

UCLA Recreation Action Research Team

Final Report June 1, 2012

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3. Executive Summary

UCLA Recreation's immense and diverse facilities present a wide range of opportunities for sustainable improvement. For the past 2 quarters, the UCLA Recreation ART Team has worked to bring sustainable changes to both indoor and outdoor recreation facilities. Through making structural changes to areas that are frequently used and highly visible, we have aimed to heighten environmental consciousness, which will translate into sustainable behavior. These projects also undeniably have a significantly positive environmental impact on these frequently used facilities, from reducing paper towel usage by installing hand dryers to changing indoor recycling infrastructure to promote a strong recycling culture. Last but not least, most of these changes will also provide monetary savings, eventually paying for the initial material costs over time.

The four projects we have been working to implement are:

- 1) Changing the recycling infrastructure in John Wooden Center (JWC) and Student Activities Center (SAC) to increase the practice of responsible recycling behavior
- 2) Installing energy efficient hand dryers in John Wooden Center's main bathrooms to reduce paper waste and carbon emissions
- 3) Install lighting sensors in areas where there can be increased energy efficiency
- 4) Introducing water refill stations to the primary outdoor facilities of UCLA Recreation to decrease waste by promoting the use of reusable water bottles

Throughout the course of our projects, we have modified specific details and project goals based on site-specific characteristics, new findings from research, stakeholder advice, and resources already available from UCLA's campus-wide efforts. Taking all of these factors into consideration, our final projects have been modified to include the following specifics:

- 1) Change recycling infrastructure in JWC and SAC by:
 - a. Coupling all trash and recycling bins
 - b. Determining the best location for each trash and recycling bin pair
 - c. Implementing bin uniformity
- 2) Install 6 energy efficient hand dryers in the restrooms and locker rooms of JWC

- 3) Install motion sensors in the hallways of JWC that have lights on 24/7, as well as in the JWC restrooms across from Sales and Cashiering
- 4) Install 6 Chicago Goosenecks on existing water fountains in Drake Stadium, the IM Field, the North Athletic Field, and the Los Angeles Tennis Courts (LATC)

There are several key findings we have obtained from the planning, research, and implementation phases:

Recycling: Recycling inefficiencies in JWC and SAC are primarily due to the lack of a standardized bin design, the lack of educational signage, and especially the randomized bin placement that can often confuse users. A significant reason for the scattered bin locations is that facilities often do not return bins to their intended locations, strengthening the need for signage that marks where the bins should be. Rich Mylin will implement the signage in cooperation with UCLA's campus recycling team. Connecting UCLA recycling and sustainability efforts with individual departmental efforts is also a critical function of the ART Teams, in addition to project recommendations, design, and implementation.

Motion Sensors: Daylight harvesting technology was not the most beneficial solution to invest in due to installation difficulties, the reduced energy savings they would provide in comparison to other solutions, and the potential to make more energy efficient and urgently needed changes in other areas of JWC. The primary recommendation to instead install motion sensors in constantly lit hallways and high traffic bathrooms was readily supported, and demonstrated the importance of input from stakeholders and associated staff members when drafting project goals. However, for the ART Team to most efficiently utilize these suggestions, it would be best for stakeholders and staff to be in contact with the ART Team as early as possible about site-specific recommendations.

Hand Dryers: Hand dryer installation is fairly expensive, excluding the cost of purchasing the hand dryers. Because installation requires infrastructural changes and the involvement of many different facilities and maintenance entities, obtaining a quote and verifying a procedure is a time intensive process.

Goosenecks: Introducing a simple gooseneck to existing water fountains is an efficient and effective way to make behavioral changes, especially in outdoor areas that are frequently visited by active students.

Communication: UCLA Recreation stakeholders are very motivated and excited to collaborate with ART Teams to implement sustainable changes, and were very available during the first half of the project. It was more difficult to maintain contact toward the latter half of the quarter when project implementation was about to begin, due to busy schedules and unexpected changes. Our stakeholders, especially Rich Mylin (the primary stakeholder of our projects), have been very open to our recommendations, providing feedback, and a great pleasure to work with.

As we reach the final steps of concluding our projects, we hope that future ART teams will be able to conclude any unfinished results, conduct follow-up studies of the effectiveness of these changes, and continue to work toward a more sustainable UCLA Recreation.

4. Objectives

In its 4th year with ESLP and the ART program, the Recreation Sustainability team has previously done great work in moving towards making UCLA's recreation facilities, namely the John Wooden Center (JWC), a more sustainable area for student activities. This year, we have are focusing on four projects aimed to help Recreation align with UCLA's 2020 goal of zero waste: an improved recycling program, energy-efficient hand dryers, lighting sensors, and water-bottle refill stations on Recreation's fields. In efforts to institute practices that continue well beyond the scope of the action research period, the team intends to couple the implemented infrastructure with educational campaigns to foster more sustainable thinking and behavior in its users. Because our projects are primarily focused on physical changes to existing buildings and structures, and since these changes have already been in place for many facilities throughout UCLA, the primary educational tool will be effective signage and written messages.

Recycling

For recycling, the ART Recreational Team intends to implement a recycling system by designing waste clusters that cater specifically to recreation needs. The waste clusters would contain bins that take into account the types of trash that needs to be disposed in Recreation's indoor and outdoor settings. The bins would be accompanied by signage in alignment with the university-wide recycling program that would instruct the user how to dispose of their trash.

The purpose of the bins would be to reduce the amount of trash that gets taken to landfills by diverting appropriate compost and recycling items to their respective bins.

Energy-Efficient Hand-Dryers

The introduction of electric hand dryers will save paper by eliminating waste generated from used paper towels. This project is focused on the John Wooden Center bathrooms and locker rooms specifically. None of the bathrooms had any hand dryers, and instead had large paper towel dispensers that often took a majority of the vertical wall space. The main focus was to install hand dryers into the locker rooms because those are the locations that receive the most foot traffic. However, after electricians and maintenance reviewed the locker room layout, the dryers did not seem feasible. Although we could not install the dryers in the locker rooms due to infrastructural issues, the dryers are set to be installed in the other bathrooms within the gym. Extensive research was done online to compare different types of hand dryers in terms of its features. The research was presented to Recreation, in order to make the final decision.

Lighting Sensors

The initial concept was to reduce energy waste by installing daylight harvesting technology in various workout rooms of the John Wooden Center and motion sensor lights in minimally used spaces within the John Wooden Center. The daylight harvesters are sensors that dim indoor lighting when natural light is bright enough to light the rooms, and adjust accordingly as less natural light becomes available throughout the evening. The motion sensor lights would use motion detectors to automatically turn on and off lights. Due to costs, the plan has been changed to proceed only with the motion sensor lights. The spaces that will have the motion sensors are hallways, bathrooms, and isolated rooms. The offices were also originally in the consideration, but were removed due to the stakeholder input that people are more conscious of the office lights.

Water-bottle Refill Stations

By introducing convenient water bottle filling stations on the athletic fields, people will be more inclined to use reusable canteens rather than buy plastic water bottles; this will reduce plastic bottle waste. The water-bottle refill stations would require minimal

infrastructure costs because it entails a simple gooseneck, which could be added to any standard water fountain to make it double as a water bottle refill station. The focus of this project is on outdoor recreation facilities, such as LATC, the IM Field, and Drake Stadium.

5. Significance/ Background

Our project will benefit students at UCLA and the institution itself because of its focus on conserving resources throughout Recreation, a large entity within UCLA that is responsible for most of the facilities that are widely used by all students and staff. As UCLA works towards its goal of Zero Waste by 2020, these focuses become especially relevant to driving UCLA in the right direction. For UCLA as a whole, these projects will immediately incur a return on investment, accompanied by fiscal saving for years following.

Recycling

During the initial stakeholder meeting with Rich Mylin, he expressed Recreation's need for a comprehensive recycling program. The current waste disposal bins did not differentiate between the various trashes thrown in them and made little attempt to encourage thoughtful trash disposal. There was a lack of signage to aid and educate the users about proper waste discarding. Upon looking into the waste bins, there was trash, compost, and recycling materials mixed into a single type of trash can. Recreation is an entity that has high traffic and with it high waste due to the immense amount of events it puts on. The absence of recycling culture within the Recreation enables its users to disregard separating their trash and hinders UCLA's ability to decrease its unsustainable waste disposal.

Energy-Efficient Hand-Dryers

The use of paper towels is less sustainable in comparison to energy-efficient hand dryers. The hand dryers researched took about 12-15 seconds to dry an average person's hands. The hand dryers are more efficient because it decreases the amount of paper that would have to be purchased to restock the paper towel dispensers. The energy-efficient dryers also use minimal energy and would require less attending to by the maintenance staff. It would save Recreation costs on paper towels. Energy-efficient hand dryers have been implemented in other parts of campus and have been well perceived by the UCLA student body. With its long-

lasting eco-friendly design, users are given a sense of environmental responsibility when they use the product. In terms of a long-term environmental benefit, the decrease in towel use would create a lower demand on paper and thus logging.

Lighting

By implementing motion detectors the energy usage will be reduced, especially in rooms that frequently keep the lights on the entire day without much foot traffic. The energy reductions can be seen through the cost savings in the electricity bills. Through inquiring about the lighting situation at the John Wooden Center, it was discovered that often times lights were left on because keys were misplaced. By implementing the motion detectors in these rooms, the amount of energy saved will be immense, since these lights have been left on for quite some time. We hope this will encourage conscience effort by patrons and Recreation staff to turn off lights in the rooms without motion detectors, as well.

Water Refill Stations

This project was inspired by last year's "Tanks for Towels" project. Similar to the "Tanks for Towels" project, the water refill stations would encourage the community to practice reusing. This practice of reusing would reduce the total amount of plastic water bottles purchased and the need to produce plastic water bottles on a commercial perspective. In addition, the water refill stations would reduce the cost of processing the plastic waste created by plastic water bottles. The water-bottle refill stations would affect the community because it would also influence students to use canteens instead of plastic water bottles in their daily lives. It would teach the community to implement a sustainable practice into their lives.

6. Initial Conditions

After discussing potential areas for sustainability improvements in UCLA Recreation's facilities with Rich Mylin, our group continued to brainstorm different possibilities for our sustainability project. Our initial project ideas included: installation of a green roof in one of Recreation's facilities, automatic pool lights and heating, biodegradable alternative cleaning products, and window tinting in JWC. The team was very excited about the possibility of installing a green roof. However, after doing thorough research on the requirements for green

roofing and roofing projects initiated in other institutions, we decided that start up costs would be too high, the location would be difficult to scope, green roof design was beyond our area of expertise, the length of time required would exceed 2 quarters, and it would require maintenance that would incur additional expenses. Therefore, our recommendation is that future ART Teams consider other potential sustainability projects before focusing on green roofing. Our team decided to work on 4 projects that would have the greatest impact on UCLA Recreation sustainability, could be implemented immediately, and have the potential to change student behavior. Each person in our team was responsible for 2 projects, resulting in 2-3 people working on each project. After finalizing our projects (confirming feasibility), our primary stakeholder also invited two other stakeholders to advise our individual projects based on their areas of expertise.

The 4 projects, and the members and stakeholder affiliated with each were:

Project	Members	Stakeholder, Title
1) Recycling within JWC and SAC	Joel Slater, Kelsie Sandoval, Jessica Chen	Rich Mylin: Event and Facilities Operations, Associate Director
2) Daylight Harvester Installation in JWC 2nd level rooms	Jannet Vu, Julie Kelleher	Amy Netland: Assistant Facility Manager
3) Hand Dryer Installation in JWC	Jannet Vu, Kelsie Sandoval	Amy Netland
4) Gooseneck Installation in UCLA's Outdoor Facilities	Joel Slater, Julie Kelleher, Jessica Chen	Ignacio Vega: Event and Facility Operations, Manager

In order to begin on these projects, we needed to establish a goal and timeline for each project, meet with our stakeholders to narrow our project direction based on site-specific requirements, and do our own research, both via internet and in the field.

7. Research Methodology

The first prong of our projects was to conduct research, which consisted of both online research and in-field investigation. Research for both the gooseneck and hand dryer projects included comparison of different models in order to identify the most efficient or cost effective model (Appendix 13.4) for the John Wooden Center. Research was specifically done to analyze the suitability of Dyson Airblades for JWC, including an analysis of the functionality drawbacks and expenses. For determining the best gooseneck model, Ignacio did a walk through with their staff, who were well-versed on which model would be the best to use and compatible with their current system. Last year's ART Team had compiled research on daylight harvesting, including recommendations for which rooms they could be installed in, and we used this research to inform our decision on which model to propose.

All projects required in-field research. For recycling, we toured the John Wooden Center (JWC) and the Student Activity Center several times to map the current location of recycling and trash bins, and to determine where trash cans and recycling bins would be best placed. In addition, we recorded areas and places where bins should be removed (Appendix 13.6 and 13.7), and which bins we wanted to eliminate to maintain uniformity. We also did a walk-through of LATC to advise the best locations for new recycling bins.

For gooseneck installation, our team toured the IM Field, North Athletic Field, Drake Stadium, and the LATC to inspect the quality of the current fountains. We originally considered replacing the existing units with entirely new models that included a spigot, or possibly installing additional water fountains. After another walkthrough with Ignacio, we decided it was best to proceed by installing a simple gooseneck to each fountain, which was the most cost effective option.

Our second prong was to continue communication with our stakeholders to determine the feasibility specifics for each project. In order to narrow the possibilities for our recycling project, we met with Chris Gallego to discuss campus recycling efforts, the desk side program, and existing signage and bins to best align our recycling recommendations with UCLA's current recycling scheme. In addition, we did an initial walk through of JWC with Rich Mylin to discuss our concerns about bin placement and uniformity between bin designs, and pointed to preliminary recommendations. Our final conclusion was to keep one recycling bin model and one trash model, to always ensure that they are coupled, and to make recommendations for

where they should be placed without purchasing new bins. In addition, our stakeholder suggested placing signage above the bins so that they would not be removed from their intended location, an idea we decided to implement. We started to brainstorm different slogans and design possibilities, and met with UCLA Recreation's Director of Marketing, Bill Aberbuch, to discuss our ideas. However, we contacted Nurit Katz upon hearing that the campus-wide recycling team already had signage designs available, and put Rich Mylin in touch with her. Recreation is now working with campus recycling to include signage and designs that match campus-wide recycling appearances.

**Although the ART Team was not able to work on creating an educational poster, it is important to note that a critical function of the ART Team is also to connect stakeholders from different campus entities to campus-wide sustainability efforts, facilitating a more uniform and unified recycling system throughout UCLA.*

We are currently waiting to do a final walk through with Rich and several staff members to determine if any of our recommended placement locations are potential fire hazards, or are in violation of any building codes. Once we are able to proceed with the walk through, the recycling plan can be implemented.

Our group first did a walkthrough with Amy Netland to discuss potential locations for motion sensors, daylight harvesters, and hand dryers. Afterwards, there was continued email contact regarding the type of hand dryer, feasibility, and update on correspondence with other facilities workers. However, it was challenging to keep regular contact during the last month regarding daylight harvester installation due to tight schedules of both ART team members and stakeholders. During a recent stakeholder meeting, Amy Netland updated us on the project after meetings and recommendations from electricians and facilities. Due to the difficulty of installing daylight harvesters, the fact that lights are already usually turned off when the rooms are not being used, and the potential to make more energy efficient changes in other areas of JWC, she recommended switching the project to installing motion sensors in the hallways and rooms that currently have lights on 24/7, and to install ceiling motion sensors in the bathrooms. There was unanimous agreement to switch gears. Amy also presented an invoice for hand dryer purchase and installation. We decided to purchase 6 Xlerators, primarily due to price considerations.

After meeting with Ignacio Vega to do a walkthrough for gooseneck installations in LATC, we waited for a response from Ground for cost estimates. We received the estimates

within the past two weeks, in addition to a recommendation from facilities for a higher quality model (Chicago Goosenecks).

The third prong of our projects was to obtain funding by applying for TGIF. We obtained the full amount of \$11,115 we requested for purchasing hand dryers, motion sensors, and goosenecks, and also have a surplus we will be able to use to purchase recycling bins for LATC. The funding will be used by UCLA Recreation to purchase the necessary items as soon as possible, and we will be following up with our stakeholders within the next week. This is the final hurdle for implementing most of our projects.

8. Data/Cost Analysis

Hand Dryers:

For the energy-efficient hand dryer project, we are purchasing six Xlerator hand dryers at the cost of \$550 each (or \$3300 total). These hand dryers will be installed in the following locations:

- Two dryers in the Men's and two in the Women's restrooms located in the front of the John Wooden Center, across from the Sales and Cashiering desk.
- One dryer each in the smaller Men's and Women's restrooms located in the hallway between Pardee Gym and Collins Court.

We decided on the Xlerator model for a few reasons. They are a cheaper alternative to the Dyson Airblades, while working with equal electrical efficiency. Xlerators have previously been installed in various locations around campus, including the Anderson School of Management, and have been well received by the student body. And finally, we had received complaints from Maintenance and Facilities about the upkeep of Dyson Airblades.

In a calculation done on cost effectiveness for energy-efficient hand dryers (though done for the Dyson Airblades, the numbers are comparable as Xlerators use similar kWh input), savings add up to about \$17,000 per year, as opposed to paper towels! The estimate was done assuming 6 Airblades used 400 times a day at electricity cost of \$0.0989/kWh versus 2 paper towels used per person at \$0.01 per paper towel.

Lighting:

Motion detectors will be installed in the same restrooms as the hand dryers, as well as the hallway in front of the smaller restrooms in the John Wooden Center (Rooms 1131, 1131B, 1125, 1125B, 1278, 1280, and 1282). Swing Shift Electrical System DT 355 motion detectors will be purchased at a cost of \$950 for total materials (not including labor).

We switched our focus from daylight harvesters to the motion detector project because of the huge potential for savings to UCLA Recreation. The light bulbs in the above rooms and hallways must be turned on or off with a specific key; however, since the misplacement of the key, the lights have been running 24 hours a day for over a decade. With electricity at a cost of \$0.0876/kWh, the potential savings from turning off those lights for as little as 8 hours a day will be in the thousands of dollars per year! (ex: \$5,819.268 assuming fifty-five 455 Watt MHID bulbs).

Water Refill Stations:

The water refill goosenecks will be added to already existing water fountains around the UCLA Recreation outdoor facilities. We will purchase six Pro-Chicago faucets (Model 350-E35-244ABCP) to be installed in the following locations:

- One gooseneck installed on the track level water fountain in Drake Stadium
- One gooseneck installed on the fountain in the Southwest corner of the IM Field
- One gooseneck on the North Athletic Field
- Three goosenecks installed around LATC

Installing water refill goosenecks in UCLA Recreation areas will help decrease the amount of disposable water bottle used by students and purchased by UCLA. It will also incur mass environmental resource savings. If, for example, the water bottle goosenecks encourage 50 people per day average to refill bottles rather than buy bottled water, this means over a year that 18,250 bottles will not be thrown away. This would save 62,050 MJ of energy spent on making and packaging the disposable bottles, and that figure does not even include transportation cost which greatly increases the carbon footprint. Also, given that it requires 3 liters of water to make 1 liter of bottled water, our project would save 36,500 liters of water annually.

***At the time this Final Report was written, the ART team had not yet had a final meeting with our stakeholders, scheduled for early 10th week. At this meeting, we will submit orders for*

the above mentioned items and discuss the timeline for installation, which, unfortunately, will not occur until the summer. We will also decide where it would be best to allocate the extra, remaining funds: whether to purchase additional hand dryers, motion sensors, or goosenecks to expand these projects further and increase their sustainable reach, or to return the funds to TGIF to be available for future environmental projects. We will keep the ART Directors, TGIF, and the administrators updated on our course of action at the appropriate time.

9. Key Findings

Recycling:

- Inefficiencies in recycling stem primarily from the diverse array of bins present in indoor facilities, the lack of signage that educates people about recycling, and the random placement of bins without coupling trash and recycling
 - A primary reason for the random placement of bins throughout JWC is that facilities staff might not put bins back where they belong
 - Connecting UCLA recycling and sustainability efforts with individual departmental efforts is critical
- Although the ART Team was not able to work on creating an educational poster, it is important to note that a critical function of the ART Team is also to connect stakeholders from different campus entities to campus-wide sustainability efforts, facilitating a more uniform and unified recycling system throughout UCLA

Daylight Harvesters

- Reasons for not investing in Daylight Harvesting technology:
 - Difficult to install
 - Lights are usually already turned off when the rooms are not being used
 - Potential to make more energy efficient changes in other areas of JWC
- ART Team can be unaware of some critical areas for improvement that stakeholders and departmental staff have much more knowledge about, such as hallway lights being on 24/7
 - This can give a much better improved direction for future projects if updates and ideas are regularly exchanged

Hand Dryers

- Installation requires a lot of work, and comes with a huge price tag, excluding the cost of purchasing hand dryers.
- Quotes can take a long time to obtain because the work pulls people from many different parts of facilities; the stakeholder needs to meet with all of them at once in order to obtain a quote
- Due to the involvement of many other workers that our stakeholders have contact with in order to get a project moving along, projects will generally take longer than expected

Goosenecks

- The best option is to use goosenecks; there aren't any compatible one-piece models, and replacement is too inefficient
- It is outdoor facility's job to keep the current water fountains looking well-maintained. If they look deteriorated, it is not so much due to the product as it is from lack of cleaning.

Funding:

- Funding for TGIF is fairly generous as long as your project has an apparent environmental cause and motivation.
- The availability of funding (and the deadline for spending it) can also be a very effective impetus for project implementation.

Communication

- Stakeholders were available during the project, being very supportive, motivated and excited to be involved in sustainable changes around UCLA Recreation.
- It was more difficult to maintain contact toward the latter half of the quarter, as both parties became consumed by other responsibilities and activities.
- In addition to presenting recommendations, one of the ART Team's main functions is to spur/promote action on sustainable projects.
- Some crucial parts of the projects will undoubtedly rely entirely on the stakeholders, especially based on the contacts and extensive knowledge they have about the inner workings of UCLA Rec.

10. Recommendations

For future ESLP Recreation Sustainability teams, we would like to pass on suggestions for continuations of previous team's work, as well as new projects that would enhance UCLA Recreation's sustainability. UCLA Recreation encompasses so many areas of the campus, numerous buildings, fields, pools, and facilities; because of how far-reaching the department is, there are so many things that can still be done to reduce environmental impact and work towards UCLA's 2020 goal of zero waste.

One main idea we would like to pass on, and one that we worked to include in our projects this year, is the recommendation to take advantage of how encompassing UCLA Recreation is. Work towards increasing sustainability in all parts and all areas of the department, and expand potential projects outside of the John Wooden Center and onto the IM field, Sunset, SAC, SCRC, and other fields and buildings around campus.

As for project recommendations and recommendations from stakeholders, we would like to pass on the following:

- Extend the campus-wide recycling program into the John Wooden Center and Student Activities center, as laid out by this year's ART team.
- Expand previous team's projects (such as 2010's low-flow shower heads, 2011's indoor plants and energy efficient lighting, or 2012's structural projects) to other areas of the John Wooden Center and to other venues around UCLA Recreation.
- Install dual flush or low flow toilets.
- Look into the process by which the kinetic motion of work-out equipment, such as treadmills, can provide power for the gym.
- Add tint to windows to reduce the need for cooling from overexposure to sunlight.
- Looking into replacing grass at the North Athletic Field and IM field with turf to reduce water and resource usage.
- Look into installing pool covers at Spieker Aquatic Center to save money on water evaporation and cleaning chemicals.
- Install automatic pool lights and heating to reduce wasted electricity.
- Look into biodegradable cleaning products for UCLA Recreation's many different cleaning needs.
- White paper composting of paper towels used around Recreation facilities.

- Look into electricity savings through motion detectors in rooms that are not often used or only used sporadically.

As for organizational and administrative recommendations, we would suggest the following:

- Meet with your team before winter break (in person or via email) to begin formulating project ideas.
- Meet as early as possible in Winter quarter (preferably first week) with Rich so that he can become familiar with your team and so that he can allocate other staff members as stakeholders to increase involvement and efficiency.
- As both students and stakeholders become very busy throughout the quarters, we would suggest scheduling regular in-person meetings every 3 to 4 weeks. Planning all these out at the start of Winter quarter for the remainder of the project will ensure both parties can remain updated on each other's progress and facilitate exchange of ideas.

11. Conclusion

In its 4th year working with UCLA Recreation and the ART Program, Recreation Sustainability had some big, green shoes to fill. Learning from previous teams' renovations, capitalizing on the research and their relationships with the stakeholders, and combining the knowledge and creativity of our current team, we were able to come up with four projects that we felt encompassed a wide range of sustainable opportunities. We worked to reduce electrical waste, paper waste, plastic water bottle waste, and to effectively organize a recycling system throughout JWC, SAC, and the Recreation fields. We could not have made any of this happen without the invaluable and enthusiastic support of our stakeholders, Rich Mylin, Amy Netland, and Ignacio Vega, consultations from Chris Gallego, Nurit Katz, Bill Aberbuch, and members of Facilities, Maintenance, Grounds, Electricians, Plumbing, Masons, and other groups of UCLA Recreation, or the support from TGIF and ESLP. We look forward to seeing the culmination of our hard work occur with the installation of the hand dryers, motion sensors, and goosenecks over the summer and to seeing their sustainable savings in the coming years. After the final, safety walk-through, we will decide final placement of the coupled recycling bins and look forward to the new signs designed by the campus-wide recycling program to infiltrate into the UCLA Recreation buildings. As 2012 ART program comes to a close, the Recreation

Sustainability Team hopes that our efforts this year will foster change Recreation and encourage teams in the future to continue down the path for a more sustainable UCLA.

12. References

Xlerator Hand Dryers

<http://www.exceldryer.com/>

Chicago Water Faucets

http://www.chicagofaucets.com/catalog/search.php?search_key=350-E35-244ABCP&searchtype=&searchkey_spout=&searchkey_handle=&searchkey_flow=&searchkey_cartridge=&acc=&fit=&sort=

Dyson Airblade (used for savings estimate)

<http://www.dysonairblade.com/technology/environment.asp>

Initial Quotes Used for TGIF

<http://www.prorestrooms.com/servlet/the-235/Dyson-Airblade-Hand-Dryer./Detail>

<http://www.goodmart.com/products/the-watt-stopper-corp-lightsaver-ls-301-dimming-photosensor.htm>

<http://www.hawesco.com/drinking-fountains/drinking-fountains/faucet-valves/5551>

13. Appendices

13.1 Invoice: Motion Sensors

1-OPTION #1
Add Comment

Total Cost of \$4,485.28

Scope of Work

Motion sensors in Rooms 1131, 1131B, 1125, 1125B, 1278, 1280 and 1282 Wooden Center

Electrical Shop

- Replace key switches for dual technology motion type DW 100 wall sensors in rooms 1125, 1131, 1280, 1278 and hallway of 1282.
- Install new ceiling type DT 355 motion sensor devices in rooms 1131B and 1125B.
- Rewire one (1) light fixture in rooms 1125B and 1131B to be constantly on for safety reasons.

****NOTE:** This Fixed-Price Estimate is valid for 120 days from receipt of the initial FSR Approval (emailed) link. This Fixed-Price Estimate does not include correction of unforeseen, pre-existing conditions. Unknown or changed conditions (i.e. hazardous abatement) discovered after commencement of work must be adjusted to this Estimate contract via Change Order form, in consultation with authorized Client. Adjustments to estimate must be authorized by Client, in writing, inclusive of FSR Notifications, Rework and Change Order forms. Verbal adjustments will not be honored.

Cost Details

Cost Center	Labor Cost	Material Cost	Contract Cost	Total
SWING SHIFT ELECTR SYS	\$3,535.28	\$950.00	\$0.00	\$4,485.28
Total Cost	\$3,535.28	\$950.00	\$0.00	\$4,485.28

13.2 Invoice: Hand Dryers (for Dyson Airblade, but labor charges applicable to Xlerator)

1-OPTION #1
Add Comment

Total Cost of \$28,221.36

Scope of Work

Install Dyson Airblades in Restrooms1278, 1280, 1125b and 1131b Wooden Center.

Electric Shop

- Provide and install six (6) 120v Dyson Airblade Hand Dryers.
- Install conduit and two (2) circuits from panel in 1350 to feed 1278 and 1280.
- Install conduit and four (4) circuits from panel in 1125a to feed 1125b and 1131b.

Carpenter Shop

- Install two (2) ceiling access doors in 1131.
- Install backing plate for hand dryer in 1131.
- Install two (2) ceiling access doors in 1125B.
- Install backing plate for hand dryer in 1125b.
- Install one (1) ceiling access door in 1280.
- Install backing plate for hand dryer in 1280.
- Install backing plate for hand dryer in 1278.
- Remove ceiling metal slats near 1278, 1280 to 1350 and reinstall.

Mason Shop

- Remove tile on wall in four (4) restrooms to allow for installation of electrical box and wiring in support of Electricians (this estimate does not include reinstallation of tile, grout, and hand dryers).

Paint Shop

- Patch and paint new ceiling access door areas (five locations).
- Patch and paint walls behind hand dryer areas (four locations).

***IMPORTANT:** this estimate does not include reinstallation of tile, grout, and hand dryers.

****NOTE:** This Fixed-Price Estimate is valid for 120 days from receipt of the initial FSR Approval (emailed) link. This Fixed-Price Estimate does not include correction of unforeseen, pre-existing conditions. Unknown or changed conditions (i.e. hazardous abatement) discovered after commencement of work must be adjusted to this Estimate contract via Change Order form, in consultation with authorized Client. Adjustments to estimate must be authorized by Client, in writing, inclusive of FSR Notifications, Rework and Change Order forms. Verbal adjustments will not be honored.

Cost Details

Cost Center	Labor Cost	Material Cost	Contract Cost	Total
CARPENTERS	\$5,017.36	\$700.00	\$0.00	\$5,717.36
MASONS	\$1,322.58	\$0.00	\$0.00	\$1,322.58
PAINTERS	\$3,927.56	\$100.00	\$0.00	\$4,027.56
SWING SHIFT ELECTR SYS	\$8,553.86	\$8,600.00	\$0.00	\$17,153.86
Total Cost	\$18,821.36	\$9,400.00	\$0.00	\$28,221.36

13.3 Water Fountain Location Pictures

LATC





NAF



IM Field



Existing water fountain



13.4 Hand Dryer Model Comparison (*added as an attachment)

13.5 Hand Dryer Locations



Potential Locations for Towel Dispensers and Hand Dryers



Current location of towel dispensers

Restroom adjacent to treadmills:



13.6 Examples of Current Recycling System in Wooden and Recommendations

(also refer to attached document)

TRASH AND RECYCLING IN THE WOODEN:



Existing: Single Trashcan and recycling bin adjacent to Collins Court



Trashcans and recycling bin adjacent to Rockwall

13.7 Recommended Locations for Coupled Trash and Recycling Bin in JWC and SAC (*see attached documents)