

UCLA ATHLETICS

**ENVIRONMENTAL
SUSTAINABILITY
REPORT
2021**



*BY THE 2021 SAR
GREEN GAMES RESEARCH TEAM*

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About This Report (Abstract)

In January 2021, the Green Games Research Team - a group of UCLA student researchers under the Sustainability Action Research program - met with members of UCLA Athletics to decide on the focus of their third year of partnership, researching sustainable practices at Athletics events. Due to impact of the COVID-19 pandemic, a new format of research was needed, which resulted in the creation of the first ever environmental sustainability report under UCLA Athletics.

This report aims to highlight UCLA Athletics' recent successes in achieving sustainable practices and analyze ways in which Athletics can improve in the future. Though sustainability has many facets, including social justice and diversity, for the sake of this report, only environmental sustainability will be examined. Due to a limited time frame and the COVID-19 pandemic limiting means of research, this report focuses on the energy usage, water usage, and waste management of three Athletics buildings: Edwin W. Pauley Pavilion, the Mo Ostin Basketball Center, and the Wasserman Football Center.

Energy usage, water usage, and waste management were chosen out of the University of California's sustainability goals as the most impactful areas and the areas most easily measured with available data. Pauley Pavilion, Mo Ostin, and Wasserman were selected as buildings of focus due to their LEED certifications and recent, high-profile renovations and/or constructions.

Information for this report was gathered using 2018 - 2020 data from UCLA Athletics and Facilities Management, as well as informant interviews from members of Athletics, Facilities Management, Sustainability, and other parts of the greater UCLA community (Appendix I).

The first of its kind, this report is written both for members of the UCLA Athletics team and the general public of UCLA Bruin fans and supporters. It is written with the intention that future researchers, either in the Green Games Research Team or beyond, can expand on the knowledge of Athletics' involvement with sustainability and push for more sustainability initiatives in the coming years.

UCLA ATHLETICS SUSTAINABILITY MISSION STATEMENT

"UCLA Athletics prides itself on a history of excellence and recognizes its expanding role in the promotion of sustainability through sports and community. The department is committed to the growth of sustainable programs and innovative solutions through the collective efforts of students, athletes, fans, and administration. We embrace the opportunity to serve our planet, future members of the Bruin Family, and beyond."

UCLA ATHLETICS
SUSTAINABILITY
MISSION
STATEMENT



Why is Sustainability Important to Athletics?

In addition to high carbon emissions, sports and sports events encourage the exacerbation of unsustainable behaviors such as deforestation for building facilities and excessive waste production, both from athletes and spectators. Taking into account contributions from college, youth, and recreational sports, the sports industry has an undeniably large environmental impact that must be addressed to ensure a greener future.

Sports is in the unique position of being built not only for athletes, but spectators and fans across the globe. From parents on the sidelines of little league games to spectators in stands at college games to fans watching the Super Bowl at home, sports reach the eyes of millions. With this in mind, pushing for more sustainable practices in sports has the capacity to reach millions of people worldwide and inspire sustainability in their own lives. Economically, greener sports is also a benefit. If athletes and sports governing bodies hold sustainability as a priority, this will force all parties involved with sports (sportswear, vendors, facilities, etc.) to go green as well. Many green initiatives, such as reusing existing facilities, are also much cheaper than the alternatives. By assessing and addressing sustainability in sports, greater change will be inspired.

The 2028 Los Angeles Olympics have been pitched as the greenest Olympics ever and the impact of highlighting sustainability on the world stage will be immeasurably large. With plans to use UCLA as an Olympic facility, looking into our own sustainability only makes sense. Sustainability is of the utmost importance in sports and we must start in our own community here at UCLA to inspire change. Sustainability must have a place in every facet of our lives if we are to combat global climate change, but it should especially have a place in sports. Sports are tied deeply to the natural world and we must act as stewards for future generations by starting in our own space here at UCLA.

Image: Interior of Edwin W. Pauley Pavilion with during basketball team practice.

Letter from Green Games Research Team

UCLA Athletics's history of excellence and status as a major piece of the UCLA identity have cemented its place as a role model for the rest of the UCLA campus and global sports community. For the past three years, its partnership with the Sustainability Action Research (SAR) Green Games Research Team has allowed the department to explore different avenues through which it can become a better steward of the planet.

Historically, through conducting waste audits on major basketball games and exploring different sustainable practices for Game Day events, the Green Games Team has been a steady player in reducing Athletics' carbon footprint. With the advent of COVID-19 and the transition to remote activities for the UCLA campus, the 2021 Green Games Team has decided to slightly shift its mode of research and look internally toward the sustainability work UCLA Athletics has already done to create a comprehensive guide about what initiatives to undertake in the future.

We aim to share this information with the broader public of UCLA Bruin fans, members of UCLA Athletics, and the collegiate sports community in order to inspire and encourage further action towards greening athletics. While many other college campuses are beginning to adopt better practices in their game day events, there is still room for growth and much uncharted territory for all.

As a leading force on the world stage for both research and athletics, UCLA finds itself in a prime position to be the change-maker that the world looks to. Sustainable practices are a major obstacle that all sectors will have to conquer within the next few decades. With our commitment to providing excellence in all forms to the broader Bruin community, understanding where we have gone and figuring out where we are going is a great first step.



Image: Interior of Edwin W. Pauley Pavilion filled with spectators during a UCLA Men's Basketball game

Who is UCLA Athletics?

UCLA Athletics consists of 25 NCAA Division I varsity sports teams sports teams that compete in the PAC-12 Conference and the Mountain Pacific Sports Federation (MPSF). Athletics has been a part of UCLA's history since its founding in 1919 and its athletes and students call themselves the Bruins. UCLA has established itself a leader in academics, being ranked the number one public school in the nation for four years in a row, and as a leader in intercollegiate sports. UCLA maintains this reputation by focusing on fostering well rounded student athletes who not only excel athletically, but also academically and are an integrated part of the student body.



Ucla



WHAT SPORTS DOES UCLA ATHLETICS HAVE?

There are a total of 25 varsity sports at UCLA, with 11 mens varsity sports and 14 women's varsity sports. These sports include basketball, beach volleyball, cross country, golf, gymnastics, rowing, soccer, softball, swimming and diving, tennis, track and field, volleyball, and water polo. UCLA athletics also has many non-varsity sports, including Badminton, Boxing, Ice Hockey, and Rugby, along with opportunities for students to take part in less official intermeural sports.

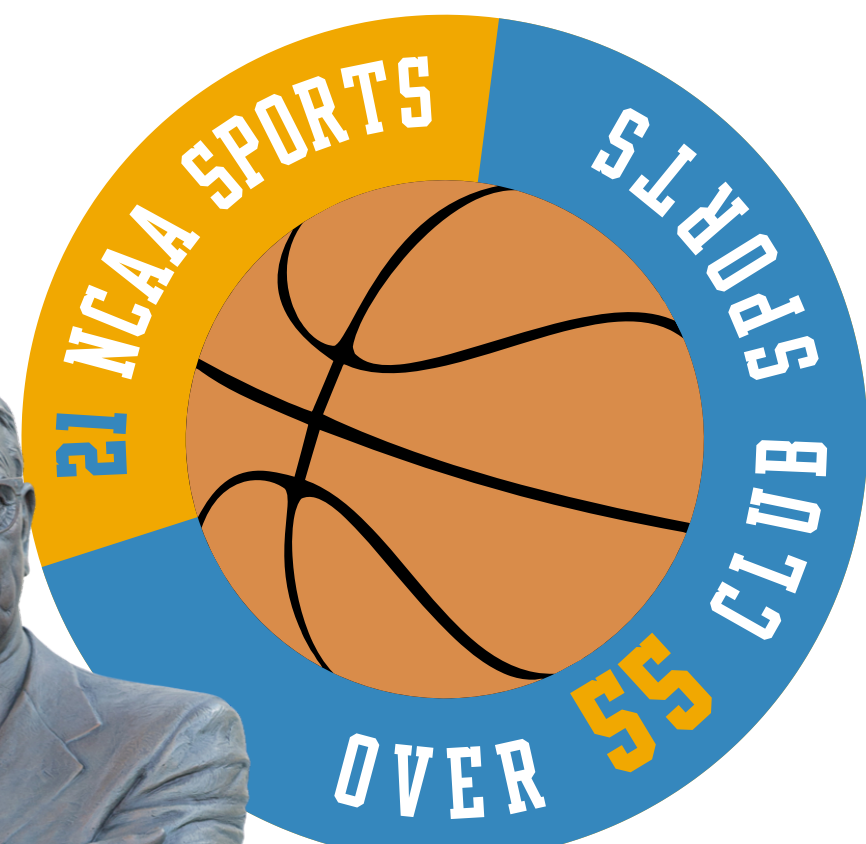
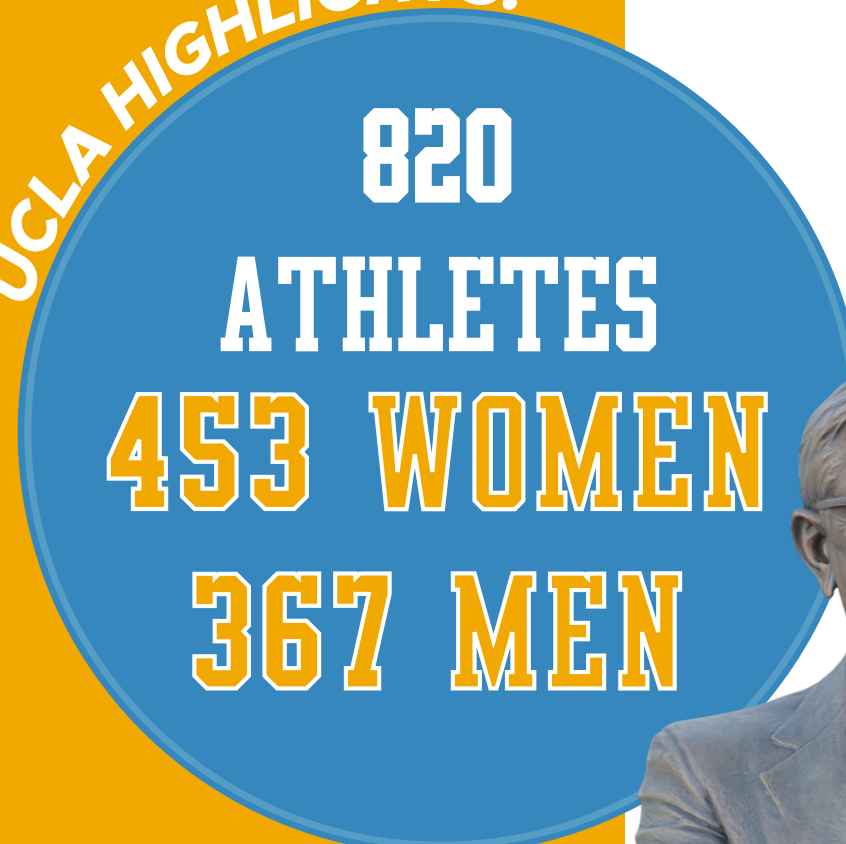
WHAT IS THE PAC-12?

The Pac-12 Conference stands for the Pacific Coast Conference and is an athletic conference composed of twelve collegiate athletic teams from the Western United states. UCLA joined the PAC-12 Conference in 1928. Other schools that compete in the PAC-12 Conference include UCLA's biggest rival, the University of Southern California, along with many other public and private Universities.

WHAT IS THE NCAA?

The NCAA is the National Collegiate Athletics Association. This organization is in charge of regulating student athletes from 1,098 colleges and universities in North America and 102 athletic conferences. UCLA has made a name for itself as an athletic powerhouse with 11p National Collegiate Athletic Association (NCAA) Championship titles. This makes UCLA the University with the second most NCAA titles in the nation and UCLA was the first school ever to win 100 NCAA titles.

UCLA HIGHLIGHTS!



MORE STATS!

UCLA Beach Volleyball has won 2 of the 5 NCAA Championships in the sport

31 31 men's basketball PAC-12 championships which is the most out of any school in the conference

7 UCLA gymnastics has won 7 NCAA championships .

12 UCLA has 12 softball national championships which is also the most softball national championships won by any program

UCLA Football has won 5 of the 12 Rose Bowl games they have competed in

12 UCLA mens waterpolo has 12 national championships. Most recently over the 2020-2021 season!

ALUMNI CORNER:

- Florence Griffith-Joyner - Olympic Track Medalist, fastest woman of all time
- Kareem Abdul-Jabbar - NBA superstar
- Jackie Robinson - Major League Baseball legend
- Arthur Ashe - Wimbledon champion
- Jackie Joyner-Kersey - Olympic Track and Field medalist
- Mallory Pugh - USA women's soccer team and so many more....



OLYMPICS:

- **UCLA students and coaches have won 261 medals - 133 gold, 66 silver and 62 bronze**
- **UCLA has won a gold medal in every Olympics the U.S. competed in since 1932.**

PAULEY PAVILION
EST 1965



LEED GOLD CERTIFIED

Capacity: 13,800 people
Size: 240,000 Square Feet
Primary Use: Men's & Women's Basketball, Volleyball, Women's Gymnastics, Non-Athletic Events

Sustainability Features:

- Light-sensored activated restrooms & offices
- 78% of seat fabric made from recycled material
- Multi-stream waste receptacles
- Drip-line irrigation, permeable hardscape, & high-albedo pavers
- Low flush/high-efficiency toilets result in a 58% reduction in non-potable water use
- 93% of existing shell & structure reused during renovation

WASSERMAN FOOTBALL CENTER
EST 2017



LEED PLATINUM CERTIFIED

Capacity: 150-200
Size: 73,500 Square Feet
Primary Use: Men's Football Training

Sustainability Features:

- Efficient plumbing solutions & greywater management programs result in a 72% reduction in potable water usage, and a 94% reduction in potable water discharged to the sewer
- Rooftop solar thermal water heaters
- LED lighting with light-sensored activated rooms

MO OSTIN BASKETBALL CENTER
EST 2017



LEED PLATINUM CERTIFIED

Capacity: 50+
Size: 35,000 Square Feet
Primary Use: Men's & Women's Basketball Training

Sustainability Features:

- Undulating roof design eliminates the need for artificial lighting during daytime
- Underfloor duct system brings outside air into the practice courts at floor level & low speed while high volume fans exhaust warm air at roof level
- Natural ventilation aims to replace air conditioning

LA 2028 Olympics

In September of 2017, the bid for the 2028 Summer Olympics was officially awarded to Los Angeles, California.

UCLA will serve as the Olympic Village, as it is equipped with centralized residence spaces, dining facilities, gyms, lounges, and laundry rooms. UCLA's Pauley Pavilion will be the site for judo and wrestling competitions.

One of the unique ways which sustainability is being incorporated into the 2028 Olympics is the intention to utilize existing infrastructure and lessen the need to build new venues for athletic events. As Los Angeles is already a city with an emphasis on sports, being home to 11 pro-sports teams and two major division I universities, the ideal venues of the Olympic Games already exist here. In previous Olympics, notably Rio in 2016, many of the venues constructed for the two week event sat idle and were eventually abandoned. Los Angeles's endeavor, termed "radical re-use" will greatly help to reduce waste and the overall carbon footprint of the event. In addition, many of these existing venues are hoping to make renovations in order to become more sustainable.

Preparing UCLA Athletics for the 2028 Olympics, with its heavy focus on sustainable practices, means prioritizing sustainability in UCLA Athletics' practices now and adapting practices to remain on track to meet future sustainability goals. This presents an opportunity unlike any other to highlight both UCLA Athletics and sustainability's role in sports into the global spotlight.

Image: Mockup of UCLA's Hill as the LA28 Olympic Village; Source: 2017 bid team presentation.



PAULEY PAVILION



Energy Usage

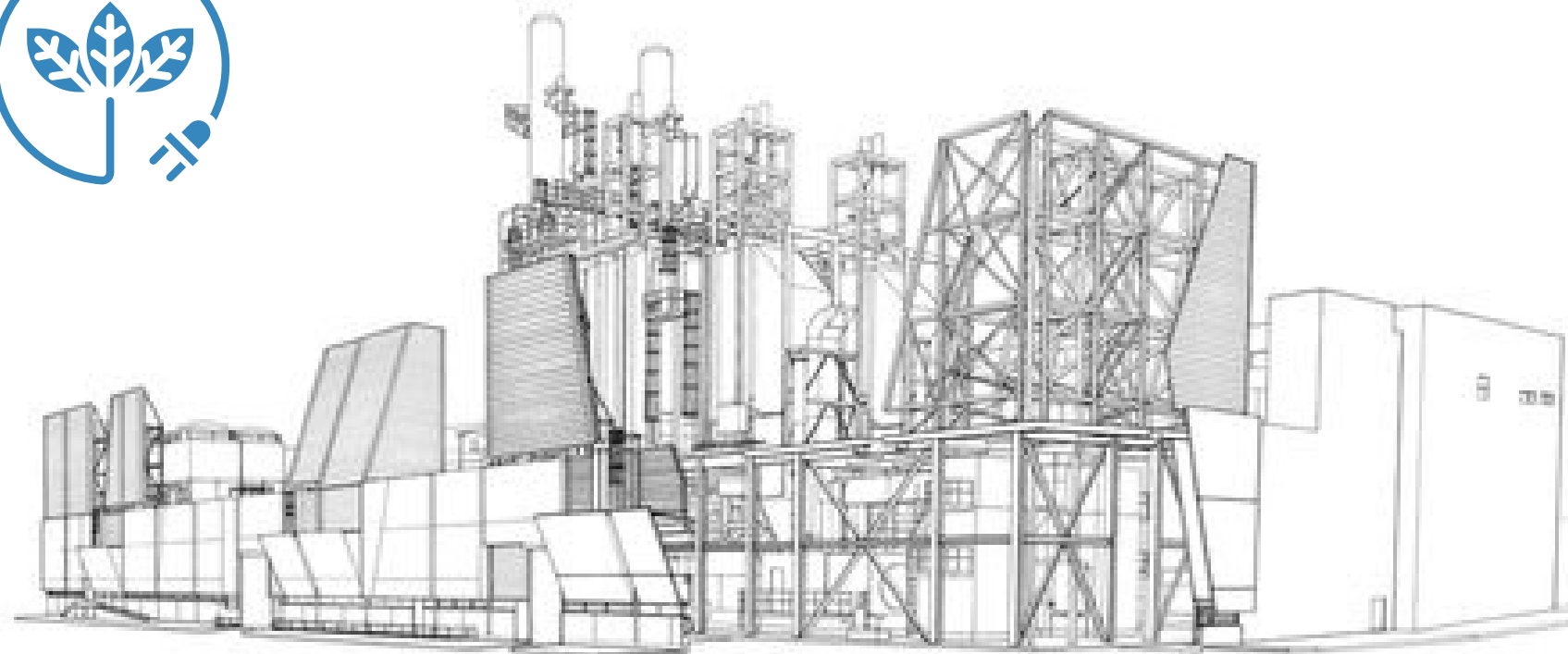


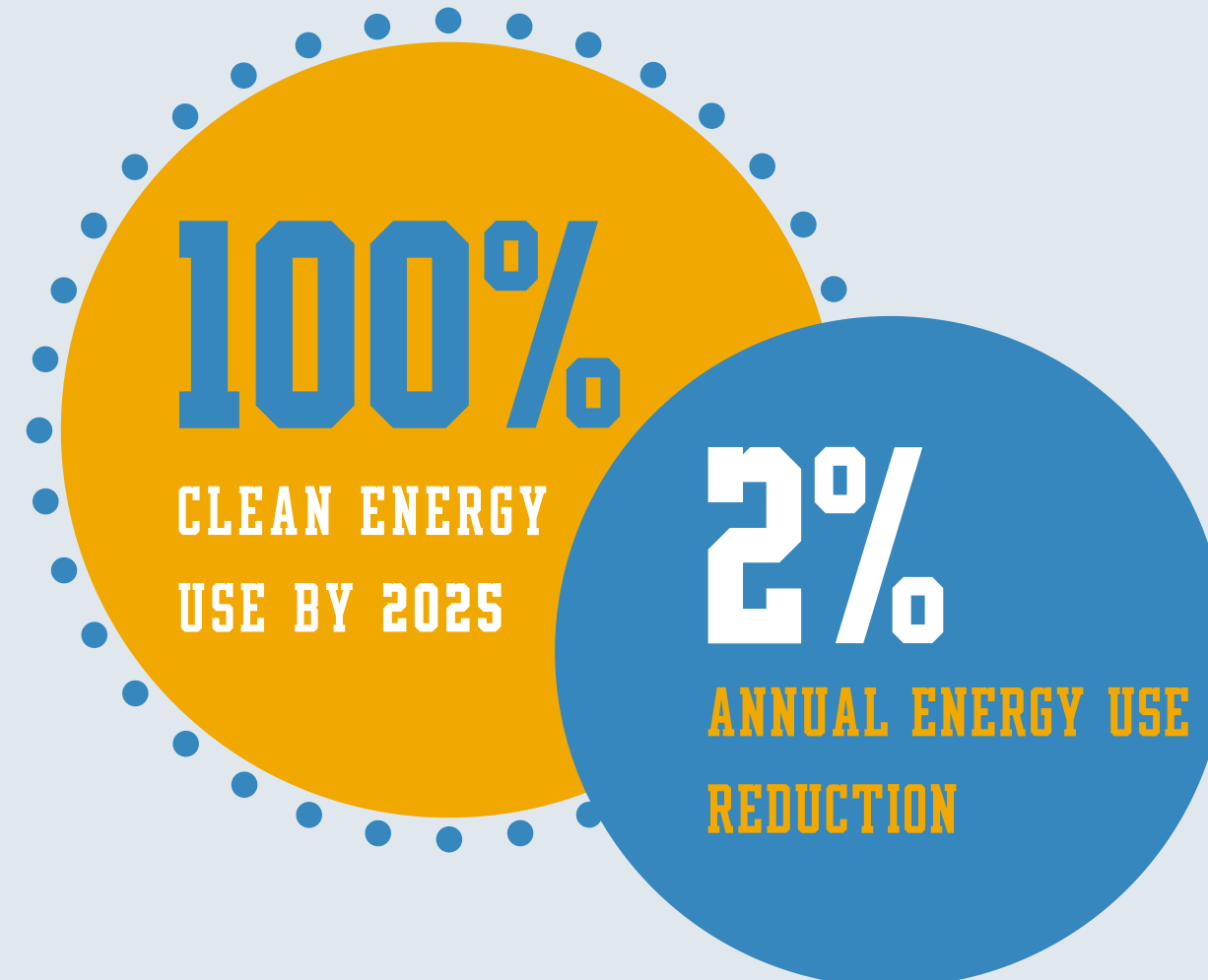
Image: Holt Hinshaw Jones, Jones Architecture Drawing of UCLA Cogeneration Facility

WHERE IS PAULEY'S ENERGY SOURCED?

UCLA's cogeneration plant is responsible for providing heating, cooling, and electricity to the university, including Pauley Pavilion. This plant produces renewable energy and currently provides about 72% of the university's energy supplies in 2020. The remaining 28% is purchased from Los Angeles Department of Water and Power (LADWP).

UC SUSTAINABILITY GOALS

The University of California Los Angeles (UCLA) has set the goal to be climate neutral by 2025. The energy portion of this major goal includes a 2% reduction in energy usage each year and 100% clean electricity by 2025. These are applicable to Pauley Pavilion, UCLA's host for a variety of events across campus, a 320,000 sq ft facility and entertainment for over 13,000 guests. The facility is currently LEED Gold certified.

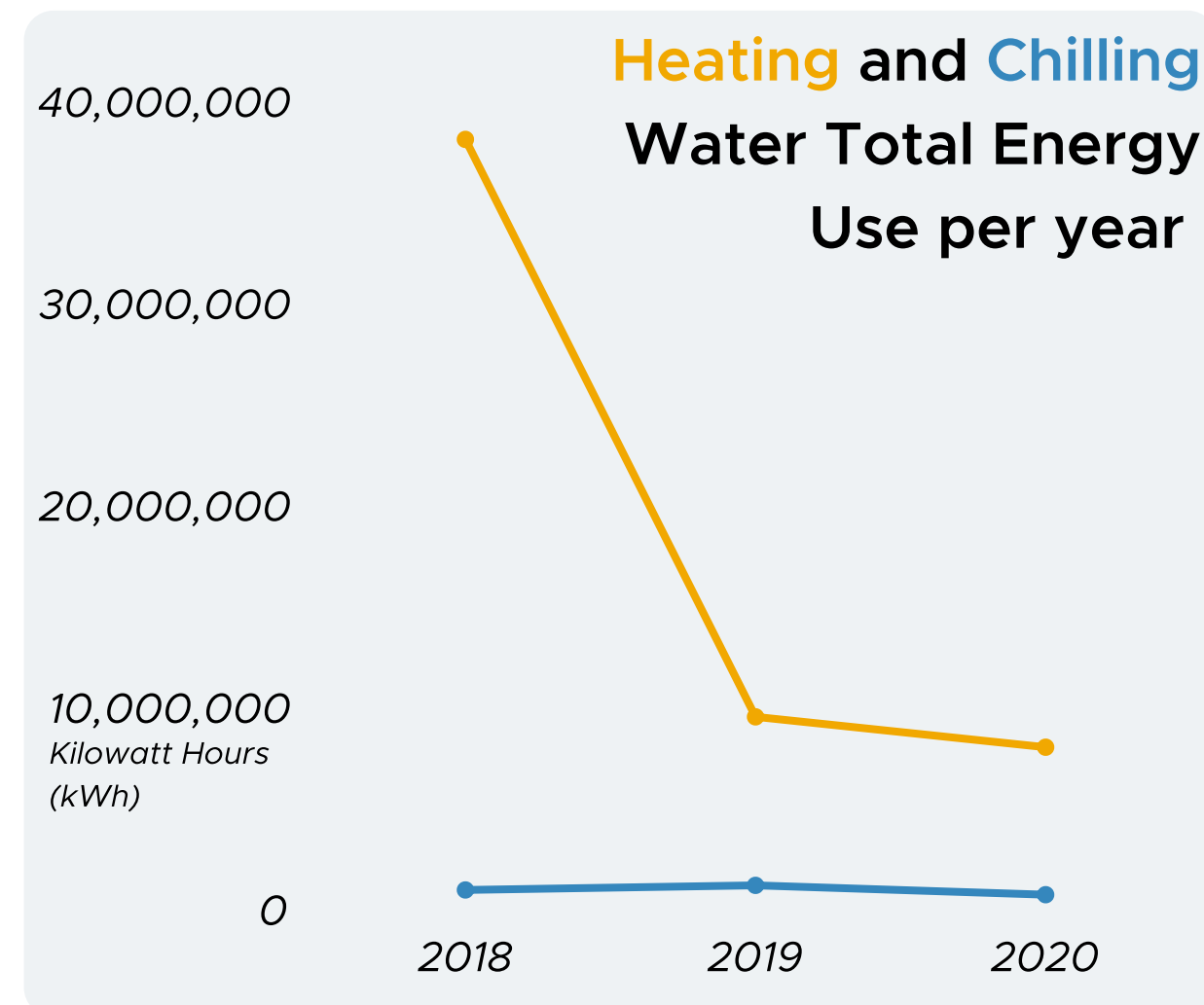


Energy Usage




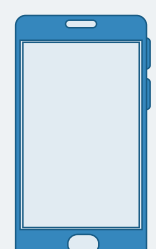
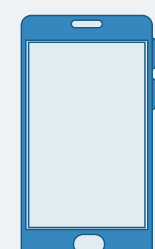
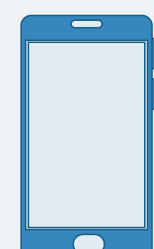
HEATING AND COOLING WATER

The big arena bowl has 4 large air handler units. Temperature in the main arena has to be controlled. Even when its unoccupied, there's a really strict tolerance for temperature. The floors are temperature sensitive and might crack or expand if the temperature is too hot or cold. To replace, the floors would cost over \$1.8 million. There are 16 locker rooms which also have HVAC units to promote air circulation and avoid mildew. Other areas of the pavilion rely on occupancy sensors to trigger the HVAC system. In total, there are 20 big air handlers and 30 fan coil units in Pauley Pavilion.

Over the 2018-2019 school year, heating water used the most energy at 5166 kwh. Chilling water came in second at approximately 4215 kwh over the fiscal year which is responsible for cooling the building. Since Pauley Pavillion's busiest seasons occur over the colder winter months, it makes sense that heating water consumes more energy than cooling. Less cooling is also necessary due to solar fritted glass shading fins on the large windows of Pauley Pavilion. These shading fins decrease the amount of heat entering through the front glass.



The sum of the energy use of Heating and Chilling water is equivalent to the CO2 emissions from:

 <p>.007 power plants</p>	OR	 <p>.002 power plants</p>	OR	 <p>.0017 power plants</p>
 <p>3.4 billion cell phones charged</p>	OR	 <p>950 million cell phones charged</p>	OR	 <p>780 million cell phones charged</p>

Energy Usage

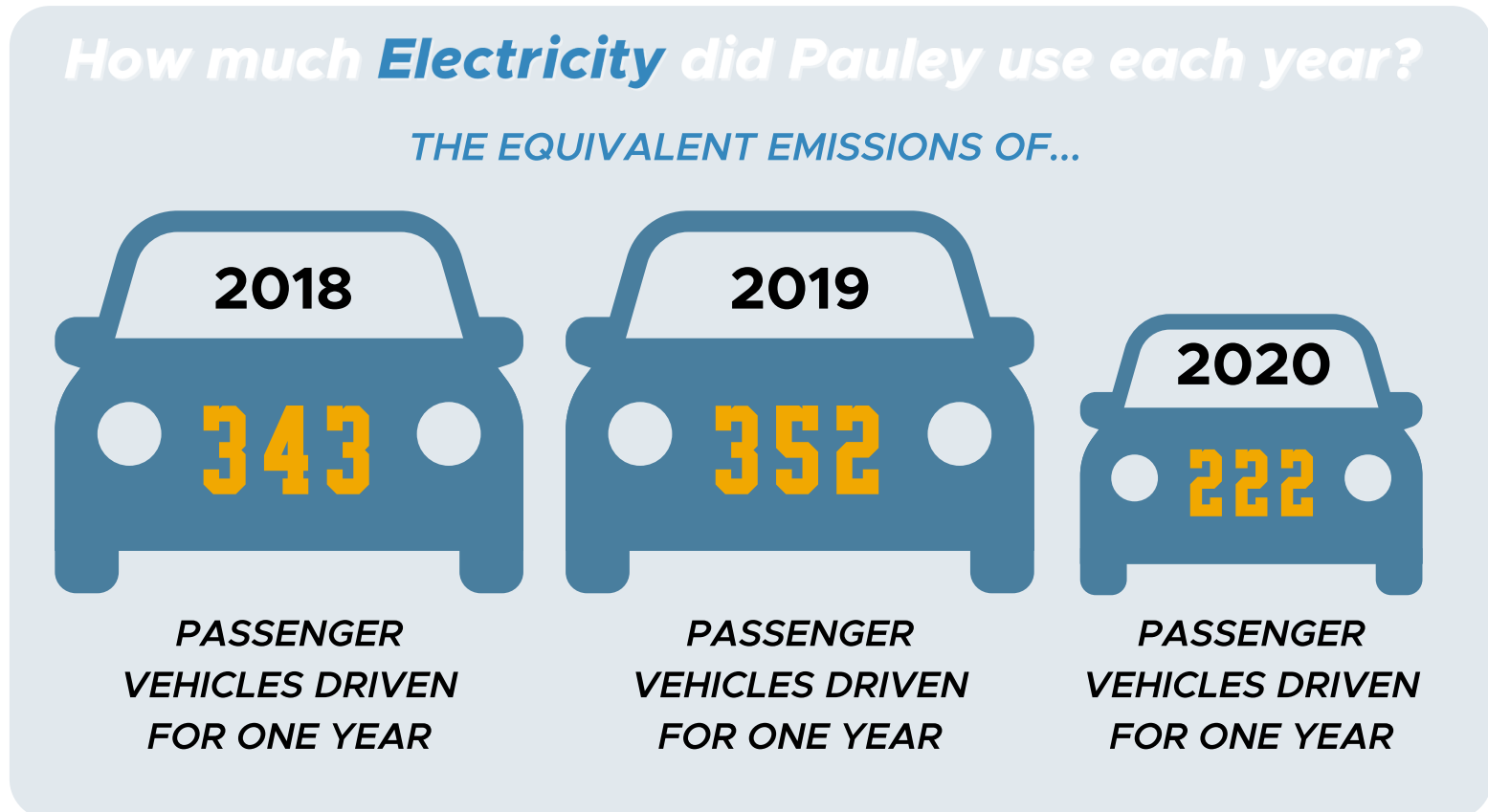
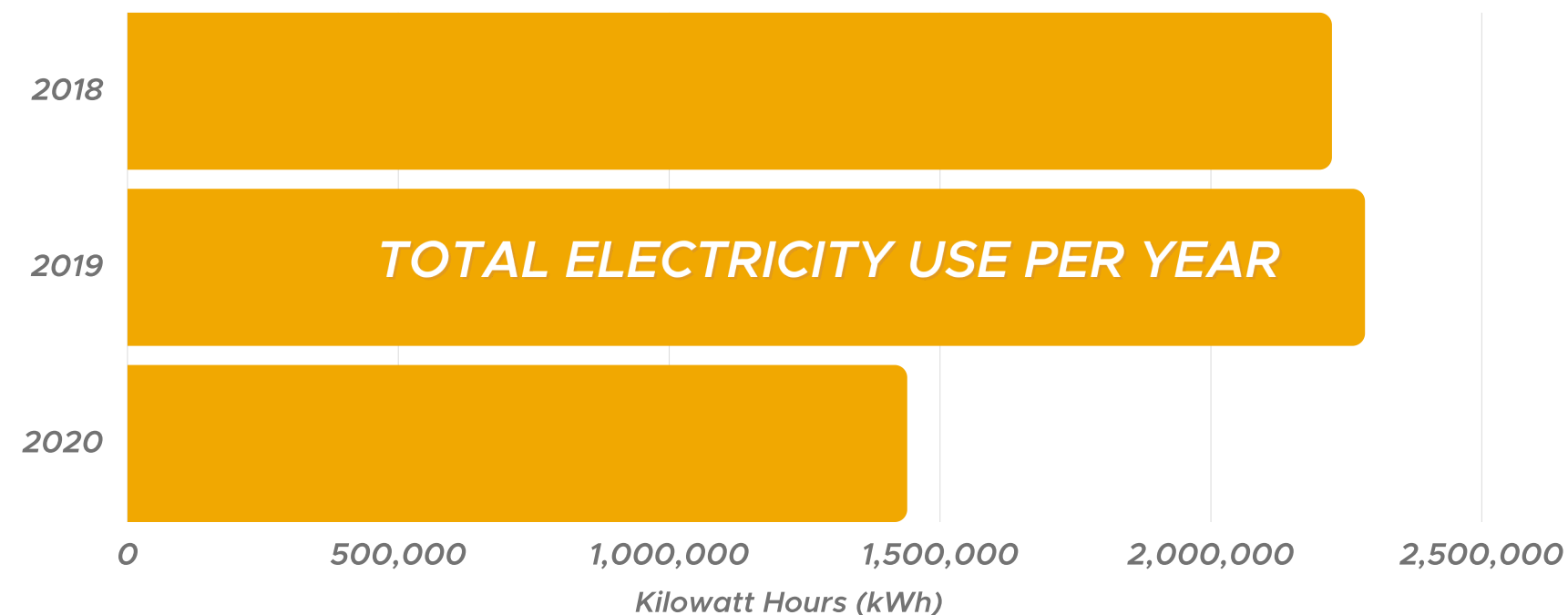
ELECTRICITY

Electricity, which consists of everything else besides heating and cooling water, consumed 2327.714 kwh in 2018-2019.

One reason energy use increased in Pauley Pavilion is possibly linked to the 2018 viral video of UCLA Gymnast Katelyn Ohashi's perfect 10 floor performance went viral. Due to the popularity of the performance, attendance of gymnastic meets increased.

Lighting is programed based on what is needed in the arena. Bare minimum lighting is used for practices in Pauley. Concourse lights are only on if it is super dark in the facility.

In 2012 Pauley Pavilion underwent some heavy renovations. More areas were added and the HVAC and lighting systems were upgraded to greener alternatives. Becuase more areas such as a locker room and concourse were added, there is more space to cool and light.



RECOMMENDATIONS

Currently locker rooms are not retrofitted with LEDs like the hallway of Pauley. Changing out florescent lightbulbs with LEDs in more spaces of Pauley Pavilion will provide a more energy efficient and safer light source. Custodian operations of the building occur overnight. Shifting building maintenance to early morning and early evening would help reduce light use overnight



Water Usage

UC SUSTAINABILITY GOAL

36% BY 2025

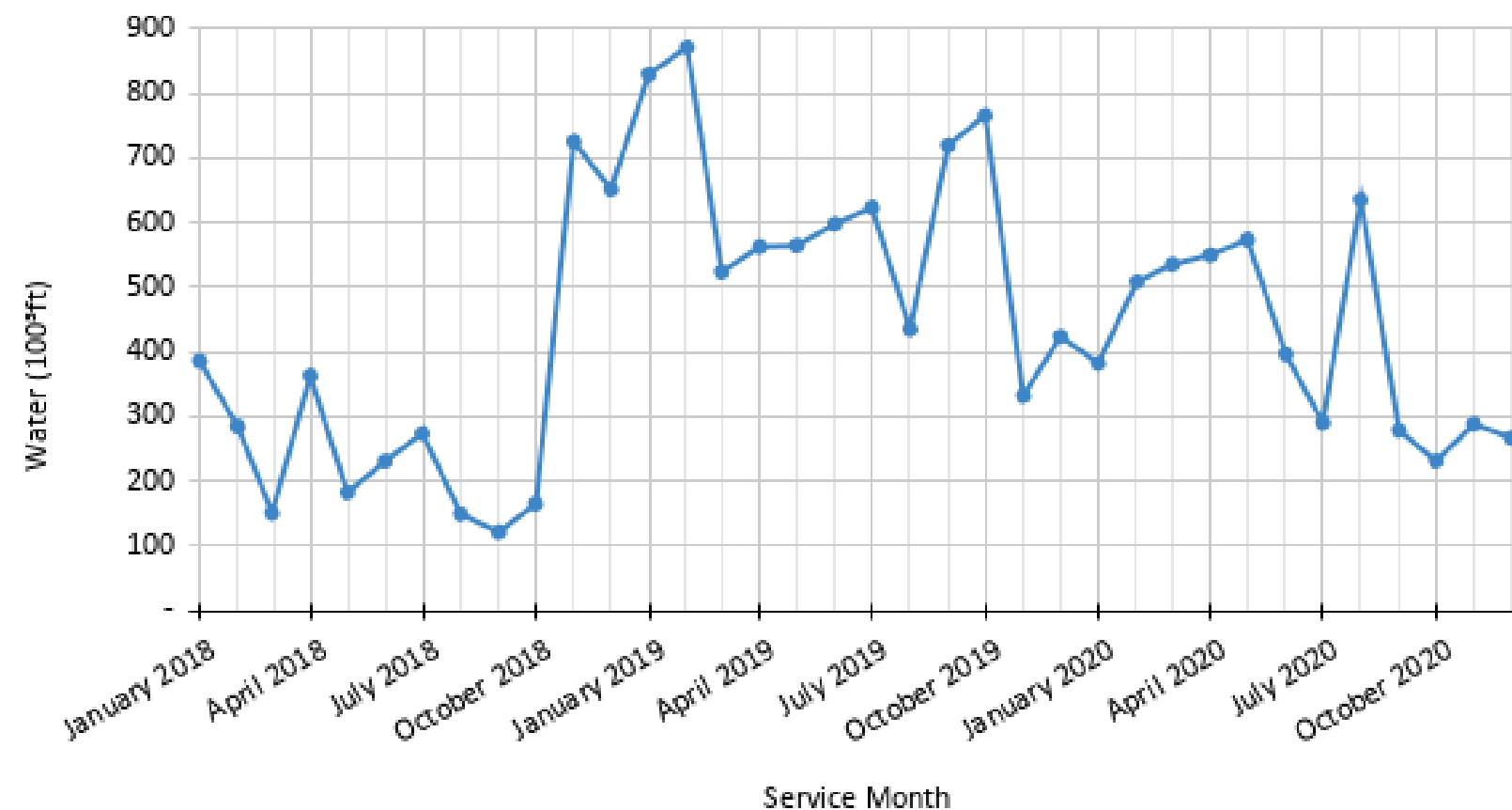
Reduce potable water consumption by 36% by 2025 compared to a three year average baseline of fiscal years 2005- 2008

PREVIOUS FINDINGS

Regarding previous research done on Pauley Pavilion, a Sustainability Action Research team in 2017 wrote a report detailing the sustainability of Pauley Pavilion for the purposes of helping it regain LEED certification. In the report, they looked at chilled water consumption, steam consumption, and overall water consumption from 2015-2016. It is mentioned in the report that the water consumption was taken from multiple meters, but there were often times when some of the meters did not have measurements for months at a time.

Another piece of previous research done was from a CalPoly Pomona paper, which looked at the 2018-19 water use data at Pauley Pavilion. According to their research, water used by the entire UCLA campus is supplied by the Los Angeles Department of Water and Power (LADWP). UCLA as a whole has a goal to reach a 36% reduction of water usage by the year 2025. The data shows and points out that there is a notable increase in water usage during the basketball season. It also details how water is used in Pauley Pavilion. The building has a heating and cooling system, where water is turned to steam and utilized year round to keep the floor of the basketball court from developing condensation.

Pauley Pavilion Water Use (January 2018-December 2020)



RESULTS SO FAR

As shown by the graph to the left, water use is typically at its peak during basketball season, due to the more frequent use of the venue and large spectator volume at this time. UCLA has already taken some steps in Pauley Pavilion towards water use efficiency. Water is utilized for toilets, urinals, and faucets in Pauley. Many of the toilets have been modified to use only 1 gallon compared to 5 gallons of water per flush, which has contributed to a more than 50% reduction in non-potable water campus-wide.

Water Usage - Recommendations

INSTALL A GREYWATER SYSTEM

A greywater system allows sink water to be reused as water for toilets and urinals. Wasserman already has a greywater system which was installed several years ago. Installing a greywater system in Pauley Pavilion would substantially decrease the amount of water used, especially considering the large scale spectator events that take place in this venue. However, installing a greywater system can be complicated and must be done very carefully in order to avoid problems. Further, greywater systems must be checked and maintained regularly in order to assure they are running smoothly.

INSTALL A RAINWATER COLLECTION SYSTEM

The roof of Pauley Pavilion, due to the way it is shaped, presents a great opportunity for the installation of a rainwater collecting system. By installing a gutter along the perimeter of the roof and storage tanks for collection, substantial amounts of rainwater could be collected and used for a variety of different purposes, including watering grass areas around campus. These new rainwater storage tanks would hopefully be able to be connected to an existing water distribution system. However, installation of a rainwater collecting system could be difficult and expensive and a location for the water storage tanks would need to be found.

UPDATE CURRENT HVAC SYSTEM

Because the HVAC system is the primary contributor to water uptake in Pauley Pavilion, inspecting and updating it for maximum efficiency may help to reduce water use.

INSTALL DUAL FLUSH TOILETS

Dual flush toilets have two different flush options, one for liquid waste and another for solid waste. The liquid waste flush option uses much less water than the solid waste flush option and therefore can save a lot of water per flush in a very simple way. By installing dual-flush toilets in all athletics buildings, especially ones that host many people, UCLA Athletics could decrease their water use.



Solid Waste

SORTING WASTE AT PAULEY PAVILION

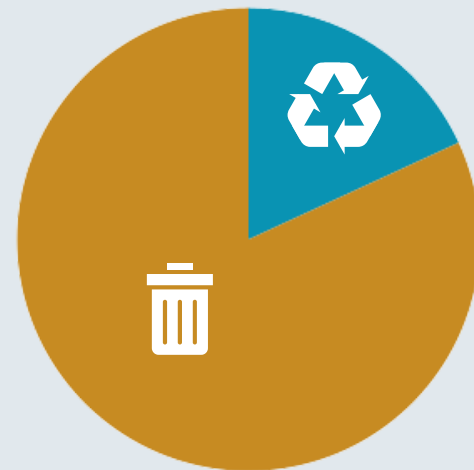
Pauley Pavilion's zero waste journey took its first major steps in 2014 with the help of a Sustainability Action Research team, Zero Waste Pauley, who led the purchasing of three-stream waste bins (compost, recycling, and landfill) placed throughout the pavilion.

Though prior to the COVID-19 pandemic, the campus-wide waste diversion goal was 90% diverted from landfills by 2020, Pauley Pavilion's waste diversion rates on non-event days stood at an estimated* 29% in 2019 and 37% in 2020. On days with spectator events, waste diversion stood at an estimated* 36% in 2019 and 24% in 2020. Though these numbers make the 90% diversion goal seem improbable, it is far from impossible, as a waste audit of Pauley Pavilion by the Green Games Research Team during the 2019 PAC-12 Zero Waste Men's Basketball Game showed that up to 94.7% of waste generated during a Pauley Pavilion event can actually be diverted from landfills.

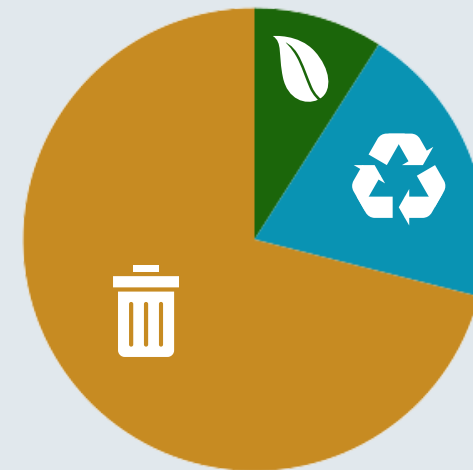
PAC-12 ZERO WASTE BASKETBALL GAME

In 2019 and 2020, during the PAC-12 Zero Waste Men's Basketball Games, waste audits were conducted, which saw the Green Games Research Team, volunteer students, and Athletics staff sorting all waste generated during the basketball game into compost, recycling, and landfill streams. In 2019, UCLA won "Most Improved" among all participating PAC-12 schools for waste diversion. In 2020, edible, unsold concessions food was given away to willing spectators through a partnership with the UCLA organization Bruin Dine. However, diversion as thorough as the Zero Waste Game audits and regular donation programs do not happen year round. As a result, waste that is incorrectly sorted by guests or staff ends up being sent to landfill instead of diverted, creating lower diversion rates during the year.

WASTE DIVERSION ESTIMATES* (NON-EVENT DAYS)



2018
 Compost = 0 tons (0%)
 Recycling = 0.91 tons (18%)
 Landfill = 4.11 tons (82%)
 Waste Diverted = 0.91 tons (18%)



2019
 Compost = 0.64 tons (9%)
 Recycling = 1.42 tons (20%)
 Landfill = 5.07 tons (71%)
 Waste Diverted = 2.06 tons (29%)

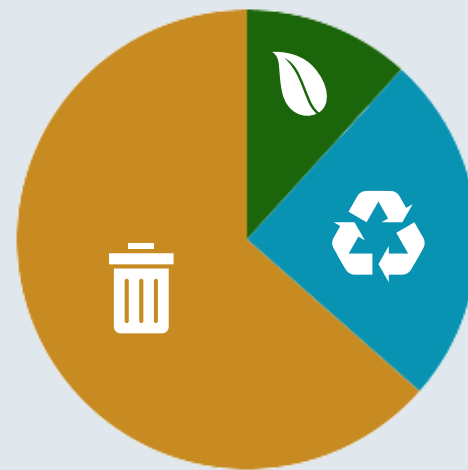


2020
 Compost = 0.36 tons (11%)
 Recycling = 0.91 tons (27%)
 Landfill = 2.14 tons (63%)
 Waste Diverted = 1.27 tons (37%)

WASTE DIVERSION ESTIMATES* (EVENT DAYS)



2018
 Compost = 0 tons (0%)
 Recycling = 2.38 tons (13%)
 Landfill = 15.34 tons (87%)
 Waste Diverted = 2.38 tons (13%)



2019
 Compost = 2.67 tons (13%)
 Recycling = 5.64 tons (25%)
 Landfill = 14.46 tons (64%)
 Waste Diverted = 8.31 tons (36%)



2020
 Compost = 0.78 tons (13%)
 Recycling = 0.66 tons (11%)
 Landfill = 4.52 tons (76%)
 Waste Diverted = 1.44 tons (24%)

*WASSERMAN LOADING DOCK

All waste diversion calculations for Pauley Pavilion exist as educated estimates, as the exact numbers do not exist. Instead, diversion was calculated by taking 8% on non-event days and 95% on event days of the waste data from Wasserman Loading Dock, where Pauley Pavilion's waste is sent along with several other buildings in the area. 8% and 95% were chosen as custodians estimate that Pauley Pavilion makes up 8% and 95% of the loading dock's waste on non-event and event days, respectively.



2019 ZERO WASTE BASKETBALL GAME

Waste Sent to Landfill = 5.3%
 Waste Diverted = 94.7%

Solid Waste

ASUCLA CONCESSIONS

Concessions at Pauley Pavilion events, which are run by Associated Students UCLA (ASUCLA), is constantly in the process of changing their practices to meet the campus's growing sustainability policies. In 2010, all Styrofoam packaging was removed from Pauley Pavilion concessions and all its third-party contract vendors to meet campus rules. A similar shift is in the works to abide by UCLA's single-use plastic ban by 2023. Currently, 90% of all items sold at Pauley's ASUCLA Concessions stands are compostable, including napkins, popcorn bags, and most recently, hot dog wrappers. However, the PLA/bioplastic utensils currently being served will have to be switched out, as they are no longer being accepted as compostable.

OBSTACLES TO ZERO WASTE

Current challenges revolve mainly around teaching guests to properly sort their own waste. Audits by the 2020 Green Games Team found sample compost bins filled 40-60% with waste that should have gone in different waste streams. Additionally, though Pauley has many 3-stream receptacles which are properly labelled, there are also still waste stations that use the 2-stream bins, resulting in compostable waste getting placed in landfill bags as well.

Certain concessions goods such as chip bags remain unrecyclable, and third-party vendors such as food trucks and Chick-Fil-A still use items like single-use plastic utensils, sauce packets, and takeout containers that must be sent to landfills. However, solutions are currently being identified as part of new sustainability commitments and the upcoming Senate Bill 1383, which requires heightened practices for waste diversion and food recovery.

UCLA ZERO WASTE GOALS

25% BY 2025

Reduce per capita municipal solid waste by 25% from 2015-16 levels by 2025

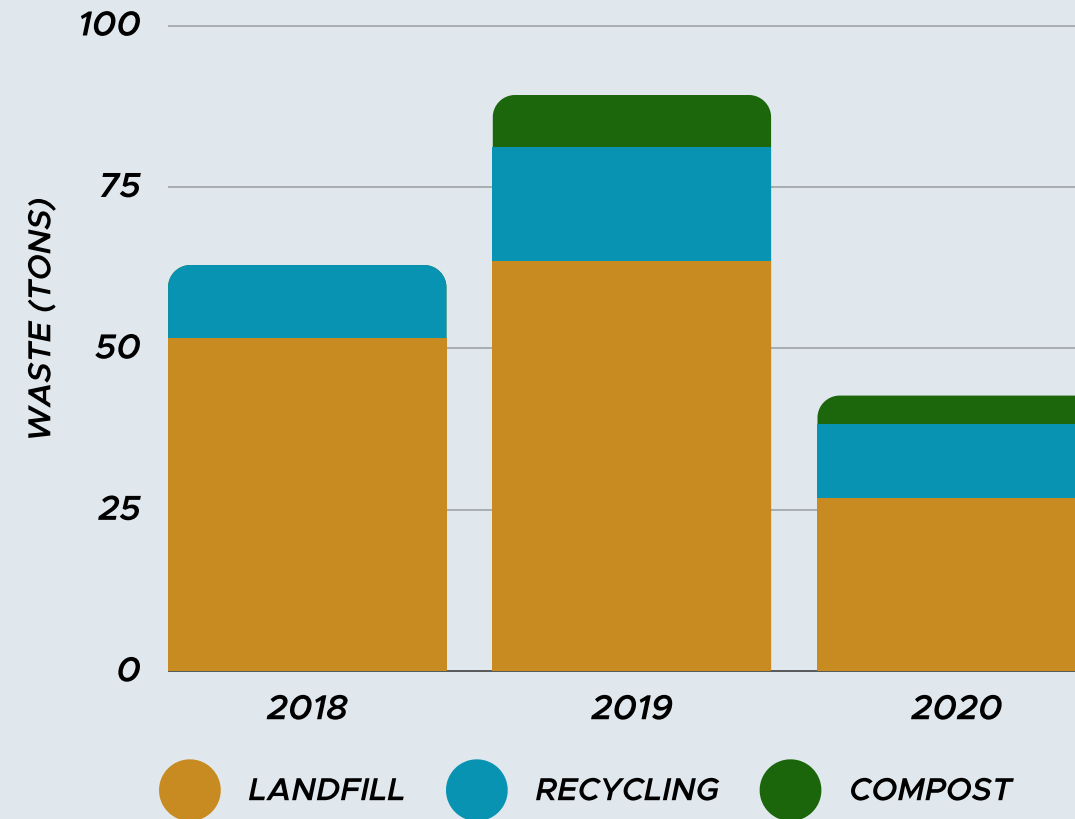
50% BY 2030

Reduce per capita municipal solid waste by 50% from 2015-16 levels by 2030

90% DIVERSION

Divert 90% of waste away from landfills.

ESTIMATED* PAULEY PAVILION WASTE (NON-EVENT DAYS)



PAULEY PAVILION YEARLY EVENTS

On a typical year, Pauley Pavilion acts as host to +100 events, both affiliated and unaffiliated with UCLA Athletics, including, but not limited to:

- Men's Basketball Games
- Women's Basketball Games
- Men's Volleyball Games
- Women's Volleyball Games
- Women's Gymnastics Meets
- UCLA Commencements
- UCLA Bruin Bash
- UCLA Dance Marathon
- UCLA Spring Sing
- UCLA Bruin Day
- Hack-a-thons
- Summer Camps
- and many more

2020 ATHLETICS ZERO WASTE RECYCLING PROGRAM

This program focuses on updating the recycling for many of the office spaces in Pauley Pavilion and was paused due to the COVID-19 pandemic.

PHASE ONE

1. Install bottle filler in media room
2. Re-purpose x2 existing containers from nutrition room
3. Label existing containers and place in nutrition room (see Figure 2.1)
4. Remove all unnecessary bins throughout the 100 level
5. Add paper towel disposal stickers in restrooms and start collecting paper towels as compost (see Figure 2.3)
6. Train custodial staff
7. Purchase color-coded liners as needed

PHASE FOUR

*Not included in Phase 2 or 3

1. Add multi-stream bins in 100 level locker rooms and team spaces
2. Add bottle fillers in 100 level
3. Collaborate with concessions partners to reduce single-use plastics and packaging
4. Phase out WBB recycling program

Solid Waste: Recommendations

RECYCLING

RESTART ZERO WASTE RECYCLING PROGRAM

As a result of the COVID-19 pandemic, the 2020 Athletics Zero Waste Recycling Program was delayed, with only phase one of the program completed. Once Athletics returns to running full capacity, resuming the program will easily improve waste diversion at Pauley Pavilion.



FAN EDUCATION

CREATE MID-GAME ADVERTISEMENTS AND ACTIVITIES ON SORTING WASTE

Given that Pauley Pavilion is incredibly event-oriented, working with athletes to create short promotional videos on proper waste sorting or creating waste sorting-related games during half-time would aid in reminding the audience where and how to properly dispose of their trash. The video PSAs can be played during timeouts, akin to the Bruin Shuffle, and could even feature team players, in order to generate more hype and energy around the importance of composting and appropriate waste disposal.

RECRUIT VOLUNTEERS TO TEACH THE GUESTS HOW TO SORT WASTE

In order to maximize the utility and effectiveness of Pauley Pavilion's 3-stream waste bins, it would be helpful for athletics, the university, or the sustainability department to work with green campus organizations to educate and guide first-time visitors. During major games, volunteers can be recruited from campus organizations in directing the flow of waste into the proper bins around Pauley during the event. This strategy has already proven to be incredibly effective as evident in the experiments of the 2020 Green Games Team (Appendix III). This particular initiative will require the university to introduce specific incentives in order to usher in more club organization participation.

CONCESSIONS

INCLUDE SUSTAINABLE PRACTICES IN FUTURE VENDOR CONTRACTS

Currently, all third-party vendors serve their food with single-use plastics, except for the annual PAC-12 Zero Waste Men's Basketball Game, when concessions provides them with compostable utensils. Given that UCLA is pushing for no single-use materials on campus by 2025, it would be helpful to make compostable utensils a constant practice and re-negotiate contracts with third-party vendors to include more sustainable practices.

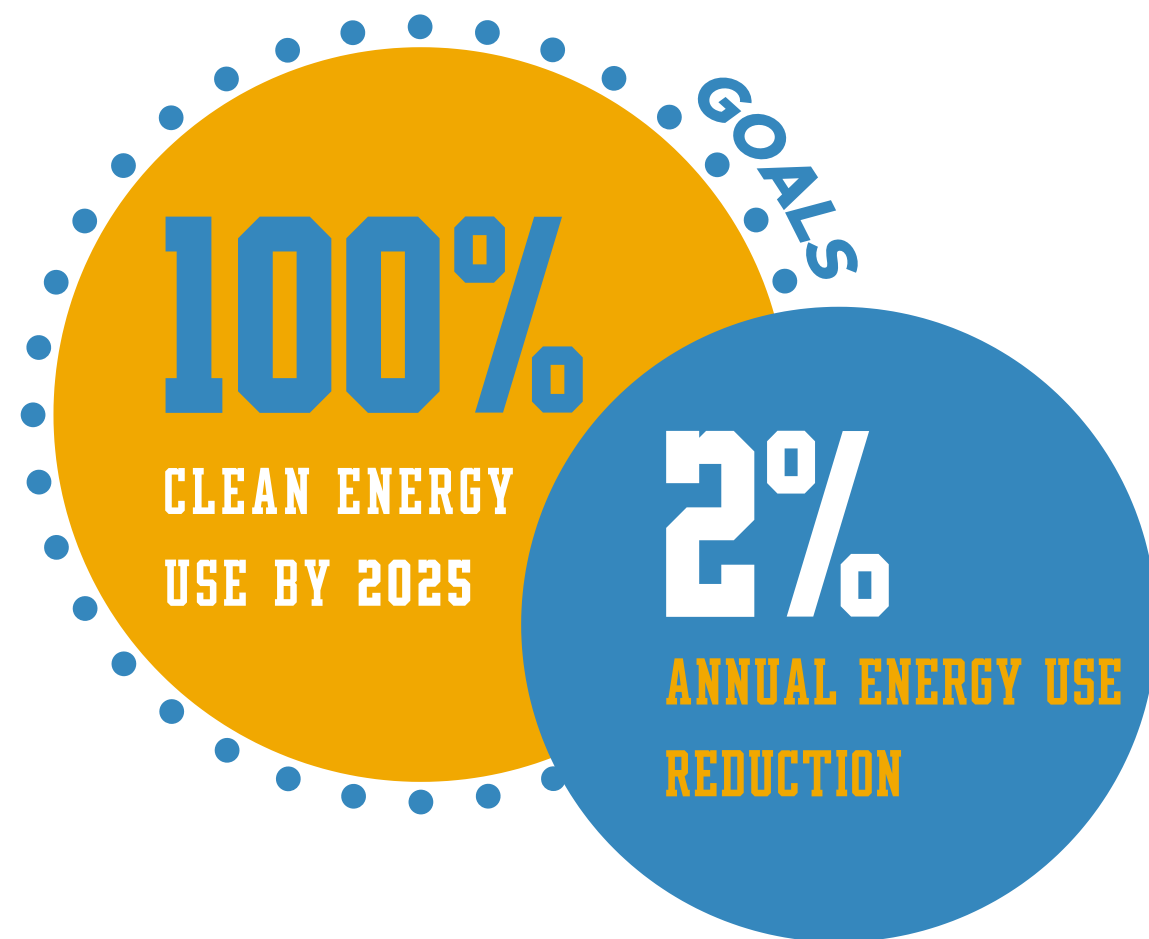
DONATE UNSOLD CONCESSIONS FOOD

Concessions has previously partnered with UCLA's Basic Needs Office and Community Programs Office to donate unsold hot dogs after basketball games, however, the process has room to include other unsold foods and involve more systematic tracking. It would be helpful to introduce a standardized system that can quantify how much leftover food is donated or recovered after events.



MO OSTIN BASKETBALL CENTER

Energy Usage



How much energy did Mo Ostin use each year?

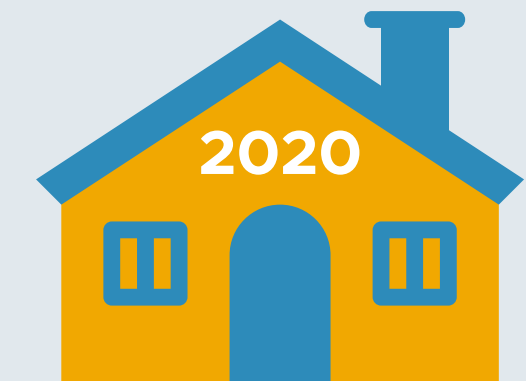
THE EQUIVALENT EMISSIONS OF...



4669 HOMES ENERGY USE FOR ONE YEAR



2238 HOMES ENERGY PER YEAR



2806 HOMES ENERGY PER YEAR

CURRENT PROGRESS

Mo Ostin has a LEED certification of Platinum, the highest achievement. Currently, 80% of the energy for the building comes from UCLA’s cogeneration plant, which provides renewable energy, while the other 20% comes from power grids. The building’s cooling and heating systems involve an under-floor system and high volume fans that handle air conditioning in a sustainable way. UCLA has energy standards which are to exceed California’s title 24 Energy Code requirements by 20%. The Mo Ostin Center’s design exceeded the title’s energy code by 42%.

KEY FEATURES

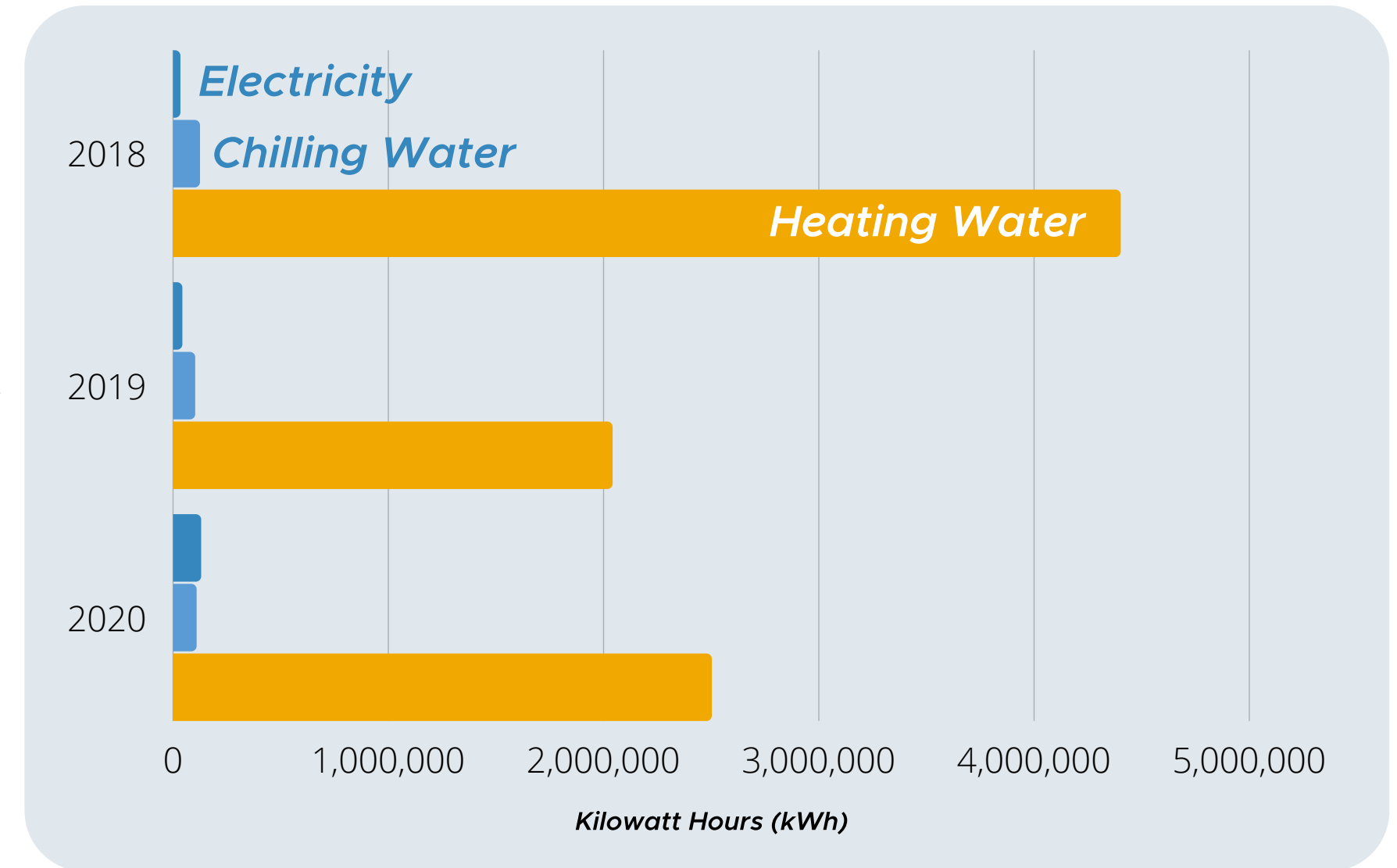
Courts may be conditioned by natural ventilation mode during mild weather days and mechanically air conditioned on warm days during the year. The natural ventilation system alleviates the need for an AC system. Natural Daylighting as well to reduce the use of electricity while also providing health benefits of natural light. Because the building is north facing, consistent, glare free indirect daylight can be provided without increasing the interior temperatures. Windows providing lighting to the basketball courts are also made up of ETFE cushions which are windows that contain a double layer film that is insulated with air. The ETFE system provides better insulation.

Energy Usage

RESULTS SO FAR

Electricity use actually dramatically increased in 2020. Energy required to heat water for mainly for laundry and showers has decreased since 2018. However, heating water remains the largest user of energy throughout the building. There is also an increase across the three categories from 2019 to 2020.

The amount of energy required to chill water and cool the facility remained relatively constant throughout the past 3 years. Chilled water usage decreased slightly between 2018 and 2019, however increased in 2020. Energy required to heat water in Mo Ostin also increased from 2019 to 2020. There was significant reduction between 2018 and 2019.



RECOMMENDATIONS

There are a couple of ways Athletics has suggested to decrease electricity usage and dependance on the city and plant. Over the course of 2020, many employees worked from home. Implementing a flex schedule could reserve the use of the building for in person meetings and building operations while permitting a few to work from home on certain days. Mo Ostin has LED retrofitting where lighting is frequently required, however most lighting of athletics facilities is fluorescent. By changing out all lighting to LED, less energy would be required to light up common spaces. Future implementation of solar panels on athletics facilities would also reduce reliance on the city for power.

Water Usage

RESULTS SO FAR

Mo Ostin is a LEED Platinum certified building, implying that it is relatively sustainable and efficient. The majority of water use comes from the HVAC system, hydrotherapy pools, and regular usage of showers and lavatories. Basketball season coincides with the coldest time of the year, and the HVAC system utilizes a lot of water to maintain a comfortable temperature during this period.

RECOMMENDATIONS



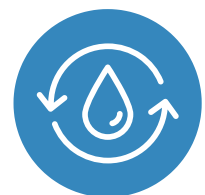
Update Current HVAC system

Because the HVAC system is the primary contributor to water uptake in Mo Ostin, inspecting and updating it for maximum efficiency may help to reduce water use.



Install dual flush toilets

Dual flush toilets have two different flush options, one for liquid waste and another for solid waste. The liquid waste flush option uses much less water than the solid waste flush option and therefore can save a lot of water per flush in a very simple way. By installing dual-flush toilets in all athletics buildings, especially ones that host many people, UCLA Athletics could decrease their water use.



Install a Greywater system

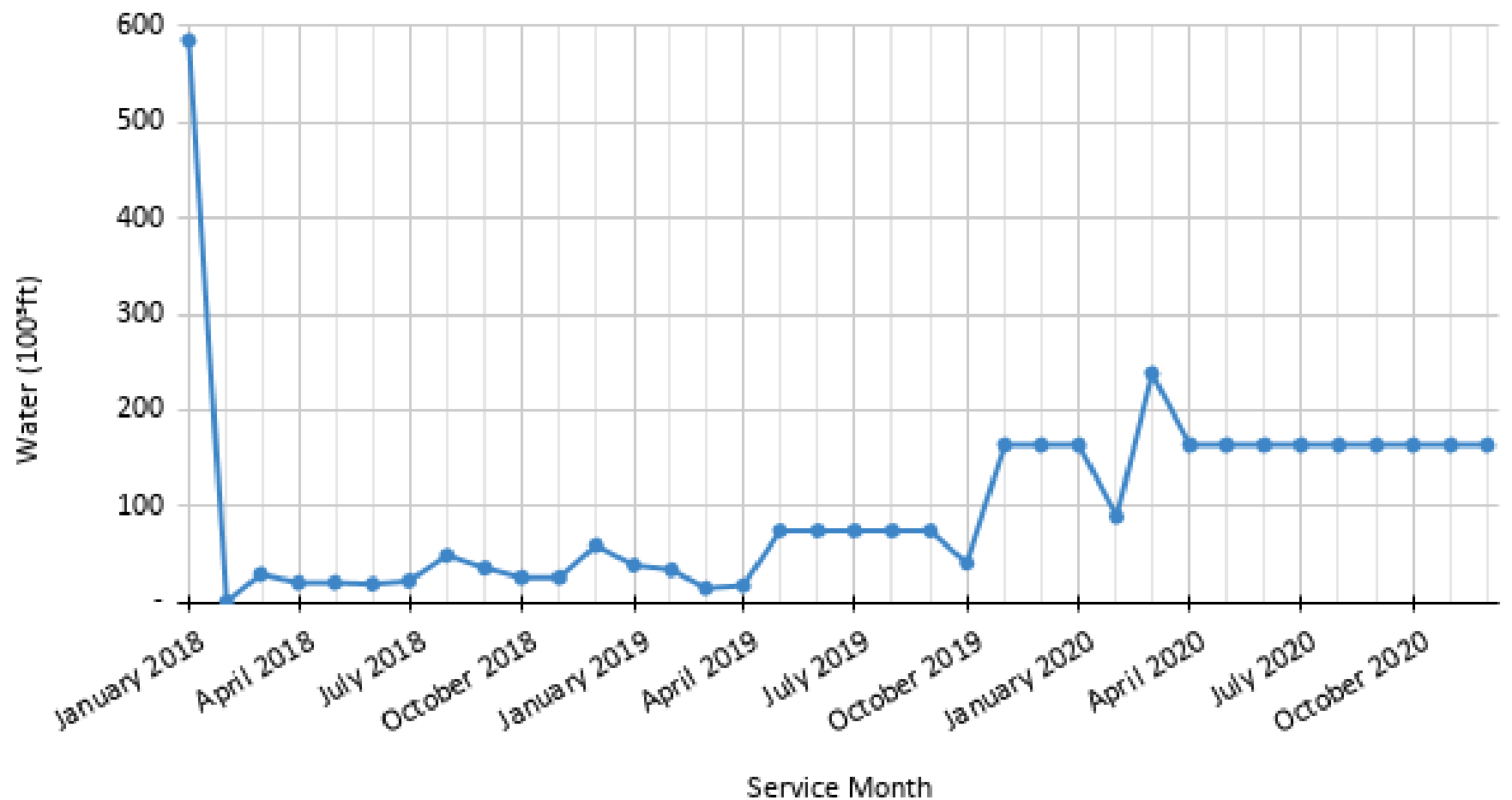
A greywater system allows used sink water to be reused as water for toilets and urinals. Wasserman already has a greywater system which was installed several years ago. Installing a greywater system in Mo Ostin would substantially decrease the amount of water used, but it can be complicated and must be done very carefully in order to avoid problems. Further, greywater systems must be checked and maintained regularly in order to assure they are running smoothly.

UC SUSTAINABILITY GOAL

36% BY 2025

Reduce potable water consumption by 36% by 2025 compared to a three year average baseline of fiscal years 2005- 2008

Mo Ostin Water Use (January 2018-December 2020)



Solid Waste

CURRENT PROGRESS

In 2020, UCLA’s Sustainability Department launched a 3-phase Zero Waste Recycling Program proposal in coordination with the Athletics Facilities in order to address the various barriers and deficiencies of their athletics building’s waste management operations and systems. In order to explicitly target each building’s particular set of problems, they laid out a tailored list of procedures for every single athletic structure. Mo Ostin is currently in the process of executing many of these initiatives and is on a scheduled timeline to complete the program. See the righthand diagram to view the specific details and policies implemented for Mo Ostin during each phase.

MAJOR SOURCES OF WASTE

Mo Ostin’s largest source of waste is food waste, born from the need to feed the approximately 30 women and men’s basketball student-athletes. Although the facility doesn’t offer main meals, it does off a variety of different snacks and foods-such as granola bars and protein shakes-whose packaging and waste often get discarded and landfilled. Other main sources of waste in Mo Ostin, though much less significant than food, consist of plastic packaging and paper use, mostly from the building’s offices.

CHALLENGES

Although the Zero Waste Recycling Program was meant to be fully executed throughout 2020 and 2021, in light of the Coronavirus, the entire timeline of the program was thrown off schedule. Currently, only the first phase of the program is fully completed, and the Zero Waste team is working to reschedule their timeline to carry out Phase II and Phase III of the program. Considering the current Coronavirus climate, there are still many challenges and barriers that the team has to navigate, including the social distancing and lockdown measures that are still in place.

2020 ATHLETICS ZERO WASTE RECYCLING PROGRAM

PHASE ONE

1. Re-purpose x2 existing containers from nutrition area
2. Label existing containers and place in the nutrition area
3. Remove all unnecessary bins throughout the facility
4. Add paper towel disposal stickers in restrooms and start collecting paper towels as compost
5. Train custodial staff
6. Purchase color coded liners as needed

PHASE THREE *Mo Ostin not included in Phase Two)*

1. Add multi-stream bins on patio
2. Re-purpose existing containers from 1st floor Locker rooms and gyms
3. Label existing containers and place in 1st floor locker rooms and gyms
4. Re-purpose existing containers from 2nd floor Locker rooms and weight room
5. label existing containers and place in the 2nd floor locker rooms and weight room

PHASE FOUR

1. Remove all office cans and divert waste to office suite or common area receptacles

Solid Waste - Recommendations

WASTE AUDIT ON WASSERMAN LOADING DOCK

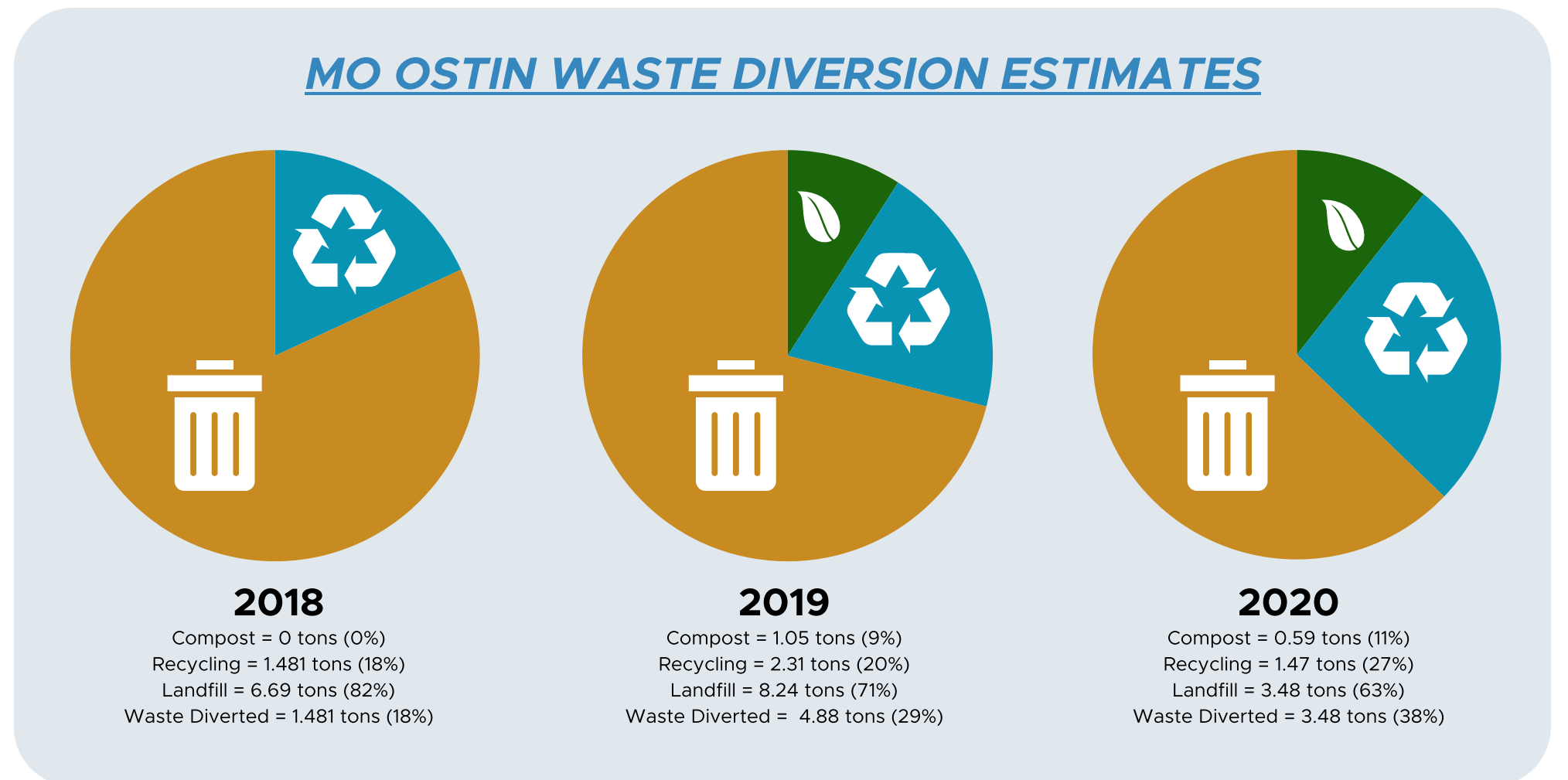
Currently, all the composted and landfilled waste from Mo Ostin is diverted to the Wasserman Loading Dock (View Mo Ostin Waste Diversion Estimate Graphic). However, a detailed waste audit of the loading dock has yet to be conducted which has led to a murky understanding of what kinds of products are generating the most waste. Having the future Green Games team conduct a waste audit of the loading dock, similar to what was done at Pauley Pavillion, would be incredibly impactful in helping Mo Ostin determine where they need to reevaluate or cut back on when it comes to overall waste.

TRACK AND MANAGE FOOD WASTE

On a typical day, Mo Ostin feeds around roughly 30 athletes and 20 staff members, making for around 50+ total people in the entire venue at all times. With that said, the amount of food and snacks that gets thrown away everyday is usually either composted or landfilled and not at all managed or tracked. Since the nutrition staff is in charge of ordering the food, it's important that they are able to track and correspond what amount of food they order is usually consumed or landfilled in order for them to engage in strategic ordering. As such, a push to incorporate a system to track the amount of food consumed or thrown away with each food order is imperative.

STRONGER PUSH FOR EDUCATION

In addition, there should also be a stronger push in educating the athletes and staff members about where and how to properly dispose of their waste. With the zero waste proposal well on its way, it's important to ensure that the athletes and staff who utilize the facilities will be able to adhere and maximize the utility of the new compostable and waste-friendly equipment and systems. For example, implementing a day to educate all staff and athletes about the location of new centralized bins and paper towel compostable bins at the start of the academic quarter could improve the overall efficiency and utility of the systems put in place by the zero waste proposal.



A photograph of a modern football practice facility. In the background, a two-story building with large glass windows and a brick base is visible. A green scissor lift is positioned on the left side of the field. The foreground is a green artificial turf field with white yard lines. Numerous football players in blue and white jerseys with gold helmets are scattered across the field, some standing in groups and others in motion. The sky is blue with light clouds.

WASSERMAN FOOTBALL CENTER

Energy Usage

UC SUSTAINABILITY TARGETS

100% CLEAN ENERGY
BY 2025

2% ANNUAL ENERGY USE
REDUCTION

CURRENT PROGRESS

The Wasserman Football Center has a LEED certification of Platinum, the highest achievement. Currently, 80% of the energy for the building comes from UCLA’s cogeneration plant, which provides renewable energy, while the other 20% comes from power grids. The facility was newly opened in 2017 and fitted with rooftop solar thermal water heaters, daylighting, solar shades, and relies on less air conditioning due to fans fitted to push air inside the weight room's vertical bifold doors.

Wasserman has significantly reduced their monthly electricity consumption since 2018. Chilled water usage decrease between 2018 and 2019, however increased slightly between 2019 and 2020. Overall, heating water is the most energy consuming aspect of the Wasserman Football Facility. While this is the largest consumer of energy, it has decreased since 2018. This could be related to the reduction of showers being taken at the facility by the athletes and reduced activity since the athletes have spent more time at their own apartments due to the pandemic.

CHALLENGES

Facilities such as Wasserman and Mo Ostin are privately funded and operated. This means emissions data and energy information is not as readily available. Because the 2019-2020, 2020-2021 academic years were unprecedented, it is also difficult to determine causation for the results. Were decreases in overall energy use due to the pandemic or the efforts made to make the facility more sustainable?

RECOMMENDATIONS



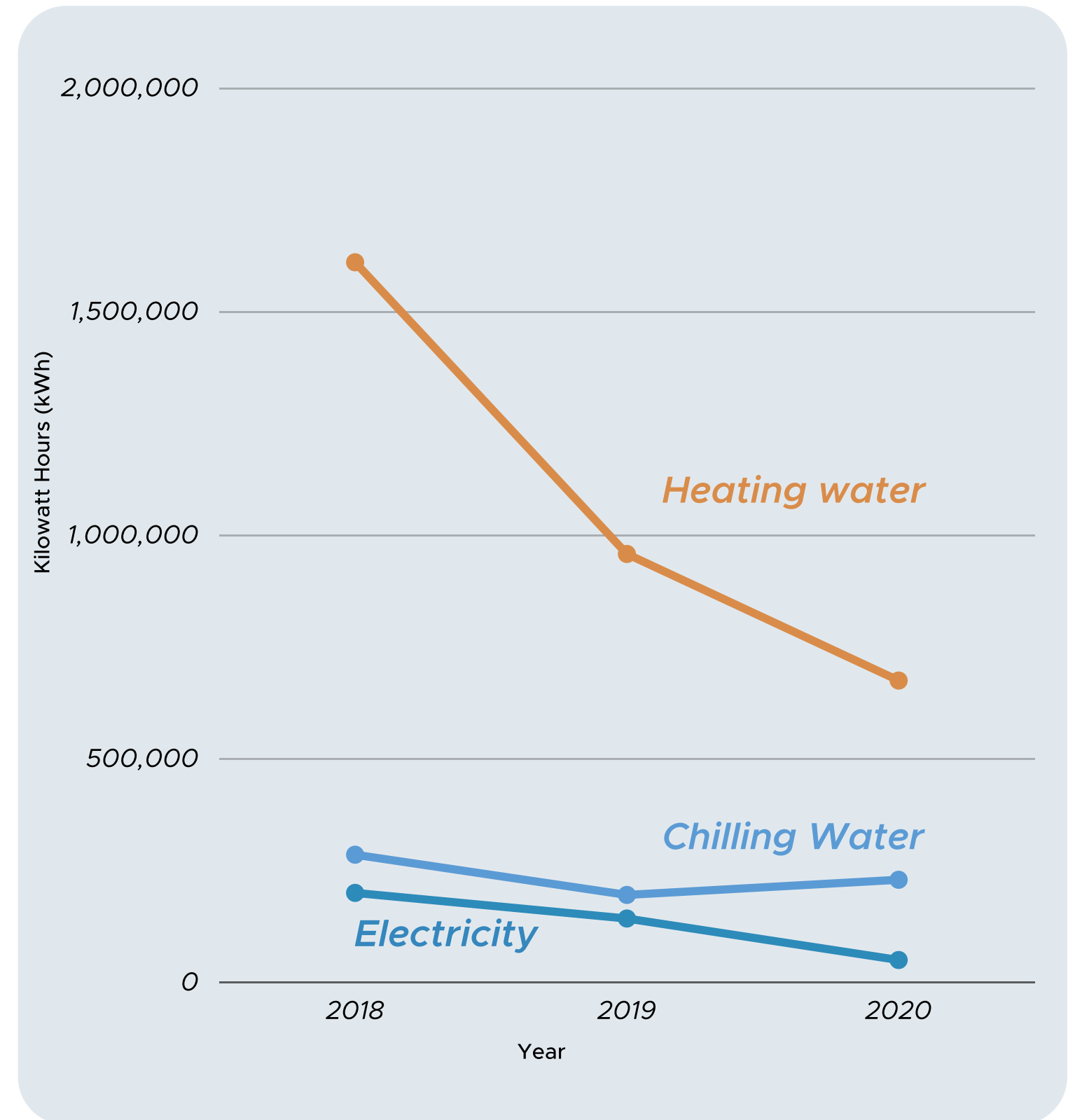
LED Retrofitting in the areas still using fluorescent lighting.



Flex scheduling to limit the amount of building usage.



Improve temperature control on showers and post signs promoting shorter showers to conserve hot water usage.



Water Usage

CURRENT PROGRESS

Wasserman is also an LEED Platinum certified building. This means that it is a relatively sustainable and efficient building. Additionally, the building already has a greywater system installed. The majority of water use comes from regular use of showers, spas and pools, the HVAC system, and laundry. Wasserman uses more water than Mo Ostin, as the football team, at 150+ athletes, is much bigger than the basketball teams. Thus, showers are used more frequently, there are more spas and pools, and there is a lot more equipment that needs frequent cleaning in Wasserman than in Mo Ostin.

RECOMMENDATIONS



Update Current HVAC system

Because the HVAC system is a large contributor to water uptake in Wasserman, inspecting and updating it for maximum efficiency may help to reduce water use.



Install dual flush toilets

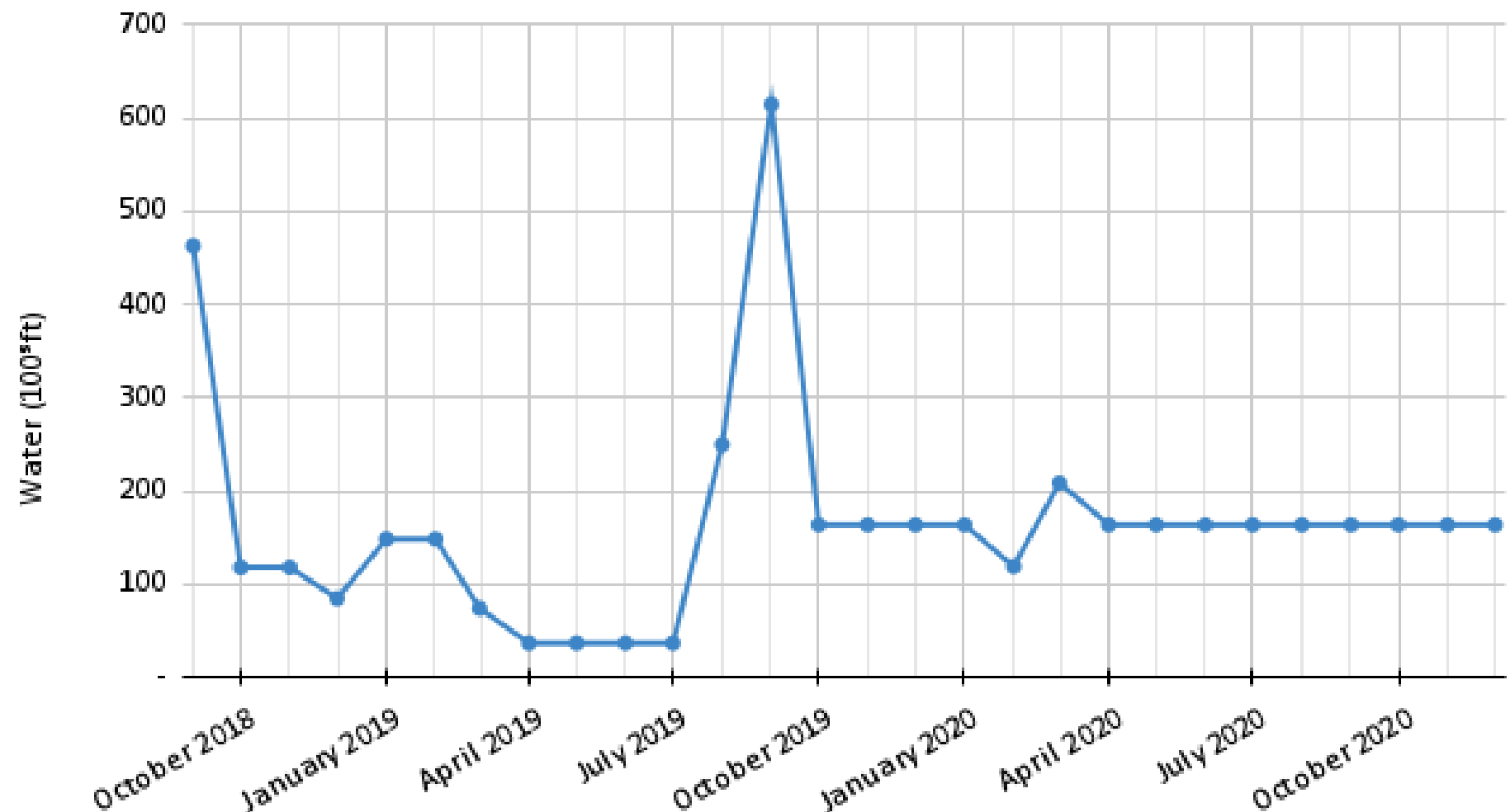
Dual flush toilets have two different flush options, one for liquid waste and another for solid waste. The liquid waste flush option uses much less water than the solid waste flush option and therefore can save a lot of water per flush in a very simple way. By installing dual-flush toilets in all athletics buildings, especially ones that host many people, UCLA Athletics could decrease their water use.

UC SUSTAINABILITY GOAL

36% BY 2025

Reduce potable water consumption by 36% by 2025 compared to a three year average baseline of fiscal years 2005- 2008

Wasserman Water Use (January 2018-December 2020)



Solid Waste

GOALS

As one of the newest buildings on the UCLA campus, the Wasserman Football Center's zero waste goals align with those on the UCLA campus (see right).

MAJOR SOURCES OF WASTE

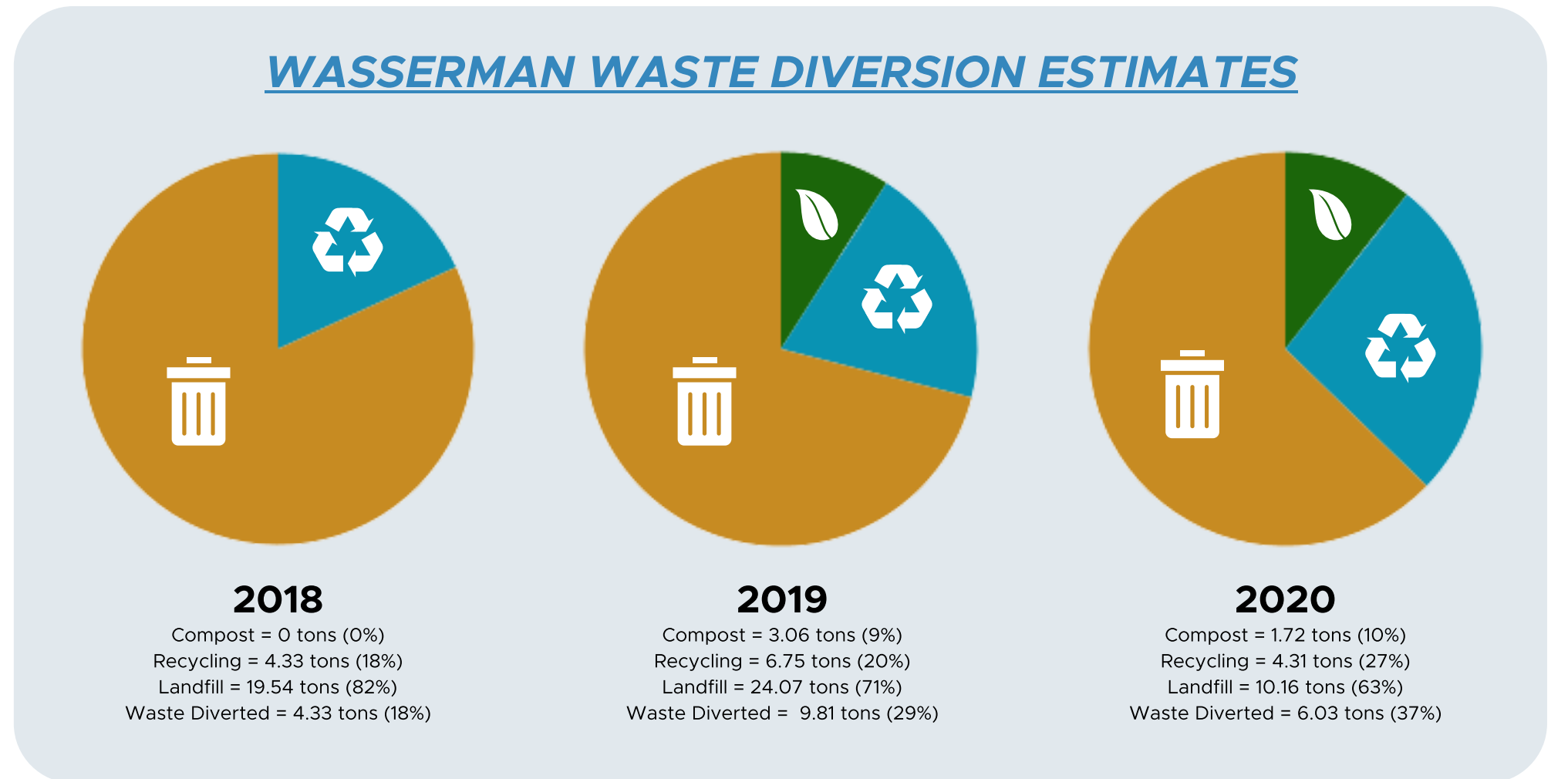
Wasserman's largest source of waste is food waste, born from the need to feed the entire UCLA football team (roughly 150 students) three meals a day. Though staff try to order based on expected need, the buffet-style menu, utilized in non-COVID times, often leaves food that ends up being discarded. Other main sources of waste in Wasserman, though much less significant than food, consist of plastic packaging and paper use, mostly from the building's offices.

WASTE DIVERSION

Wasserman currently empties its waste into the Wasserman Loading Dock, which is shared with other facilities such as Pauley Pavilion, the Mo Ostin Basketball Center, the Los Angeles Tennis Court, and the Acosta Athletics Complex. However, the shared disposal site means that there is currently no data on waste diversion on specifically Wasserman Football Center alone. The graphs pictured to the right, and on the next page, are created by taking the waste diversion rates from Wasserman Loading Dock as a whole (excluding days with Pauley Pavilion events) and dividing them by 38%, Wasserman's estimated contribution to the loading dock waste. Waste audits of Wasserman's waste must be conducted to find more accurate numbers.

2020 ATHLETICS ZERO WASTE RECYCLING PROGRAM

The 2020 Athletics Zero Waste Recycling Program saw the first attempt to improve waste sorting in Wasserman, with the Phase one (see right) being enacted shortly before the start of the pandemic. Since March 2020, the Zero Waste Recycling Program has been on pause.

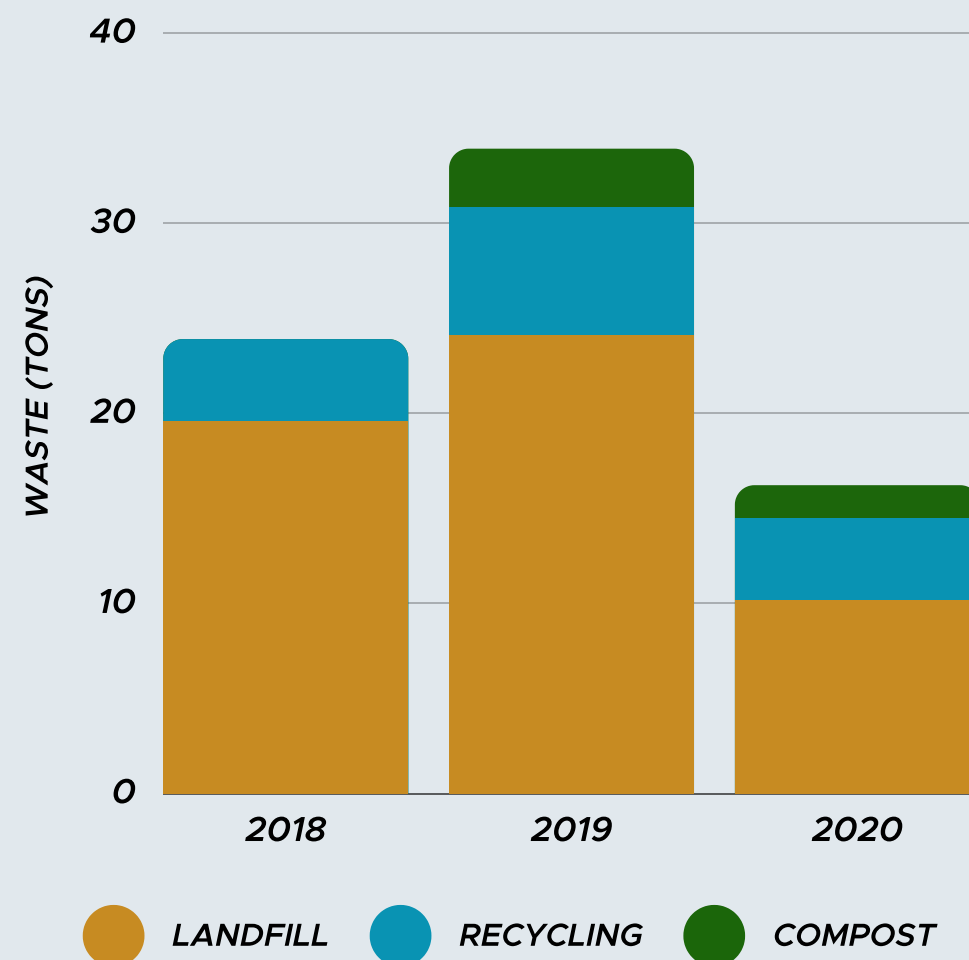


Solid Waste - Recommendations

CONTINUATION OF RECYCLING PROGRAM

The 2020 Athletics Zero Waste Recycling Program (see right) was paused due to the COVID-19 pandemic. Once Wasserman has returned to running full capacity, restarting the recycling program presents an easy fix and easy win for waste diversion at the facility.

WASSERMAN WASTE ESTIMATES



WASTE AUDIT OF WASSERMAN LOADING DOCK

Though this loading dock serves as a waste destination for multiple facilities used by UCLA Athletics, no audit has ever been conducted at the Wasserman loading dock. Doing so would help identify the main sources of waste for these buildings and inspiration for changing future habits at these facilities. Like the waste audit held at Pauley Pavilion's PAC-12 Green Game, this audit could be conducted with the help of a future Green Games Team and volunteer student athletes.

TRACK FOOD WASTE FROM FEEDING ATHLETES

With food waste being the largest source of waste coming out of Wasserman, there exists a need for a better system of tracking this waste, whether on the purchasing end or disposal end. Ensuring that any food waste gets sent to a composting bin rather than to landfill is an important and easy first step to diverting waste.

2020 ATHLETICS ZERO WASTE RECYCLING PROGRAM

PHASE ONE

1. Re-purpose x12 existing containers from locker room and 2nd floor terrace
2. Label existing containers (Figure 2.1 in Appendix) and place in locker room, weight room, and 2nd floor terrace
3. Remove all unnecessary bins throughout the facility and replace re-purposed bins with appropriate bin types
4. Add paper towel disposal stickers in restrooms and start collecting paper towels as compost (Figure 2.3 in Appendix)
5. Train custodial staff
6. Purchase color coded liners as needed

PHASE TWO

1. Add multi-stream bins (Figure 2.2 in Appendix) on B level, 1st floor, 2nd floor, 3rd floor, and Spaulding Field
2. Analyze food distribution process and reduce single use materials where possible
3. Standardize materials used throughout the facility to reduce confusion over composting vs. recycling

PHASE FOUR (Wasserman not included in Phase Three)

1. Remove all office cans and divert waste to office suite or common area receptacles



**ACKNOWLEDGEMENTS
& REFERENCES**

Acknowledgements



Cal Poly Pomona PSWC Team

Elaine Cohen

Brence Culp

Derek Doolittle

Danny Harrington

Peter Kareiva

Nurit Katz

Dennis Koehne

Jake Kuennen

Carl Maida

Raidis Maypa

Spencer Middleton

Cully Nordby

Jenna Parikh

Ahn-Vy Pham

Luis Sanchez

Kayla Shirey

Elizabeth Tanner

Denita Toneva

Ignacio Vega

Jaime Witner

Kikei Wong

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APPENDICES

APPENDIX I - List of Key Informant Interviews

<i>DATE</i>	<i>INTERVIEWEE</i>	<i>TITLE</i>	<i>INTERVIEWER</i>	<i>SUBJECT</i>
2021-02-05	Nurit Katz	Chief Sustainability Officer, UCLA	Elizabeth, Jasleen	UCLA's role in LA28
2021-02-19	Brence Culp	Chief Impacts Officer, LA2028	Elizabeth, Jasleen	UCLA's role in LA28
2021-03-03	Raidis Maypa	Manager, Associated Students UCLA (ASUCLA)	Elizabeth, Jasleen	Pauley Pavilion Concessions
	Luis Sanchez	Head of Pauley Pavilion Concessions		
2021-04-15	Danny Harrington	Associate Director, Digital Media; UCLA Athletics	Elizabeth	Sustainability Subpage on Athletics Website
2021-04-22	Derek Doolittle	Associate Athletic Director, Facilities, Operations and Capital Projects; UCLA Athletics	Elizabeth, Jasleen	Facilities Management with UCLA Athletics
	Jake Kuennen	Director of Facilities, Department of Intercollegiate Athletics; UCLA Athletics		
2021-04-26	Elaine Cohen	Managing Director; Beyond Business and Sustainability Reporting Expert	Elizabeth	Basics of Sustainability Report Writing
2021-04-27	Raidis Maypa	Manager; Associated Students UCLA (ASUCLA)	Elizabeth, Evelyn	Pauley Pavilion Concessions
	Luis Sanchez	Head of Pauley Pavilion Concessions		
2021-05-06	Spencer Middleton	Energy Analyst, UCLA	Danielle	Athletics Energy Usage
2021-05-20	Jake Kuennen	Director of Facilities, Department of Intercollegiate Athletics; UCLA Athletics	Chuc, Danielle, Elizabeth, Evelyn	Mo Ostin and Wasserman Facilities Management
2021-05-25	Ignacio Vega	Manager, Sports Venues; UCLA Recreation	Elizabeth	Pauley Pavilion Daily Operations
	Dennis Koehne	Assistant Manager, Facility and Event Operations; UCLA Recreation		
	Jenna Parikh	Event Production Manager; UCLA Recreation		

APPENDIX II - Images from 2020 Zero Waste Recycling Program Proposal



Figure 2.1
Existing containers in Athletics facilities are given color-coded labels to assist with waste diversion (green = compost, blue = recycle, tan = landfill)



FlexE-3
UCLA
Rev2

NOTE: Unit colours may vary from render depending on real world lighting conditions

Figure 2.2
Three-stream multi-flex e-bins with signage are used to replace single-stream landfill bins in Athletics facilities.

PAPER TOWELS ONLY

Millions of tons of paper towels go to the landfill every year in the United States...

At UCLA, we make sure our paper towels are repurposed through composting.

UCLA, reduce. Be a part of the solution.

Please throw other trash away in the designated landfill containers located outside of the restroom.

UCLA FACILITIES MANAGEMENT

Supporting the UC Sustainable Practices Policy Target of Zero Waste by 2020

Figure 2.3
Stickers on the paper towel disposal machines encourage users to use less paper towels and educate them on how paper towels are composted.

One towel is enough.

Shake
Shake hands 10-12 times to remove water.

Take
Take one paper towel from the dispenser.

Fold
Fold paper towel in half and dry hands.

Millions of tons of paper towels go to the landfill every year in the United States...
... at UCLA, we make sure our paper towels are repurposed through composting.

UCLA, reduce. Be a part of the solution.

UCLA SUSTAINABILITY Supporting the UC Sustainable Practices Policy Target of Zero Waste by 2020 **UCLA FACILITIES MANAGEMENT**

APPENDIX III - Energy Data for Pauley Pavilion

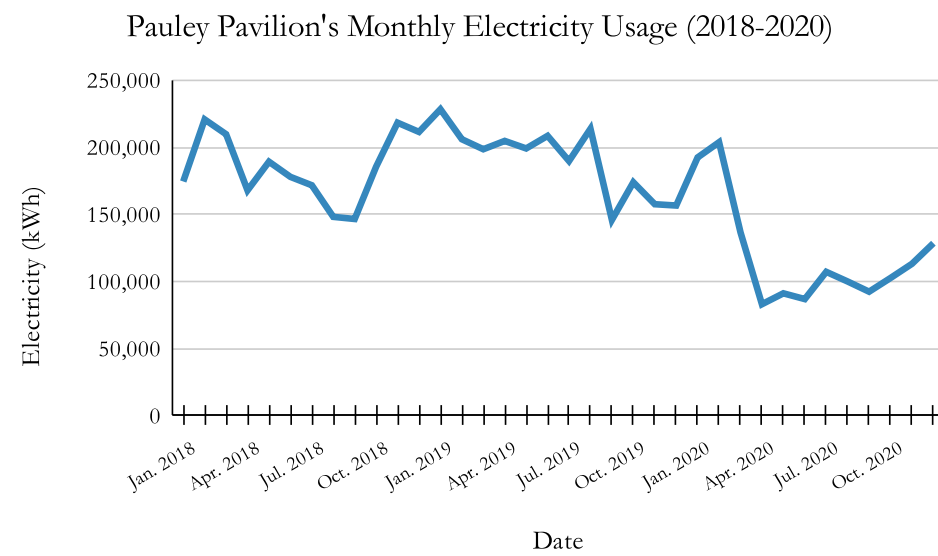


Figure 3.1
Pauley Pavilion's monthly electricity usage since 2018. Measured in kWh.

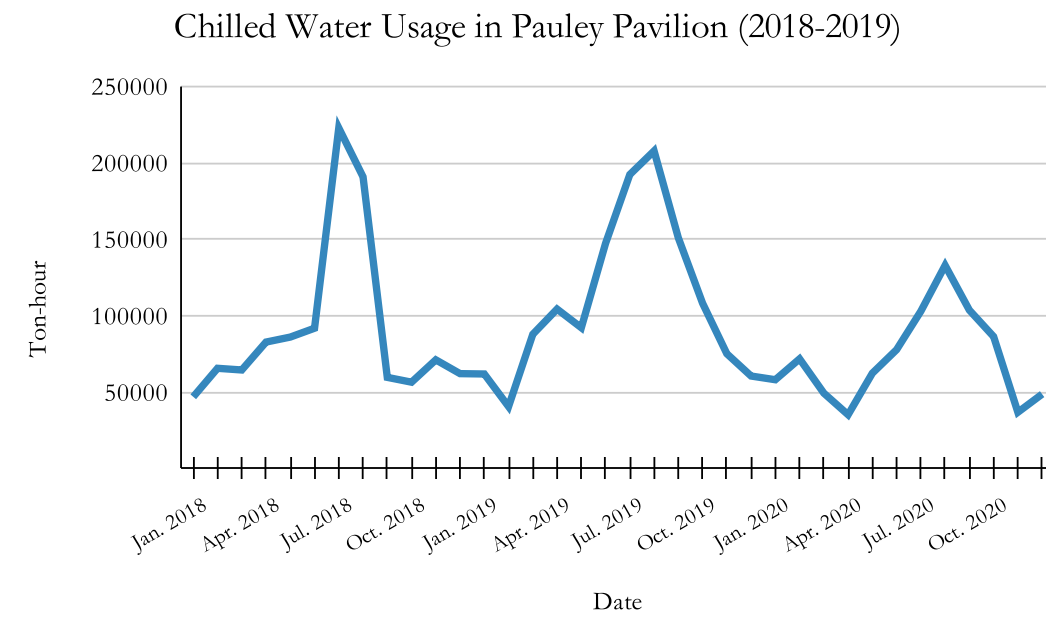


Figure 3.2
Amount of energy required to chill water for hvac systems in Pauley Pavilion each month. Converted from ton-hour to kwh.. (1 ton-hour = 3.5168528421 kWh)

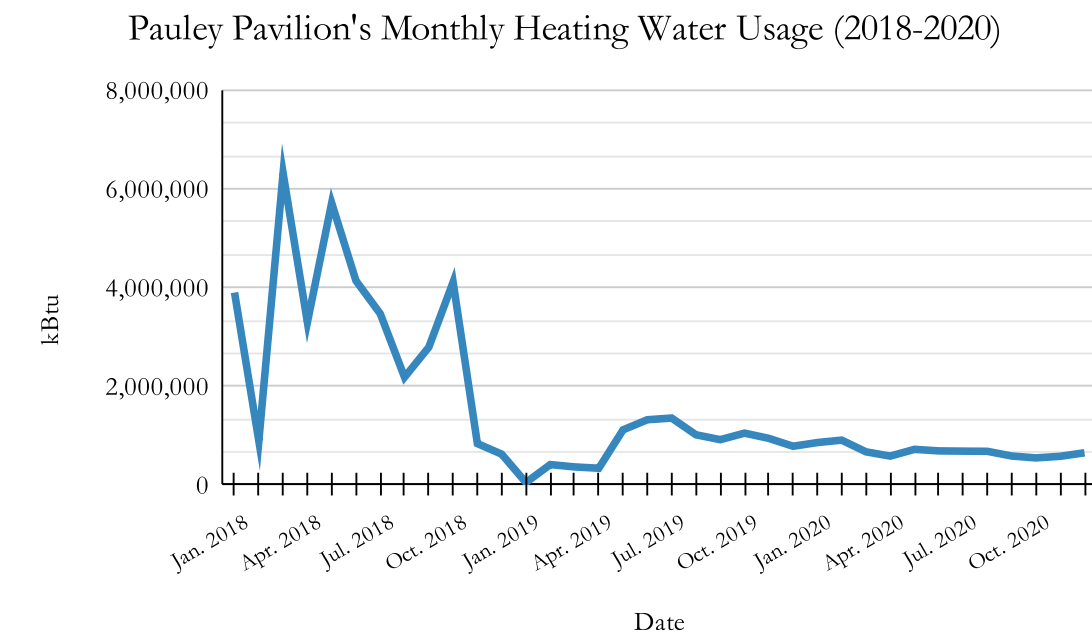


Figure 3.3
Amount of energy required to heat water in the facility. Data converted from kBtu to kwh. (1 kBtu = 0.000293071 kWh)

APPENDIX IV - Energy Data for Mo Ostin Basketball Center

Mo Ostin Basketball Center's Monthly Electricity Usage (2018-2020)

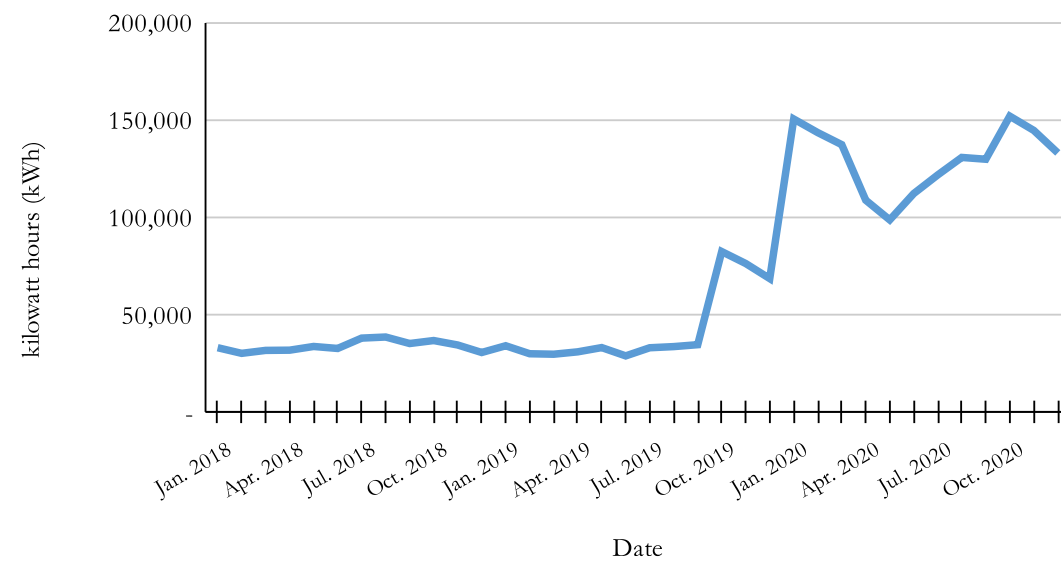


Figure 4.1

Mo Ostin Basketball Center's monthly electricity usage since 2018. Measured in kWh.

Mo Ostin Basketball Center's Monthly Chilled Water Usage (2018-2020)

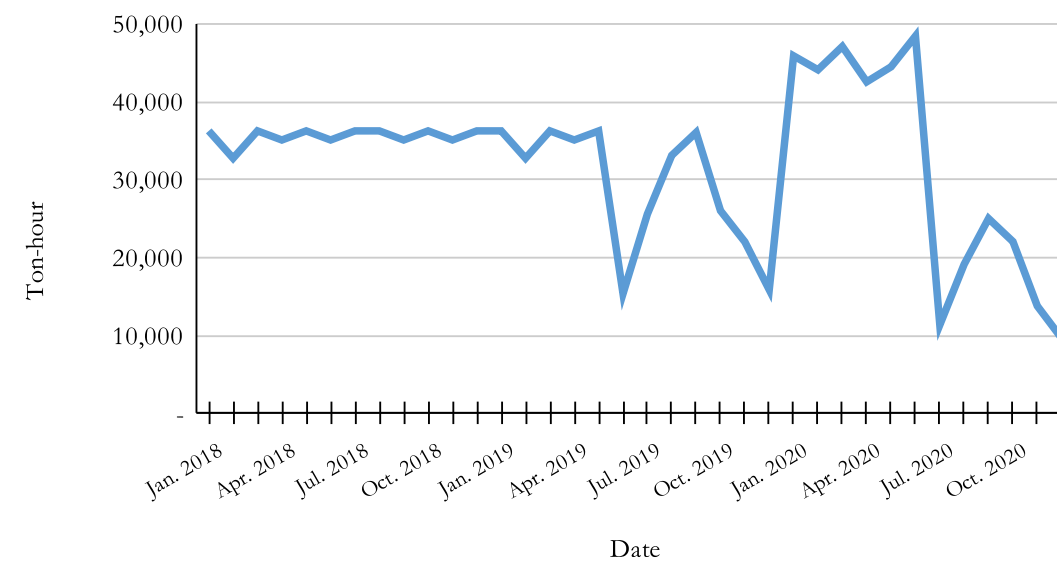


Figure 4.2

Amount of energy required to chill water for hvac systems in Mo Ostin Basketball Center per month. Converted from ton-hour to kwh.. (1 ton-hour = 3.5168528421 kWh)

Mo Ostin Basketball Center's Monthly Heating Water Usage (2018-2020)

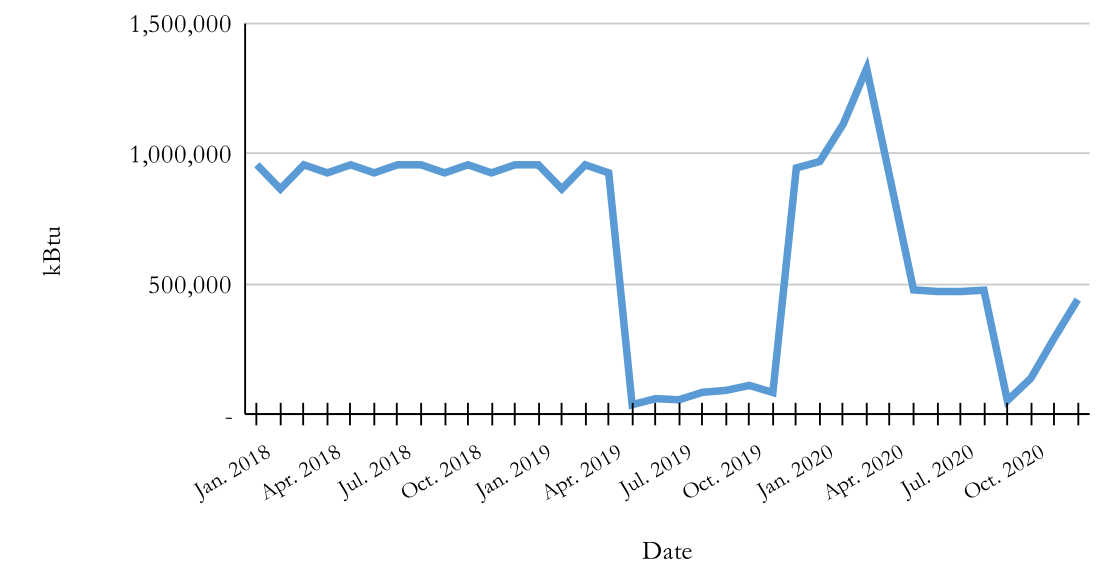


Figure 4.3

Amount of energy required to heat water in the facility. Data converted from kBtu to kwh. (1 kBtu = 0.000293071 kWh)

APPENDIX V - Energy Data for Wasserman Football Center

Wasserman Football Center's Monthly Electricity Usage (2018-2020)

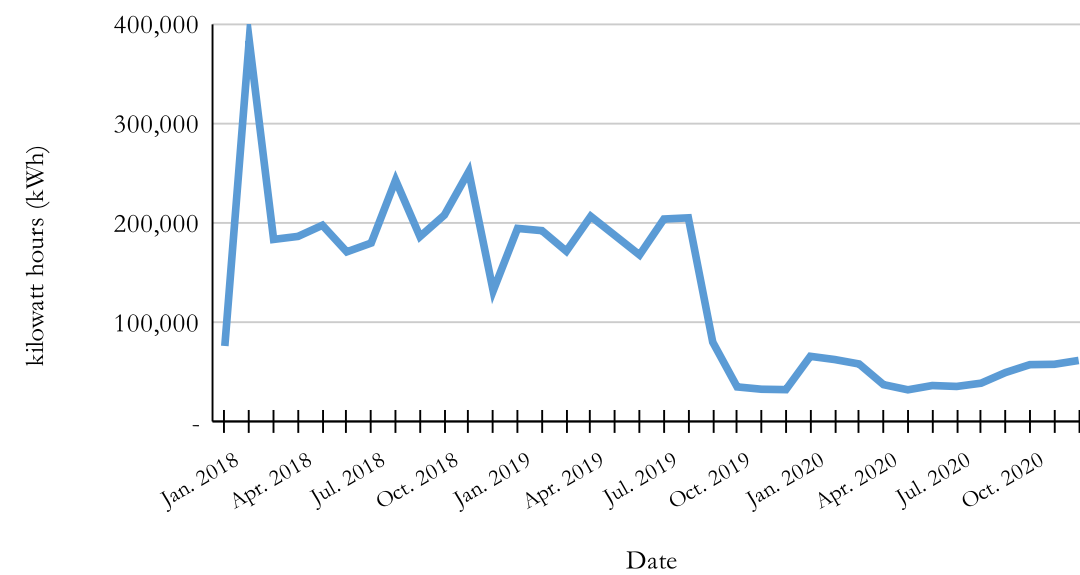


Figure 5.1
Wasserman's monthly electricity usage since 2018. Measured in kWh.

Wasserman Football Center's Monthly Chilled Water Usage (2018-2020)

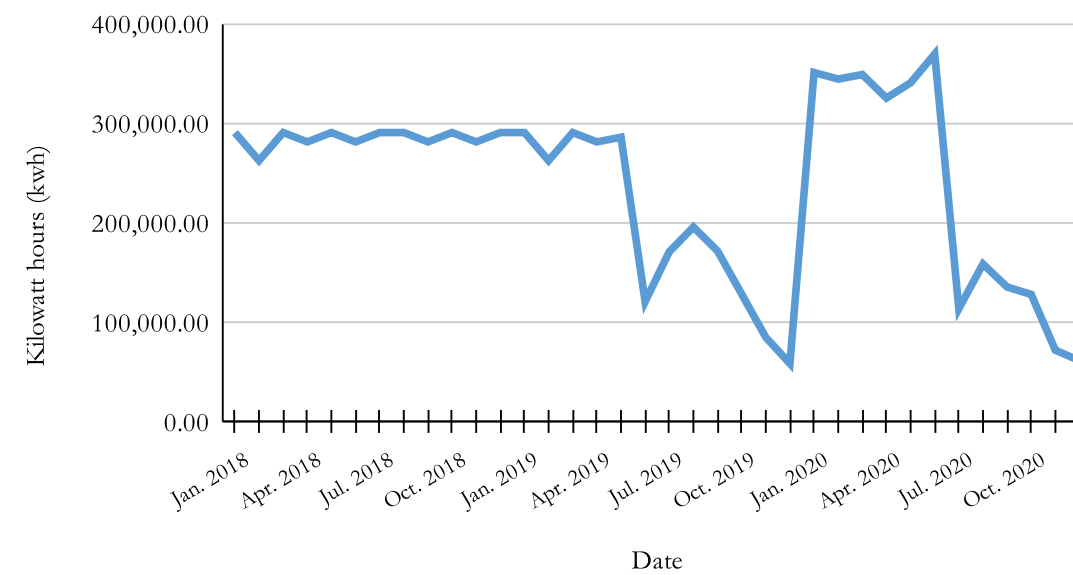


Figure 5.2
Amount of energy required to chill water for hvac systems in Wasserman Football Center per month. Converted from ton-hour to kWh.. (1 ton-hour = 3.5168528421 kWh)

Wasserman Football Center's Monthly Heating Water Usage (2018-2020)

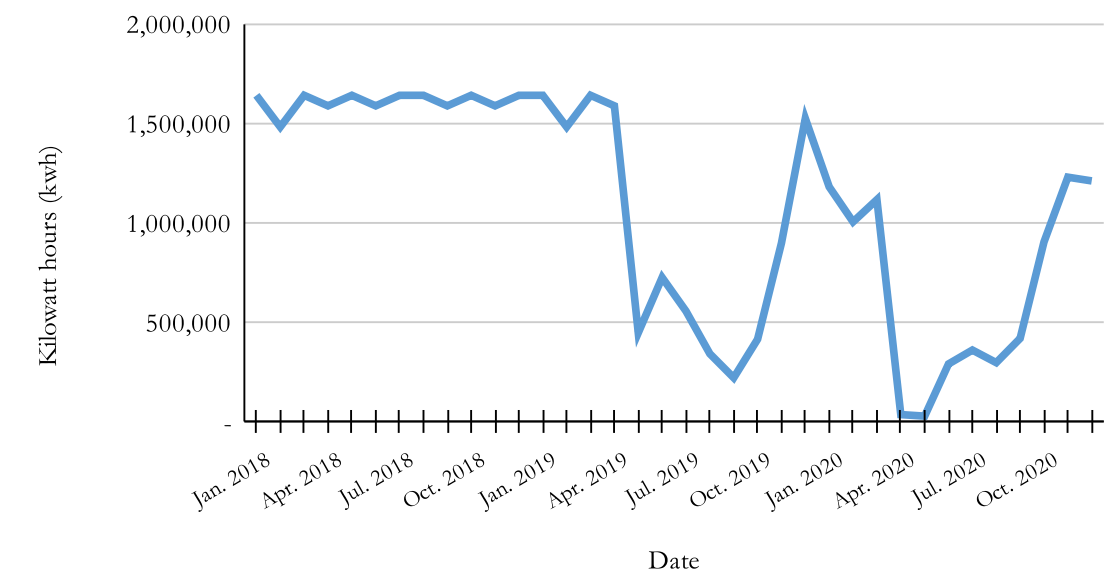


Figure 5.3
Amount of energy required to heat water in the facility. Data converted from kBtu to kWh. (1 kBtu = 0.000293071 kWh)

APPENDIX VI - Breakdown of Wasserman Loading Dock (Non-Event Day)

Building	Enclosure Location	Percentage Breakdown of Enclosure
Pauley Pavilion	Wasserman Football Center Loading Dock (non-game day)	8%
LATC		5%
Morgan Center		18%
Wasserman Football Center		38%
Mo Ostin Basketball Center		13%
Acosta Center		18%

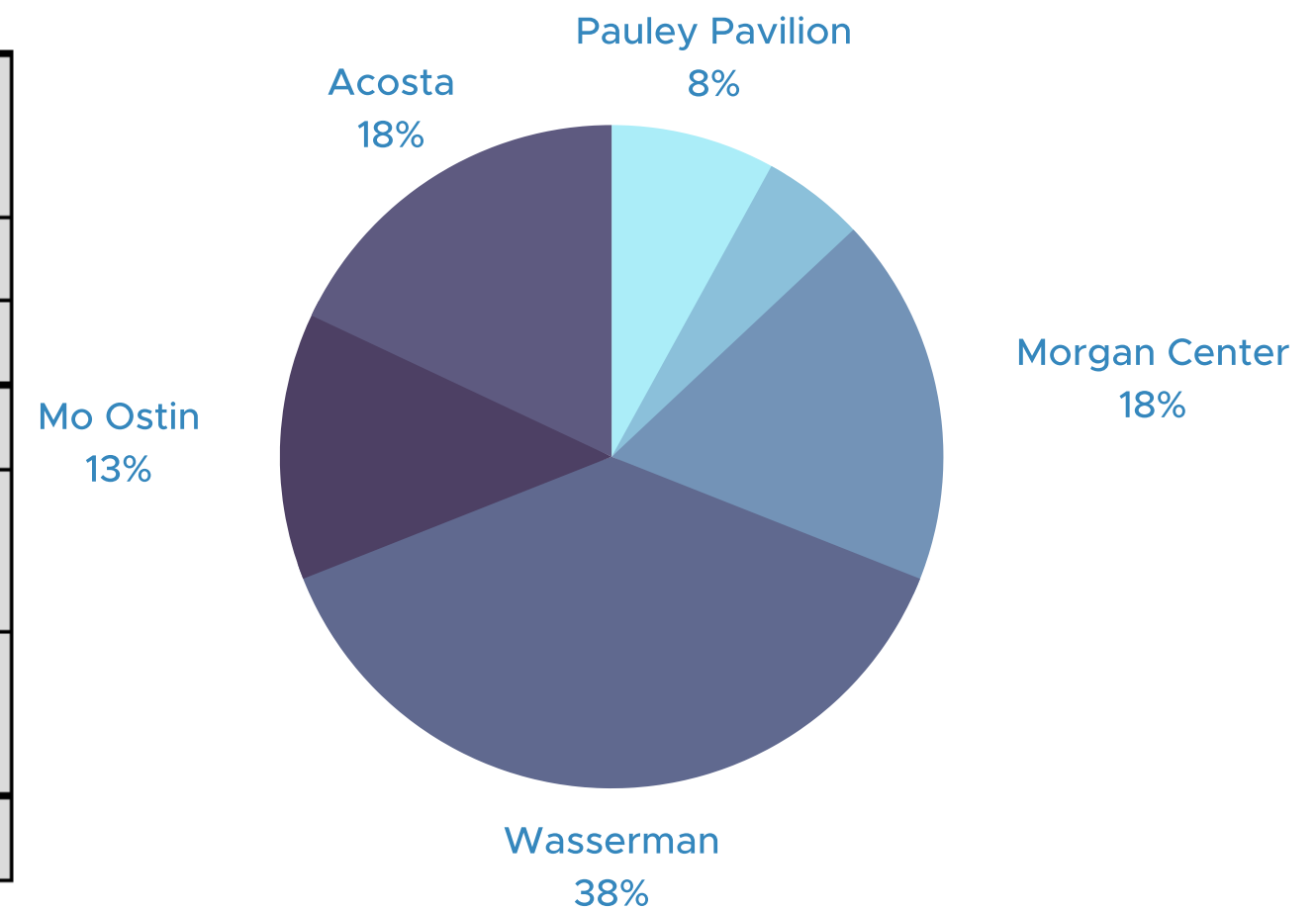


Figure 6.1

A breakdown of the different buildings which use Wasserman Loading Dock, and estimated percentages of their waste contribution on non-event days by custodians. Note: on event days, Pauley Pavilion constitutes 95% of the waste. Source: Kikei Wong