000.00
Freight (price per station)	\$ 750.00	\$ 3,000.00
		\$ 7,000.00
Subtotal		\$ 245,280.00
**Note: Above pricing may change depending on final specifications.		

Table 3: Marketing Implementation Schedule Year 1		
Milestones	Budget	Manager
Marketing Plan Completion	\$ -	The owner
Web Site Completion	\$ 1,160.00	IS class
Advertisement Campaign	\$ 3,627.99	The owner
Totals	\$ 4,787.99	

Table 4: Regression Analysis and Forecast

SUMMARY OUTPUT								
<i>Regression Statistics</i>								
Multiple R	0.907883637							
R Square	0.824252698							
Adjusted R Square	0.810733675							
Standard Error	9.99554846							
Observations	15							
ANOVA								
	<i>df</i>	<i>SS</i>	<i>MS</i>	<i>F</i>	<i>Significance F</i>			
Regression	1	6091.557143	6091.557143	60.96984129	2.91324E-06			
Residual	13	1298.842857	99.91098901					
Total	14	7390.4						
	<i>Coefficients</i>	<i>Standard Error</i>	<i>t Stat</i>	<i>P-value</i>	<i>Lower 95%</i>	<i>Upper 95%</i>	<i>Lower 95.0%</i>	<i>Upper 95.0%</i>
Intercept	9.485714286	5.431162867	1.746534677	0.104286467	-2.247599718	21.21902829	-2.247599718	21.21902829
X Variable 1	4.664285714	0.597348274	7.808318723	2.91324E-06	3.373793228	5.9547782	3.373793228	5.9547782
Ft = 9.49 + 4.66t								

Forecast Demand

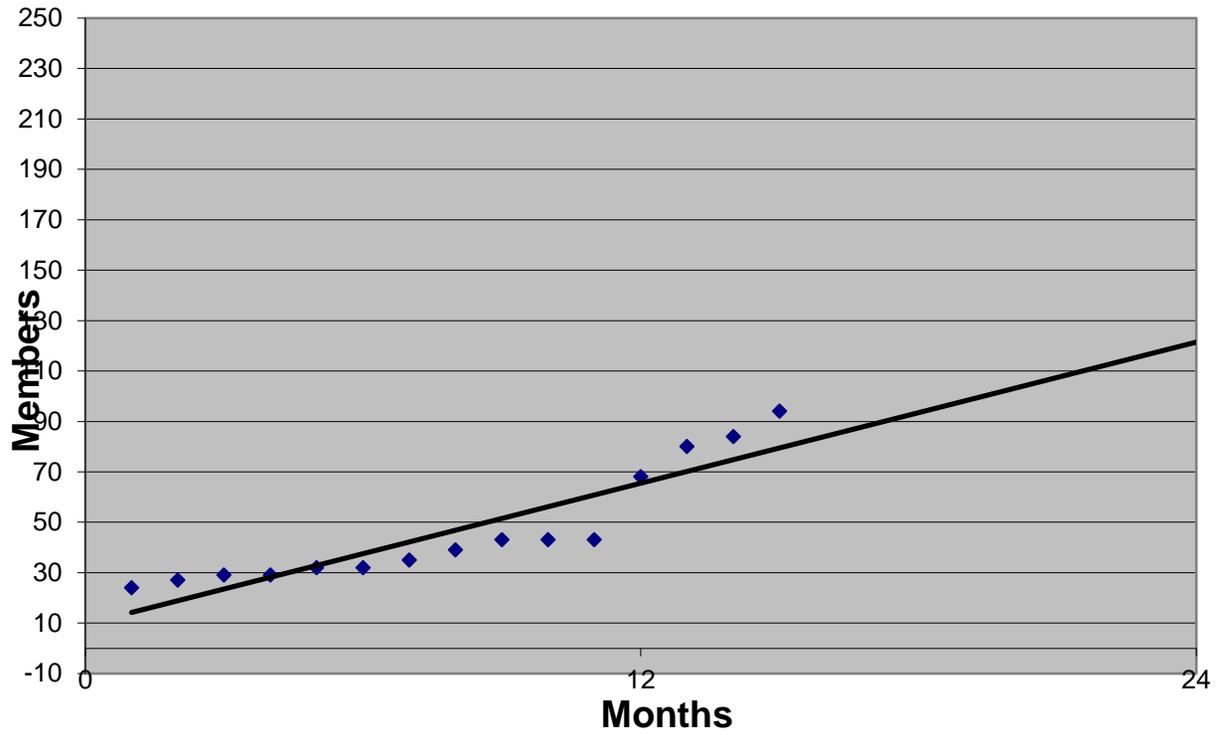


Figure 2: Globe Carmel Bicycle



20. Appendix

20.A. Parking

California State education code dictates that no public university or college can use on campus parking fees as a profit making initiative to fund other departments outside of the parking and transportation department. Parking permit rates are based on a cost analysis and computed to cover the costs of parking maintenance. Any remaining funds rose through the issuance of parking permits or tickets must go back into the parking program, parking expenses and transportation programs e.g. tram and metro link. The majority of parking revenue comes from selling permits to students and faculty. Only a small percentage of parking revenue is derived from parking tickets and citations.

In 2009:

- 23,122 tickets were issues @ \$40 each = \$924,880
- 38,536 student permits were sold /1,139 resident permits were sold
- 271 motorcycle permits were sold
- There are approximately 9,500 parking spaces on campus in addition to:
 - 420 handicap spots
 - 145 motorcycle spots
 - 730 on campus student housing spots
- There are three different kinds of student permits.
 - S permit - allows students to park on campus = \$360/year
 - R permit - allows students to park on campus and residential lots = \$360/year
 - North Lot permit - allows students to only park in the north lot = \$250/year

Because the R permit allows students to park in both on campus and in residential lots for no additional fees, this provides an incentive to students living on campus to park in both locations. By restricting the R permit to only parking in residential lots, this could greatly reduce the number of students living on campus driving to class. Captain Fernandez has offered to reformulate the parking permit system to only allow students to buy an on campus permit or a residential lot permit granted that he is provided research findings that students living in on campus housing are driving their cars to campus.

20.B. Bike Sharing Industry

In 2009 the bicycle industry in the United States was considered a \$5.6 billion industry. This industry is considered seasonal. Also, it is affected greatly through economic changes in the economy. Most of the bikes sold in the United States are imported from China and Taiwan. This industry consist of 5 different categories of players which are specialty retailers, bike shops, sporting goods stores, mass merchants and independent retailers that don't fall under the previous categories.

20.C. Porter's Five Forces Model for Bike Sharing Industry

	<p><u>New Entrants: HIGH</u> -There are currently many forms of transportation available to students. -Not a lot of capital is needed to enter this industry. -New entrant would need special approvals or contracts with CSUN in order to use their form of transportation inside the campus.</p>	
<p><u>Suppliers: HIGH</u> -Most bikes are manufactured in China and imported to the U.S -There are more than 2,000 suppliers in this industry. -The inputs to make a bicycle such as material, services and supplies are standard and not differentiated or unique. -The companies can easily switch suppliers. -The materials used to make a bike are the norm across different designs. -The bike companies can substitute inputs easily.</p>	<p><u>Competition: LOW</u> - Competitors consist of specialty bike retailers, bike shops, sporting good stores, mass merchants, and other independent retailers. -The competitors are about the same size. -Each competitor specializes on the type of bike they sell (high performance, men, women or children etc).</p>	<p><u>Buyers: HIGH</u> - If needed the student can easily switch transportation method to school. -The buyer has more than 100 different types of bicycle brand names to choose from. -Students are sensitive to cost. So, students would switch for a cheaper option or convenience. -The buyer does not need a lot of information to switch transportation form. -This industry has many buyers.</p>
	<p><u>Substitutes: HIGH</u> -Cars, tram, bus and walking. -Some of the substitutes do have performance advantage over the others. A car can be more convenient for a student in comparison to a bike. The tram as well can be more accessible. -Currently there is not bike program set in place, so threat of substitutes is high -The switching cost for the user is low from substituted to substitute.</p>	

20.D. Free Bikes Lying Around Campus

We explored the option of purchasing a given number of bicycles simply leaving them around campus unlocked. This would allow students to pick up, ride and drop off bicycles wherever they wanted. Unfortunately, our research showed that this method has never worked in any school or municipality due to theft. Bicycle sharing programs without user electronic identification struggle against theft and vandalism. In one program tried in 1993 in Cambridge, United Kingdom, the overwhelming majority of the fleet of 300 bicycles was stolen, and the program was abandoned. The non-for-profit, BiCyBa released White Bicycles into public use in Bratislava, Slovakia in 2001. During the next three months all the bikes were stolen or destroyed and the project was cancelled. A similar result occurred in Edmonton, Alberta, with 95% of the bikes in the People's Pedal program stolen in the 2008 season. Acknowledging that he had not researched this option, Captain Fernandez is pessimistic that this method would work and believes will cause a spike in on campus bike theft.

20.E. In-House versus Third Party Comparison

In-House		Third Party	
Strengths	Weaknesses	Strengths	Weaknesses
Control System	Space Design	Space Design	No Direct Control
Student Jobs	Training	Experienced Labor	Difficult to Alter
Direct Profits	Labor to Repair	Repairs	
	Labor to Rent	Maintenance	
	Buy Bikes	Bikes	
	Buy Parts and Tools	Bike Prices	
	Cost \$66,926+Space ¹	Storage Space Revenue	

20.F. Rental Rates

Rental Term	Total Price
Same Day	\$3
24-hour	\$5
Weekend	\$7
Weekly	\$10
Monthly	\$35
One semester	\$90
Academic year	\$170

20.G. ZotWheels Demand over recent 15 month period

Month	Members
1	24
2	27
3	29
4	29
5	32
6	32
7	35
8	39
9	43
10	43
11	43
12	68
13	80
14	84
15	94

20.H. Suggested Liability Waiver

Please read carefully before signing:

I accept for use the equipment listed on this form and accept full responsibility for the care of this equipment.

I understand that bicycling is a hazardous activity. I understand that the sport of bicycling and the use of this equipment involve a risk of injury to any and all parts of the user's body. I hereby agree to freely and expressly assume and accept any risks and all injury to the user of this

equipment and others while bicycling. I understand that bicycle protective gear, such as helmets and gloves, are recommended, but they do not eliminate the risk and may not reduce the risk of injury in the event of an accident.

I agree that I will release this bicycle shop from any and all responsibility of liability for injuries or damages to the user of the equipment listed on this form or to any other person. I agree not to make a claim against or sue this bicycle shop for injuries or damages relating to bicycling or the use of this equipment.

The equipment, at all times, remains the exclusive property of the bicycle shop. The renter is responsible for damage to or loss of the equipment. If the equipment is lost, destroyed or damaged beyond repair in the judgment of the bicycle shop, the renter agrees to pay the bicycle shop the value of the bicycle. All repairs needed as a result of the use of the equipment will be performed at the normal labor rates and the cost of such repairs, including all parts, shall be paid by the renter.

Initial here_____I hereby accept the terms of this contract. This document constitutes the final and entire agreement between this bicycle shop and the undersigned. This bicycle shop itself provides no warranties, express or implied, and this equipment is accepted "as is."

Initial here_____I have carefully read this agreement and release of liability and fully understand its contents. I am aware that this is a release of liability and a contract between me and this bicycle shop and I sign it of my own free will.

California State University **Northridge**

Graduate Programs
College of Business and Economics
California State University

Northridge, California 91330

Date: September 9, 2010

Helen Cox
Director, Institute for Sustainability
California State University Northridge
18111 Nordhoff Street
Northridge, CA 91330

Dear Dr. Cox:

The purpose of this letter is to (1) verify that we intend to pursue the MBA Consulting Project that we discussed with you on our recent visit, (2) explain our understanding of the task that we are expected to accomplish, and (3) advise you of the information and material we expect to be needed to complete this task. Also, we are required to bring to your attention the following statement concerning the nature of the student consulting engagement that we are embarking upon:

"The MBA Consulting Project Experience operates under the auspices of the College of Business and Economics at California State University, Northridge. The report that you will receive should not be interpreted as the official position of California State University, Northridge (CSUN) or of the College of Business and Economics at CSUN. Rather, it will contain views and opinions of the MBA student or student team based on discussions, observations, investigations, and analysis of your firm's operations and its business environment."

Based on our discussion with you on September 2, 2010, we intend to develop a research brief and recommendations for the Institute for Sustainability by December 14, 2010. We hope that our recommendations will be of some assistance to you in achieving the long-run effectiveness of your organization. Our goal is to provide a final written report and oral briefing for you by December 14, 2010.

In order to accomplish our goal, we will need the following material and/or information:

1. Past survey data conducted by the Center for Sustainability on student commuting.
2. Up to but not to exceed four hours of your time every month to brief you on our research.
3. Assistance with obtaining contact with other relevant CSUN department representatives.

Your assistance in expediting the above material and any future information we may require is appreciated. Please inform us if you have any questions concerning our interpretation of the work to be accomplished.

Thank you for giving us this opportunity to apply our knowledge and skills in an actual business environment. We are looking forward to an interesting and challenging assignment.

Yours truly,

Benjamin Packard
Student Consultant

Rosa Machuca
Student Consultant

Ilya Kaminsky
Student Consultant

Guadalupe Viramonetes
Student Consultant

Elaine Vilchez
Student Consultant

The following individuals will be supervising this project:

Dr. Deone Zell
Faculty Advisor
(818) 677-4500

Deborah Cours, Ph.D.
Director, Graduate Programs
(818) 677-2467

Receipt of engagement letter acknowledged:

Helen Cox

Date