



# Diverting Landfill Waste in University Apartments

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# Understanding Waste Behaviors



This year, Sustainability Action Research's Graduate Housing Team has set out to accomplish a variety of ambitious goals in a branch of UCLA housing that hasn't traditionally been associated with progressive environmental policies. As the newest SAR team and with the additional challenge of few previous attempts to address issues of sustainability in Graduate Housing, we first had to overcome lacking a clear and obvious direction for our project.

We spent the first several weeks of the program primarily familiarizing ourselves with University Apartments policies and practices, sorting through current plans and previous attempts, and meeting with various UCLA employees to understand what might be a feasible and effective use of the team's short two quarters of the SAR program. Eventually, we found an opportunity to implement a zero-waste program to reduce landfill waste and educate graduate students on responsible recycling and composting habits.

Our team quickly turned our idea of introducing residential composting into University Apartments into a reality. We successfully launched our pilot program in the Hilgard Apartments on April 12th, 2017. The collaboration and generous participation of Athens Services, Global Green, EcoSafe, and UCLA faculty made this program pilot possible with funding, materials, guidance, and support. A team from UCLA Housing Facilities distributed kitchen compost caddies to each resident in Hilgard along with blue recycling bins. Each caddy came with a liner, a guide on how to participate in compost, clear instructions on how to sort waste, and information about our program.

Other important milestones in this effort have included implementing new signage in the waste rooms and around university housing, engaging residents at various community events (e.g. karaoke night and barbecue) with zero-waste efforts, and integrating our goals with the responsibilities of the new Weyburn-Hilgard Association Sustainability Position.

We conducted three waste audits for each of the Hilgard buildings to collect data on the habits of residents. We used the first audit to establish a baseline in order to compare the progress of the zero-waste pilot program through the subsequent audits. We have also collected student feedback through several surveys to serve both as feedback to better our program and as evidence of student support to expand the program to the rest of Graduate Housing and eventually to all University Housing including undergraduate apartments.

Our team recognizes that if UCLA is to reach its goal of "Zero Waste by 2020," we need to make significant progress immediately, and that UCLA cannot afford to disregard Graduate Housing in the process. This waste reduction initiative complements current programs such as community gardens and free produce collection in University Apartments South by serving as part of a closed loop food system. We hope to encourage further integrated approaches to addressing sustainability issues and reaching the goal of "Zero Waste by 2020."

*"If UCLA is to reach its goal of "Zero Waste by 2020," much progress must be made immediately."*

# Project Inspiration & Creation

After our initial meeting with our stakeholders, Daisy Oliver and Addae Jahdai-Brown, it was clear that our team had a lot of freedom in determining the direction we wanted to head in and ultimately in designing our project. They were able to provide us with a variety of background documents describing certain Weyburn-Hilgard Residents Association policies, and took us on a tour of the Weyburn Apartments so we could understand the general layout and structure of Graduate Housing complexes. With this baseline knowledge, we worked with Daisy and Addae to try to identify areas for improvement which could be the focus of our project. They were excited to work with students to address issues of sustainability, something that has not received great focus in Graduate Housing.

After hearing their perspectives, it became clear to all of us that our project ought to include components that promote community engagement and encourage residents to interact with their neighbors and the entire community. It is a bit more difficult to develop a sense of community in apartment-style living among students of all sorts of programs than it is on The Hill where there is communal living and such a high concentration of students. We initially planned to expand the successful community garden program from University Apartments South to the Weyburn Apartments and create educational materials to teach residents about food and food waste. We hoped that this would encourage sustainable food practices among residents and at the same time develop a sense of community among the hundreds of Weyburn residents. Eventually [unfortunately?], we learned that a community garden was already in the works at Weyburn and that we would not be needed to help implement it, so we had to explore other avenues.

*"...Significantly reducing waste requires a multifaceted approach which must go beyond recycling."*

As it turns out, one former project that was conducted through Action Research Teams, the previous version of Sustainability Action Research, provided a significant amount of guidance and influence regarding the direction of our project. This project was conducted by the University Apartments Team in 2014 and focused on creating a more efficient recycling program for UCLA's University Village Graduate Apartments on Sawtelle Boulevard and Sepulveda Boulevard.

Their plan was to design an experiment that would monitor the diversion rate of recyclable materials to recycling facilities through 4 experimental groups and one control group. The components of their experiment consisted of dividing University Village into 5 sections with the experimental groups consisting of:

1. providing residents with personal recycling bins
2. providing residents with door hangers that listed recyclables
3. replacing the text-based trash enclosure signs with image-based signage
4. sending out weekly reminder emails

(Pastor et al, 2014: 3).

They ultimately experienced major challenges in actually increasing diversion and found that this was because the majority of waste being produced by the apartments was not recyclable materials but was primarily food scraps and compostables. They found that significantly reducing waste requires a multifaceted approach which must go beyond recycling.

In their final report, the team explicitly advocated for the establishment of a food scrap and compostables collection program which they predicted would significantly increase the rate of waste diversion. This conclusion was backed by their research, experimentation, and survey results which inspired us to commit to a project aimed at improved recycling throughout a suitable location within University Apartments. Their project served as an invaluable resource for our project considering the shared goals between our teams and our ability to learn from what they found to be successful and unsuccessful. In addition, our research brought us to plans from several other college campuses to make their large, apartment-style housing complexes more sustainable. A report by students at Santa Clara University to implement a composting program in a large undergraduate apartment complex gave us a model to adapt to UCLA (Schmidt, 2015).

These resources combined to give us a solid understanding of waste diversion projects and revealed the value of pursuing a zero-waste pilot program. If UCLA is to reach its goal of "Zero Waste by 2020," the issue of organic waste must be widely addressed. California State Assembly Bill 1826 also states that businesses of a certain size are prohibited from sending food waste to landfill. While this law technically exempts multi-family housing complexes like those of UCLA Graduate Housing, it is only a matter of time before this law expands to include all University Apartments. As such, it is important to be ahead of the curve and be prepared for when this regulation inevitably changes.



*On left: image-based recycling signage*

# Getting Connected

By the end of winter quarter, we turned to advice from UCLA's Sustainability Manager for Housing & Hospitality Services, Emma Sorrell. Sorrell has been in charge of the successful implementation of composting initiatives in undergraduate dormitories and dining halls all over the residential area of campus that is referred to as "the Hill" at UCLA. Together, we discussed the possibility of expanding these initiatives in order to service Graduate Housing residents in addition to residents who were being serviced on the Hill.

She informed us that any initiatives to implement a composting program within Graduate Housing Facilities would have to be discussed with Athens Services, UCLA's primary partner for waste management services. She then put us in contact with the Athen's Sustainability Manager, Jessica Aldridge, to discuss incorporating composting into the waste management services for the Graduate Housing complexes. Aldridge proposed setting up a food scrap collection program pilot in one of the Graduate Housing complexes in collaboration with Global Green and Ecosafe, who, respectively would provide us with a grant and free materials (such as compost caddies, compostable bags, and bag dispensers), to conduct the pilot.

In further conversation about designing a plan to divert all waste in Graduate Housing, Sorrell explained her team's second major approach to reducing waste-using communications to instill environmental responsibility within the individual. Some of these solutions revolved around creating dialogue through online pledges via the "My Last Trash" campaign or perhaps merging environmental-sustainability education with art through visual displays of how to sort waste. It became clear that installing infrastructure was only part of the process and providing necessary educational tools such as signage and direction is vital in making lasting impacts.

Additionally, we attended a WHRA Karaoke Night Social to engage with the Graduate Housing residents in order to understand their sustainability needs while also taking the opportunity to make zero-waste events and sustainable lifestyle choices accessible to graduate students in order to familiarize ourselves with the waste behaviors of UCLA's diverse graduate student body. At the Weyburn-Hilgard Residential Association social, we set up two sets of trash cans, recycling bins and compost bins along with basic signage. During the event, we introduced ourselves, our mission and how we planned on using a short survey to further our research. Of the 56 people that filled out our survey, only 81.82% felt that the signage was easy to follow. In addition, many people did not sort out their waste and others that were confused and had to ask where items should be place. This reaffirmed the need for us to produce simple, easy-to-follow signage for proper sorting techniques for residents.

We decided that it would be best to pilot the program in both of the Hilgard studio apartment complexes. In addition to providing residents with the resources to compost and divert their food waste, we decided to provide residents with in-kitchen recycling and landfill bins in order to increase overall waste diversion and to create a full-circle approach towards waste sorting for residents to take. In order to make sorting even simpler for residents, we also decided to develop new, easy-to-follow signage to help direct and inform proper waste sorting behaviors. Moving forward, we decided that our ultimate goal would be to implement new and improved recycling and compost programs in Hilgard to further establish UCLA's Zero-Waste by 2020 goal, with the help of UCLA Facilities, UCLA Housing & Hospitality, Athens, Ecosafe, and Global Green.

*"This reaffirmed the need for us to produce simple, easy-to-follow signage for proper sorting techniques for residents."*

# Methodology

The first step in the launching process of our pilot was to notify residents about the implementation of the program. We began by sending out emails to Hilgard residents one month before the start of the pilot as well as the day before to notify the residents that the program would take place, how it would generally work, and to let them know that their participation in would be essential to its success.

The next step involved providing the materials that residents would need to successfully participate in the program. Athens and UCLA Facilities started this process off by installing green-waste dumpsters in the central waste rooms of both buildings, as well as compostable bag dispensers that contained a year's worth of compostable bags for residents to use as caddy liners during the project.

We also put up temporary signage on the dumpsters in each central waste room that had been developed for waste sorting on the Hill that listed the materials that would be allowed in each of the dumpsters, i.e. what types of materials should go into the compost, recycling, and waste bins. We planned to adapt the signage to better encompass the kinds of waste that would be generated by residents in Hilgard, and were able to do so, but not until almost the tail-end of the pilot because of the time constraints for the SAR Team as well as the UCLA Housing Team behind the signage designs.

Then, the morning before the kickoff of the pilot, one portable compost caddy, one recycling bin, and one trash bin was placed in each unit of both the 720 and 824 Hilgard buildings (comprised of 54 and 24 units respectively). Each of the composting caddies held a sticker with directions for proper waste sorting on the front as well as paper inserts with the same instructions that were provided by Athens.

The day after distribution, on April 12th, a kickoff event for the program was held in the lounge of each apartment building for all of the residents. The kickoff was meant to answer any questions that residents had about the program, waste sorting, and other general concerns, as well as to introduce them to the faces behind the program. We provided residents with food and a few run-throughs of a short presentation regarding how the program would work, how to use the composting caddies, and how to properly sort their waste.

We then began the process of monitoring the progress of the pilot in order to understand if the new sorting system and signage were effective ways to help improve resident waste sorting behaviors. We did this using three different methods including:

**1. waste audits to assess overall waste diversion**

**2. resident surveys that were sent out via email to gather feedback about the program**

**3. communicating with our student ambassador to Hilgard, who monitored the program through visual and olfactory audits.**

The process of conducting audits involved cancelling the weekly pick-ups for all of the dumpsters in both Hilgard apartments so that we could get an accurate estimate of how much waste was generated by the apartments on a weekly basis. After a one week accumulation of waste, our SAR team would conduct a waste audit by hand to sort through the waste to assess actual diversion rates and to see what potential diversion rates would be in the future. Going through one building at a time, the actual diversion rates and potential diversion rates of the individual dumpsters (compost, recycling, and trash), were assessed one at a time using the following process:

1. The dumpster was emptied. If the team had enough time to do the entire dumpster by hand, the dumpster would be completely emptied, as was the case every single time with the compost and recycling dumpsters; otherwise, some fraction of the dumpster that could be sorted through within a reasonable amount of time (approximately an hour), would be emptied from the dumpster, and the estimated fraction of the dumpster that was emptied would be recorded and used to determine a total average amount of waste in the entire dumpster, as was the case every single time with the trash dumpster.

2. The waste emptied from the bin was sorted into properly into their three respective three categories: compostables, recyclables, and trash. Items from each category were kept separate throughout the audits.

3. The items from each category were weighed and recorded to get the total weight of compostables that had been in the dumpster, the total weight of recyclables that had been in the dumpster, and the total weight of trash that had been in the dumpster.

These total weights were used to find the potential diversion rates for each building (i.e. the amount of materials that could have been composted versus the amount of materials that were actually composted).



*Pictured above (from left to right): Helen Lu, Chris Hunter, Mark Biedlingmaier, Chloe Ney, and Sarah Paset sorting recyclables.*

We conducted three of these audits on April 14th, May 12th, and June 2nd. The first audit was used to establish a baseline for understanding how waste was being sorted without the pilot and signage in place. The second audit was used to see if improvements in waste sorting behaviors were taking place after the implementation of the pilot. The third and final audit was used to measure the overall success of the pilot in diverting waste in both apartments. However, the data for these audits is not completely accurate because of suspected failure to cancel all pickups for trash and recycling before some of the audits.

Surveys were also sent out to Hilgard residents four weeks into the pilot to gather feedback about the program to understand how easy or difficult the pilot was for residents to participate in, what they liked or did not like about the program, and to see if they would support the expansion of this pilot as a permanent feature at Hilgard in the future.

Surveys were also sent out to residents living in Weyburn to see if they would be interested in having the pilot implemented in the Weyburn complexes. The last survey that our SAR team used was a general student survey that was circulated around at the Earth Day Fair and on team member's social media accounts as a sort of petition to show overall student support for expanding composting initiatives in all UCLA-affiliated housing.

We also reconvened with our student ambassador to the Hilgard apartments, a student living in Hilgard who would report back to us, to understand the challenges and benefits of the pilot that residents were facing first-hand. She conducted walk-through audits of the central waste rooms of each of the apartments to assess the progress of the program by roughly determining the level of contamination through visual audits and the level of smell being produced by the compost. However, these meetings were rather infrequent.

## Materials included:

1. one luggage scale
2. buckets for sorting materials
3. disposable gloves
4. goggles
5. respirators
6. hazmat suits
7. tables
8. saran wrap (to cover table surfaces).

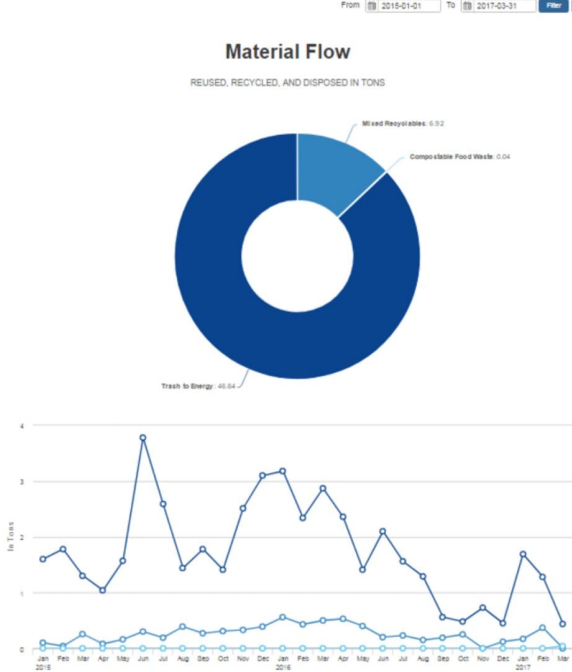
# Results

Every time an Athens truck services a location, it has sensors which record the weight of each bin and loads the measurements into the Green Halo Database. This was incredibly useful, as it allowed us to calculate and estimate the average amount of waste collected in a week for each building and bin type (see graph on right). After coming up with the average expected bin weight for each building and bin, we extrapolated the ratio of waste type for the incomplete audited bins to the average bin weight in order to reach an estimate for each waste type.

Creating these estimates proved to be more of a challenge than expected, however. There appear to be missing tickets in the database, particularly in the recent data. Furthermore, a look at the long-term trends in the data of time reveals huge variations from week-to-week or even month-to-month. For example, here is the Green Halo profile for 720 Hilgard across 2015 and 2016:

We believe some of this variation is seasonal, and spikes during times like move-out or winter break, while dipping over summer when there are more vacancies.

To overcome this problem as much as possible, we calculated the average weight using data only from April and May over the past two years, as those are the only two months our pilot ran. Using this method, we were able to analyze the trends in our audit results, albeit with high uncertainty.



(Above) Green Halo Waste Data

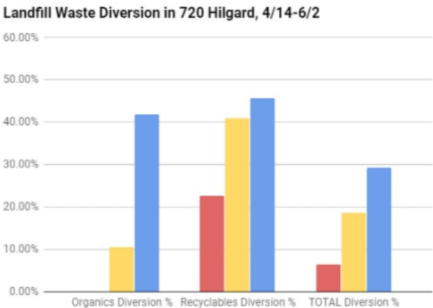
Our midpoint audit was somewhat encouraging, but showed only modest progress. While 720 Hilgard seemed to be diverting a significant share of its waste through the program, the new system did not appear to be catching on in 824 Hilgard. Organics diversion was minimal and the diversion rate for recyclables actually dropped (although it was still higher than recycling diversion in 720, suggesting the recycling numbers from the baseline audit may have been an outlier).

Despite these somewhat disappointing returns, the progress between the second and third audits far exceeded our expectations for both buildings! Both buildings saw huge leaps in organics diversion, and recyclable diversion continued to increase in 720 while remaining high in 824.

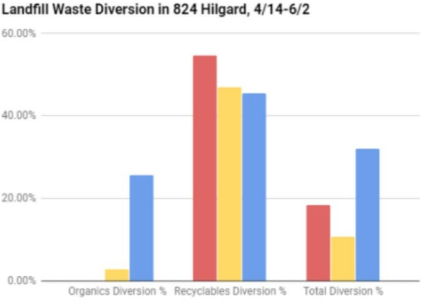
Using a “Greenhouse Gas Reductions Calculator” found online, we estimate that over a full year, diverting 36.25% of organic waste from just the two Hilgard sites alone would save the equivalent of 10.66 metric tons CO2 emissions, or would have the same impact as taking 27.6 cars off the road. As the program improves and residents become more accustomed to composting, we expect this number to be even higher in reality.

These results suggest that a composting system similar to the one in 720 and 824 Hilgard has great potential to reduce landfill waste and bring UCLA closer to its goal of “Zero Waste by 2020,” and gives a strong justification for program expansion. The large jump in organic diversion rate between the 2nd and 3rd audit relative to the change from the 1st to 2nd audit suggest that the new system was a significant change for the residents and it took some time for them to get used to it and learn the process. On the other hand, the large increase in recyclable diversion after the 1st audit suggests that simply having access to a small in-unit recycling container and being exposed to improved signage is enough to significantly increase recycling.

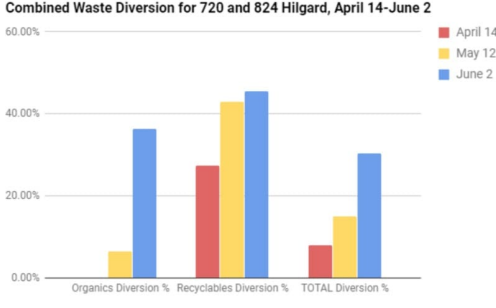
Even with the impressive gains, the diversion rates are still far below their theoretical potential. If residents sorted perfectly, both organics and recyclable diversion would be 100% and total diversion would be over 70%. While it is unlikely that these numbers will ever be perfect, we believe greater outreach and educational efforts could continue to increase diversion over time.



30.42% of ALL waste was diverted on the June 2nd audit, more than twice that of 5/12 (15.10%) and roughly 4 times that of 4/14 (7.93%)



The diversion rate for recyclables increased to 45.5% from 42.83% on 5/12 and 27.36% on 4/14.



Overall between the two buildings, 36.25% of all organics were diverted through compost the week of the 3rd audit on June 2nd, up from only 6.47% on May 12th.

# Challenges & Difficulties

From the moment our team had our first official meeting, we knew there would be many challenges to overcome throughout the Winter and Spring Quarters. Not only was our team composed of the youngest students in this year's program, but Chris was the only returning student who had ever participated in Sustainability Action Research. On top of that, our stakeholders were newcomers as well and the fact that our team was given the freedom to hone in on any opportunity to green graduate housing and university apartments required a large investment of time and patience in order to find the right fit for our group. With that being said, we were able to respond with creativity and persistence which allowed us to utilize resources and surpass any and all obstacles in our way. Having stakeholders who were well connected to outside departments served as one of our greatest assets in providing our team with support in the direction we wanted to go.

During the beginning of Winter Quarter, our team reviewed numerous resources provided by our stakeholders intended to provide us with a better understanding of what programs the graduate students may be interested in. A particular needs-assessment conducted in recent years showed our team that nearly 30% of participants felt a lack in a sense of belonging to campus. With that in mind we knew we wanted to develop an environmental project that would also connect residents and make them feel as though they were a valuable part in helping UCLA reach its sustainability goals. After brainstorming numerous solutions to address this problem, we decided to implement new and improved recycling and compost programs in Hilgard to further establish UCLA's Zero-Waste by 2020 goal. Considering the current waste-reduction initiatives occurring around campus, our team felt as though our time and effort would be maximized if we were to partner with these stakeholders. In order to ensure that our program would go over well with the graduate student community and would provide opportunities to draw students together, we began looking for avenues to connect with individuals and confirm that this would indeed be something that they would be willing to participate in. Therefore, we challenged ourselves with making zero-waste events and sustainable lifestyle choices accessible to graduate students to serve as an opportunity to familiarize ourselves with waste behaviors of UCLA's diverse graduate student body and to give them an opportunity to improve their understanding on the subject by working together.

Over Winter and Spring Quarters we were able to participate in two events including a karaoke night and barbecue social. Having done two events allowed us to experiment with how we would engage with the graduate student residents and allowed us to refine our approach on our second time around. Although our signage was mediocre for the karaoke night, we were happy with the short survey activity we placed on tables for groups to fill out. At the barbecue, we were able to reflect on what could be improved and felt as though our signage was more articulated and easy to understand. Additionally, the "sort-your-waste" game we offered turned out to be very successful in bringing students together and allowing them to work through which items belonged in each bin. Participating residents were rewarded with prizes which provided a sense of achievement for correctly sorting their waste. Although we didn't use these events to collect waste audit data, our team met our expectations for exchanging knowledge on zero-waste policies with the graduate community and we learned how to create a green atmosphere that would be well received by the specific needs of the community.

As our Spring Quarter pilot began, our team encountered a new set of challenges within conducting proper waste audits. This required diligent communication between multiple parties including facilities management, maintenance, as well as UCLA's Housing and Hospitality Services. One of these problems we encountered during our waste audits was the unfortunate, occasional, and mistaken servicing of a bin. With our audits set up to track a full week's worth of residential waste, the servicing of a bin created inaccurate statistics of the total waste produced by each residential complex. As a result, this under represented the potential environmental impact of the green waste initiative within our data. Although we requested scheduled waste-pickup cancellations, the miscommunication between waste collection staff was often unavoidable. This was a great learning experience for our team in that it taught us the importance of clear and quick communication and how to make the most out of disadvantaged situations.





# Challenges & Difficulties cont.

In the process of canceling waste-pickups and preparing for waste audits, our project ran into a sanitation problem where fruit flies were inhabiting central waste rooms due to a profuse amount of decomposing green waste.

This was likely aggravated as a result of recent waste audits our team conducted which required us to cancel regular waste pickups and ultimately led to larger volumes of waste sitting in the waste rooms for extended periods of time. The entire lifecycle of a fruit fly is about 3 days and waste at Hilgard is typically picked up every 3 days.

To resolve the problem, our team addressed the issue to the Hilgard residents through an informational email and explained that the situation was a product of skipping pickups and actively working to ensure a resolution. A few solutions included tightly tying green compost bags to prevent spillage and keep the bins clean, closing the bin's lid before you leave the waste room to mitigate odor, and applying pest mitigation sprays to control population size.

Another challenge encountered through conducting our waste audits was the fact that we had to do them by hand. Although physically demanding, we chose to do them this way because it was financially reasonable, surprisingly educational, and insightful on what exactly is being purchased and wasted by residents. However, there were many setbacks including an audit being a large time investment, about 4 hours, as well as confusion on how to sort. Our team often had to limit the amount of time we invested in auditing a bin in order for us to make sure we at least got through a portion of each waste stream; landfill, recycling, and organics.

In order to compensate for the amount of waste we couldn't get through, we estimated how much of the bin we got through and then multiplied the fraction accordingly. For example, if we got through 25% of a bin we would then multiply our measures 4 fold. Although we were able to recruit a few extra hands to help expedite the sorting process, we found it difficult to encourage a larger and more preferred number of volunteers to help us sort through the waste...we don't blame them!

A significant goal of our team was to present a comprehensive report on our findings to UCLA administration to determine the success of the program and examine the possibilities of expansion. This required us to have precise measurements and calculations of annual waste data outside the scope of our research period. In order to build the most compelling case, we used GreenHalo data to extrapolate average waste trends throughout the year. Since we were presented with inconsistencies in our data collection, this online resource allowed us to verify our findings and project them onto annually accrued weights.

*“Love that composting is being implemented, however, the amount of flies in the trash room/ directly in the green trash bin has reached an insane amount.” - Hilgard Resident*

# Conclusion

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Our Graduate Housing team has had a significant impact in supporting UCLA's overall goal of "Zero Waste by 2020." While our pilot program was only implemented in the Hilgard Apartments, this pilot was an essential step forward in overall campus waste diversion.

A number of UCLA's students come from places where compost is a part of their lifestyle, and we should provide the resources to facilitate sustainable behavior rather than hinder and frustrate these students. Education and behavioral influence of the residents have become key components of our program. By fostering participation in campus sustainability initiatives, we are promoting progress throughout all of campus.

In addition to our campus goals, California also has ambitious greenhouse gas emission reduction goals as detailed in AB 1826. This current state regulation requires businesses and organizations producing a certain quantity of organic waste to compost such waste.

While graduate housing is currently exempt from food scrap compost requirements, this regulation contains a clause indicating that this exemption may be temporary. UCLA has the opportunity to lead the way and stay ahead of requirements to avoid potential consequences later on. By focusing on this program now, we can optimize a compost system in the most effective and efficient manner rather than face non-ideal circumstances in the future.

After a successful meeting with UCLA sustainability and housing staff, we are very hopeful this program will receive the staff support needed to perfect the program in Hilgard and then expand into more university apartment complexes next year. Throughout our pilot program, we ran into several challenges that should be worked out to ensure successful expansion. For example, we have found several solutions to our fruit fly predicament and once we prove which solution is best, we can avoid this challenge in the additional complexes by implementing this solution proactively to avoid a similar situation.

To ensure success, we feel that it is vital to have an additional Sustainability Action Research team continue our work. We recommend this team continues to oversee Hilgard and ensure proper maintenance of waste servicing, work with additional housing communities to expand the program, and create new housing brand flyers and instructions to unify materials distributed.

To expand the program, we recommend using Weyburn and/or undergraduate apartments to explore new territory and the unique challenges that come along with it. One advantage of transitioning from graduate housing to undergraduate is that many of those moving into undergraduate apartments have been living on the hill where compost has already been implemented. Because of this, these students will have already been introduced to the process, and we can continue the process of further educating and reinforcing this behavior to have even more successful result for years to come.

## Recommendations:

- 1. Continue our work through a new SAR team!**
- 2. Oversee Hilgard/ ensure proper maintenance of waste servicing**
- 3. Expand the program to new communities**
- 4. Create new housing brand flyers/ instructions**
- 5. Test expansion with Weyburn/ undergraduate apartments**



*(Above) 2017 Graduate Housing Team with Stakeholders Addae Jadhai-Brown and Daisy Oliver*

# Acknowledgements

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This project could not have been possible without the help of Emma Sorrell, Javier Ayala, Jessica Aldrige, Victoria Hathaway, Austin Park, Mochi Li, Gabby Merino, Carl Maida, Cully Nordby, our stakeholders Daisy Oliver and Addae Jahdai-Brown, and our supportive peers.

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