

UVM Food Waste and Composting

Final Report

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“Going Local”
CDAE 195
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Goals

Our group, the food waste and composting group, worked with the University of Vermont physical plant, specifically Erica Spiegel and Corey Berman. Our main goal of the project was to take a comprehensive look at the current system of composting here at the University and to find ways to improve upon that system. To achieve this overall goal we created several smaller more specific goals that seemed to be more achievable. These goals included creating some sort of qualitative as well as quantitative map of the waste stream at the university. The map would follow food from its preparation in the dining facilities to its disposal as compost or as “trash”. Our next goal was to identify the strengths and weaknesses of the current system. By doing this it would enable us to see what is working well and what needs improvement within the system. We also planned to create a basic cost/benefit analysis for increasing composting and identify the potential for composting within the residential facilities. Our final goal was to create an educational tool, such as a large poster board that would incorporate all of our results and conclusions. This tool could be used to educate students about composting and the importance of strengthening the current system.

Methods

In order to achieve these rather lofty goals it was essential for us to breakdown even our smaller goals into a work plan. This plan included weekly tasks for all members of the group as well as planned meeting times to make sure that everything was on track. One of our main tasks were to develop a survey which we would administer in the residence halls. One group of students to be survey was living within the “green dorm” an

ecologically friendly living site. We believed that these students would be more interested in composting. The other group consisted of students living within a non-programmed residential hall. The survey would provide us with information on how much interest there was within the dorms for setting up residential composting. Our next task was to interview Paul from All Cycle, the man who collects all of the University's compost and takes it to the Intervale. This was done in order to identify areas that could use improvement from the side of collection and to find out how possible it would be to add additional compost collection sites. Finally we attended a presentation by a representative from Sodexo the food provider for the University. We were looking to find areas that could use improvement from their perspective. Once these tasks had been completed we compiled all of our results and drew conclusions from them.

Results

Survey:

The results of the survey indicate that there is significant interest within parts of the student body to extend the composting program to the residence halls. The sampling of students from both the Green House residence hall and a non-programmed residence hall was effective in demonstrating in which parts of the student body the incentive exists, and how an extension might be applied in order to achieve the greatest degree of participation.

The interest in involvement with the composting program is inconsistent on the floor of the non-programmed dormitory; however, there is a strong interest on the surveyed floor of the Green House. Students on both floors have similar degrees of

experience composting, but the students in the Green House are more likely to participate in the existing composting program and many have begun to compost in their rooms. Students on both floors also prepare a comparable amount of food in their rooms or on their floors. The incentive to compost is highest when the composting receptacle is located on the floor which the students live. It significantly diminishes when the student is responsible for transporting the compost to the ground floor of the building or to a central location located somewhere else on campus. [all results referred to available in appendix]

Trash Sort:

The trash sort data provided by the Eco-Reps represents the results of demonstrations conducted using residence hall waste in March 2005, and October 2006. The 2005 results show that: 51.5% of the waste by weight is true “trash”, 36.52% is recyclable, and 11.98% is compostable food waste. The 2006 results show that: 43.61% of the waste by weight is true “trash”, 30.49% is recyclable, and 25.90% is compostable. [graphs of the trash sort are in the appendix of the report]

All Cycle Waste:

All Cycle contributed to this project by allowing the group to shadow Paul, the employee responsible for compost pick-up, and by providing the group with its audit data. Following Paul gave the group an impression of the volume of waste collected each day, at each location, as well as an impression of some of the problematic aspects of the composting system.

Compost is wet, heavy and messy. It is currently bagged and put in typical waste containers which are then pushed to the loading mechanism on the truck, which then empties them into the bed of the truck. There are photographs from the shadowing available which document this process very well. The truck itself is designed for trash, not food waste. The containers are also designed for trash. This is problematic because the compost spills out of its bags over the bed of the truck when it is dumped, making for a very messy drop-off at the Intervale Center. Contamination has been a significant problem in the past, but Paul has noticed a great deal less since Sodexo employees have become responsible for sorting the trash at some dining halls. Contamination is a particularly frustrating difficulty as nobody is responsible for determining what can be composted and what is too contaminated. Paul does not want to sort through the compost searching for contamination, and if there is a little visible, he must make the decision whether to accept it as compostable or not.

The All Cycle audit was conducted from September 25 -29, 2006, and confirms that UVM is increasing its compost output. The total compost collected was 4.96 tons, which is 1.71 more tons than All Cycle's bid estimated. The estimated cost difference per month is a total of \$248.11. Therefore, All Cycle decided to increase its collection fees.

Sodexo/Dining Services:

Melissa Zelazney, the General Manager of Sodexo on campus, identified a number of problematic aspects of the composting system: the wet/heavy nature of the compost, the small size of loading docks, the current containers, the collection truck, the

difficulty of tracking weights, and grease collection, student contamination, and retail packaging. The necessity of setting up a clean, efficient system to deal with the compost was also emphasized by Paul. Adjusting the loading docks is a task which seems more difficult than finding a proper collection truck, containers, and routing the grease to a collection bin on the loading dock. Student contamination is being addressed, it is only a problem in the Simpson, Marche, and Cook dining facilities, where students separate their wastes. At Harris Millis, where Sodexo employees now separate the waste, the amount of compost output has tripled. The retail foods' packaging is the primary contamination problem which Melissa sites within the food services. Compostable silverware, and cups are being implemented; however, in general the packaging is not compostable.

Cost/Benefit Analysis:

The cost benefit analysis uses one residence hall, Harris Millis, as its basis. As of 2006 compost cost \$25 per ton for UVM to dispose of. Trash, on the other hand, cost \$90.72 per ton. Between July of 2005 and June of 2006, there was 76.69 tons of trash collected at Harris Millis. The 2006 trash sort data, as described previously, attest to 25.9% of trash being compostable. This means that there is 19.86 tons of compostable material landfilled each year, costing UVM an extra \$1305.30.

Map of UVM Waste Stream:

The map of the UVM waste stream, created by Garret Bergey, is a simple visual diagram of where the waste from UVM is generated, and where it is transported to. It

includes data from the cost/benefit analysis, as well as the trash sort, in order to impress upon the viewer the incomplete nature of the current program, and how individual effort on the part of the student can positively affect the total amount composted. [the map itself is in the appendix of the report]

Conclusions

Our conclusions and recommendations fall into five general categories:

Education and Policy:

Education concerning the food and waste systems on and off-campus can be improved. The economic and ecological consequences of composting should be focused on, with particular attention to how the individual student can compost effectively. Posters, tutorials, or other educational tools can be provided in the dining halls instructing students how to separate trash, and the consequences of doing so, or not doing so.

There is also the potential for a policy requiring student and faculty participation in the composting program. This is a choice which implicates the members of the UVM community with responsibility for their actions. The terms of the policy are not suggested here, only the benefits of impressing upon the community the scope of its responsibilities.

Refining the Current Process:

A number of aspects of the current composting system at UVM have been described as problematic in this report, particular: student composting in the dining halls, grease collection, collection containers, loading docks, and the collection vehicle. Our

group has not sufficiently researched alternatives to the methods currently used, but this is an excellent area for continued work in future semesters.

Work to Expand the Composting Program:

Just as the university should work to educate students and staff members of the importance of composting, it should be taking steps to increase the efficiency and scope of the current program. This is particularly relevant considering UVM's goal of being considered the, "environmental university". The university could approach the goal of composting 100% of its food waste in a number of ways, such as: projecting future dates by which it will accomplish a particular percentage increase, or by expanding the program to different aspects of the campus (residence halls, faculty and staff buildings, administrative buildings and offices, etc.) over time. Considering the response by the Green House residence community, this group would recommend beginning with a pilot program there. The goal of composting 100% of the food waste created at UVM is the university's responsibility to the UVM community, the Burlington community, and the greater ecological community.

Amend the Pilot Residence Hall Composting Program:

There is currently a pilot composting program in the residence halls. It provides students with a centrally located composting site where they can bring their compost. In consideration of our survey results, we would recommend locating a compost disposal site (container) on each floor of residence halls. Nearly all students, both Green House and non-programmed, responded that they would be willing to compost if they do not have to walk further than their floor to do so. The results of the pilot program would probably be more favorable if this could be arranged. The problematic aspects of doing

so include the lack of reliable containers and personnel to bring the compost from the floors to a collection site. The container element, as attested to above, has not been researched by our group, and therefore we can make few suggestions other than researching comparable programs at other universities and businesses. The cleaning staff of the residence halls has said that they are not interested in hauling more waste; therefore, we make two suggestions: make a rotating list for students, making them responsible for transporting the compost, or assign the job to the Eco-Reps who are paid employees of the university.

Communication:

Most importantly, communication between groups and individuals working to accomplish similar goals at the university must be facilitated. This project relied upon a number of groups and people for information, and often times they were not aware that our project existed. The university could approach this in a number of ways. One possibility is an online forum categorized by subject on which groups and individuals can post projects and ideas and communicate with one another. The facilitation of communication among people at UVM can expand networks and the potential for projects, and reduce a good deal of redundant work.

Recommendations

As a result of our findings, the Food Waste Recovery group has found opportunities for expanding the macro-composting efforts of the University of Vermont to allow for greater efficiency and effectiveness. We therefore propose that the University:

- ◇ Expand the current education initiative on campus

- ◇ Refine current process through infrastructure re-alignment
- ◇ Work to expand composting on a University-wide level

As a part of the current education package around composting, ECO-Reps, students hired from residence halls around campus, play an integral part. These ECO-Reps put up bulletin boards and apply other tools to increase awareness, but are only employed for up to four hours per week. To expand awareness around campus about composting, perhaps these ECO-Reps may be hired for additional hours or may be combined with other infrastructure programs, such as the Residential Advisors, to expand resources and creative options. As presented in class, the utilization of more knowledge-intensive bulletin boards in more visible parts of campus provides more opportunities to extend knowledge and resources to all students in the community.

Due to infrastructure short-fallings, the University is not operating at maximum efficiency in regards to composting and food waste management. Post-consumer waste is a highly debated part of the waste stream, because, although students should be empowered with the accountability for their waste, it is proven that the majority of students will not participate in a composting program. However, the Food Waste Recovery team strongly believes that students will participate in an accountability-based composting program if the appropriate education mechanisms are put into place.

Therefore, as this is a subject where many universities are unsuccessful, we propose that greater research be done involving directly the student population eating on campus. By performing extensive surveys and tabling near waste receptacles in the campus eateries, student knowledge will expand and eventually will empower students to participate in proper post-consumer waste disposal. The Food Waste Recovery team also suggests the

University revise current infrastructure in the disposal process. By interviewing Sodexo management and workers, the University will find that current infrastructure may be causing the university to operate below efficiency due to financial and time losses.

Grease collection is a process which should be looked at, as currently it is a burdensome process. At other universities, a grease shoot runs from the kitchen worker to the waste collection vehicle, so perhaps this is a process UVM can consider. Containers for holding waste and compost should be expanded. The loading docks and containers are physically ill-suited for one another, which makes waste disposal a messy process. By realigning the loading docks and waste containers, the University will save on clean-up costs and will make the waste disposal process more efficient.

Chittenden County, All-Cycle, and the University of Vermont should evaluate the compost disposal truck. Currently, the compost collector uses a standard trash truck, which is wholly unsuitable for compost pick-up, as compost requires different waste compaction processes. Therefore, this is an area in which collaboration is necessary, as the county, university, and private sectors are operating below max efficiency due to this infrastructural short-falling.

By prioritizing and making a commitment to composting on this campus, the University of Vermont will increase its efficiency economically and environmentally. By refining current infrastructure and through community education and mobilization, the University will catch many of the current sunk costs. As our research has proven, composting saves a great deal of money and is an environmentally-sound process, which furthers the University mission to be 'The Green University'.

Lessons Learned

This has been a semester of learning and growth. The entire UVM campus learned sorrow and grief from the loss of our classmate, Michelle Gardner-Quinn. We learned to find support in our classmates and navigate through the grief process as a group. An important lesson learned for everyone was how quickly and intensely we make connections with time and place, just as we see in Ms. Gardner-Quinn's life.

The Food Waste Recovery group learned to navigate the communication course of the University and those who operate around its parameters. Besides learning the actual process of compost collection and production, we learned to communicate with community partners and liaison with graduate level students and professors. This is an important skill to have as the professional world may not be as drastic a realization when we get there.

We learned how the academic life can be merged with the community to increase resources and knowledge base. This was the first service-learning class some of our group had taken, and it served to enlighten and promote the mission of sustainable learning. Working with the community, like speaking with Paul the Compost-Collector, furthered our knowledge of the composting process and brought greater understanding of our place in the University as a whole. We learned much about the resources the Web offers as supplements to the education process, and how to use new technology to reach further communities.

Learning to write critical reflections was a frustrating but rewarding process. Following a particular format was challenging, as we had to 'un-learn' some of the natural writing processes we have become accustomed to following to write the

reflection. However, learning to critically analyze an experience has been highly rewarding, as we sort our thoughts out in a more manageable way as a result of the DEAL reflective process.

Much of the knowledge we gained is incommunicable. Working within a small group has been a tremendous experience, especially considering each of our members' diverse backgrounds. By combining our knowledge, we have learned about ourselves, each other, and the importance of such experiences in the educative process.

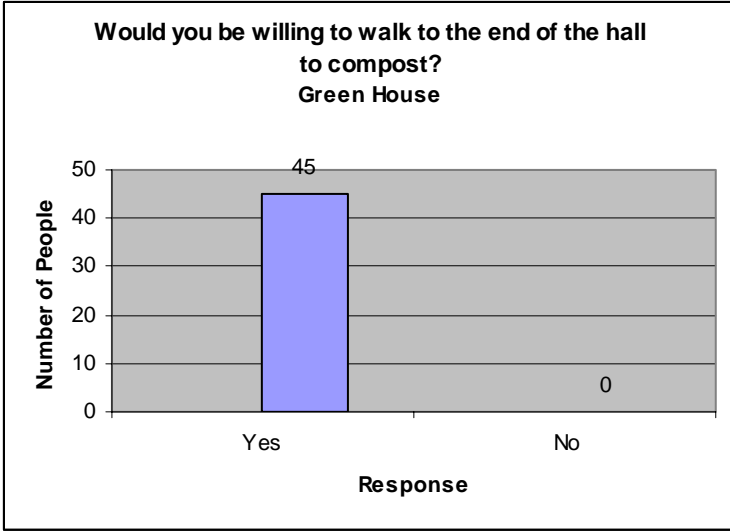
Appendix:

Survey

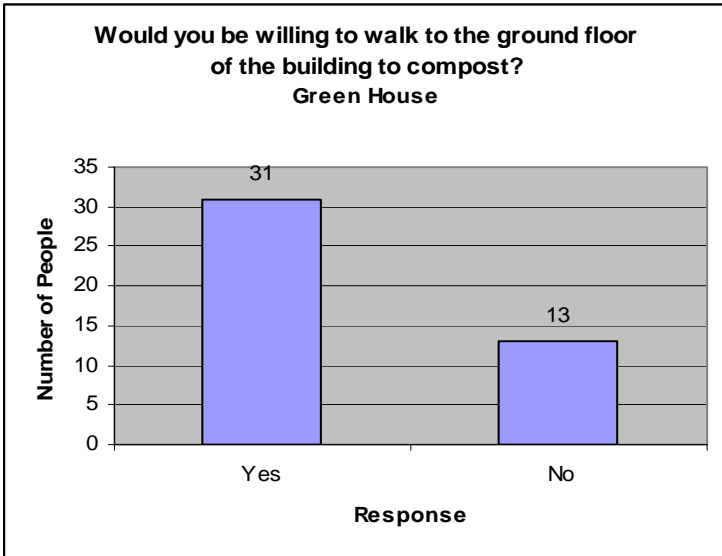
Survey Results

Waste Sort Results

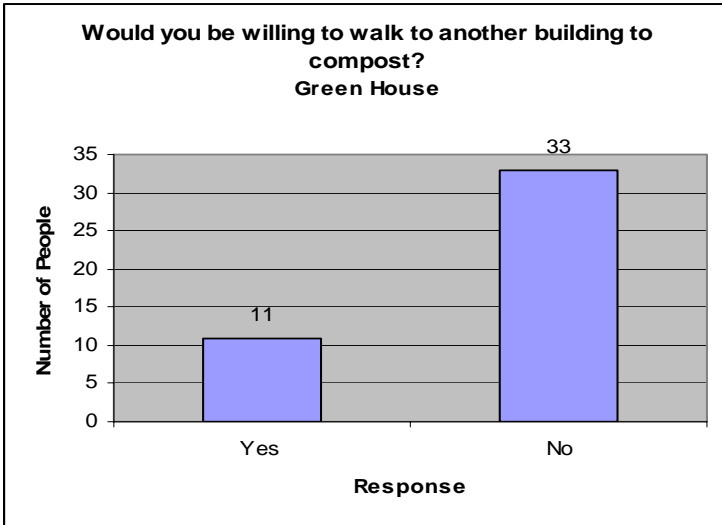
Waste Stream map



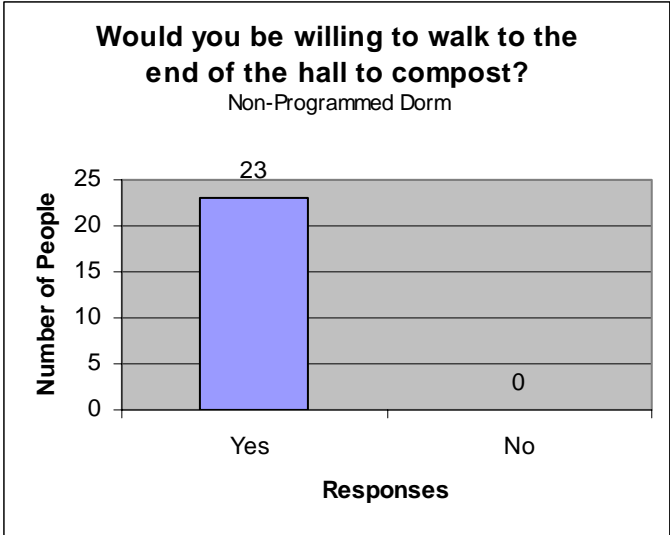
100 % of students from the Green House Dorm surveyed said that they would walk to the end of the hall in order to compost.



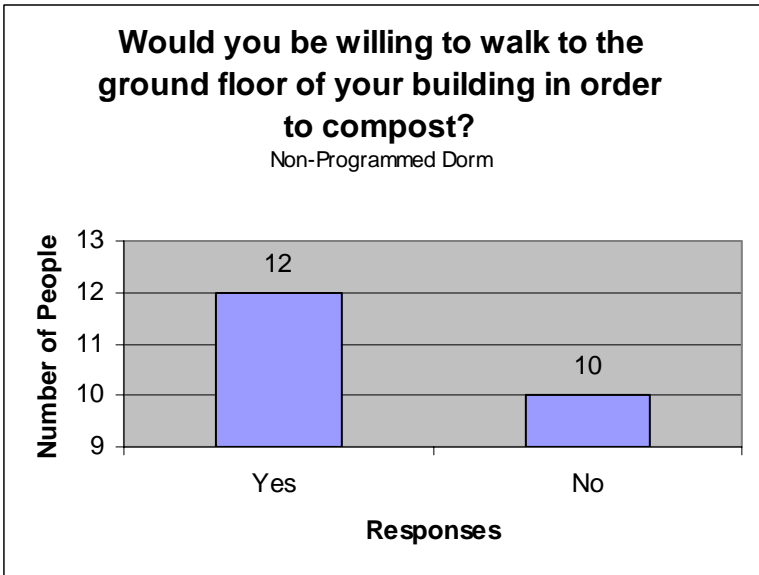
70% Yes
30% No



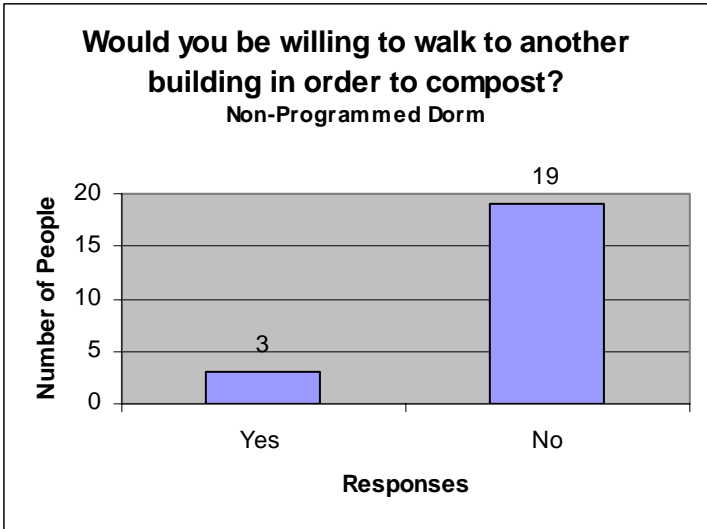
25% Yes
75% No



100% of students from the Non-Programmed Dorm surveyed also said that they would be willing to walk to the end of the hall in order to compost.



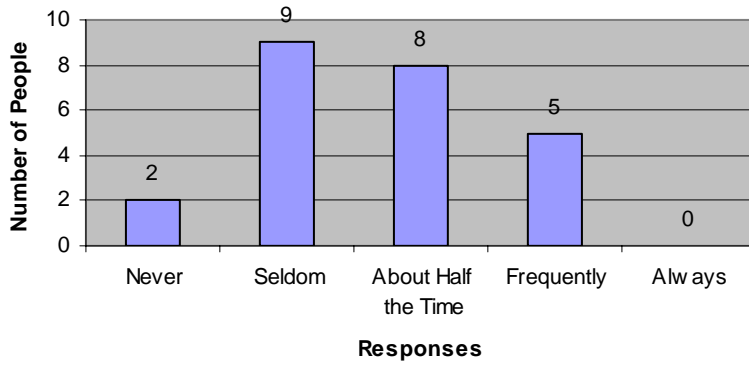
55% Yes
45% No



14% Yes
86% No

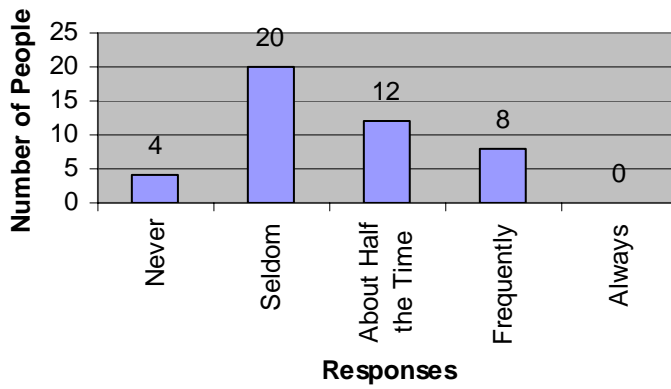
How often do you prepare meals in your dorm room?

Non-Programmed Dorm



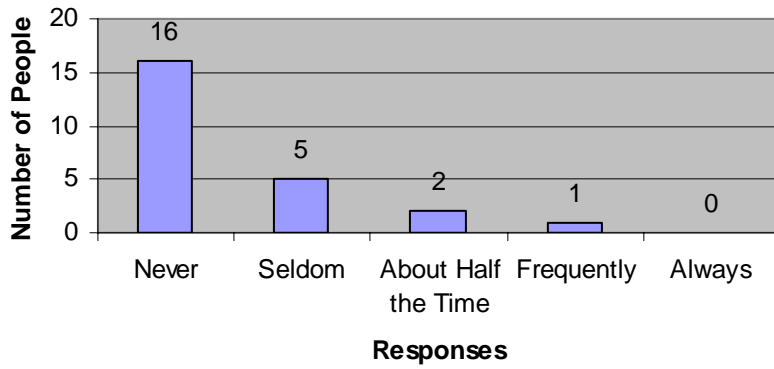
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Green House



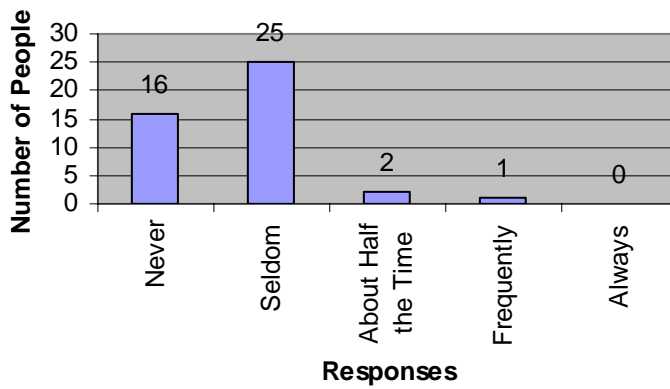
How often do you prepare meals in your common kitchen/cooking area?

Non-Programmed Dorm



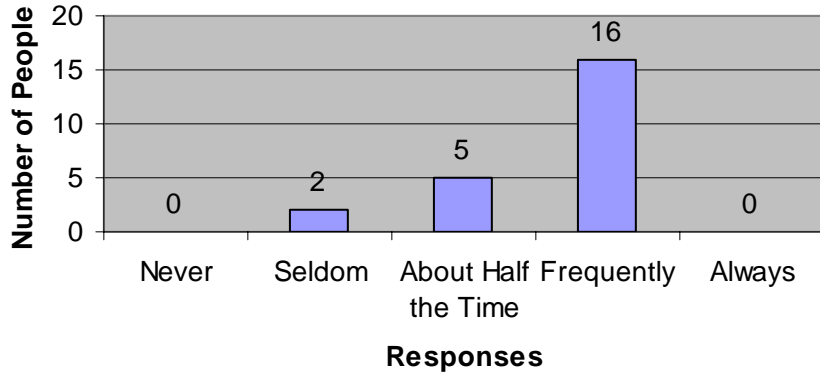
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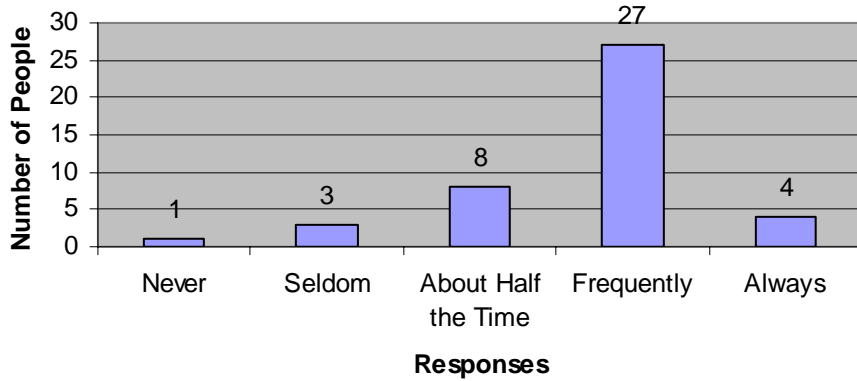
How often do you eat meals at the residence dining halls?

Non-Programmed Dorm



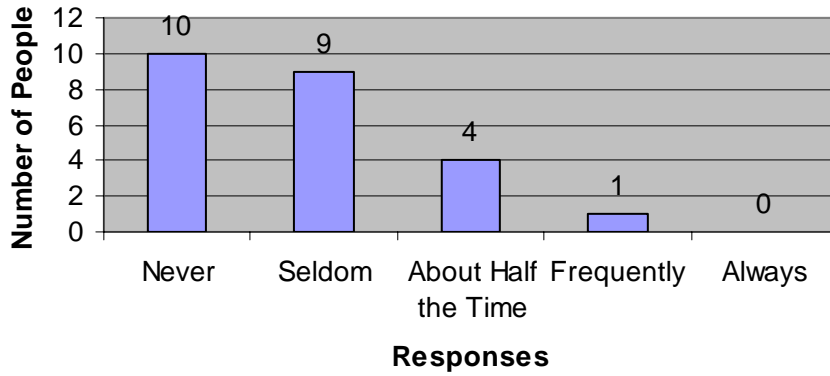
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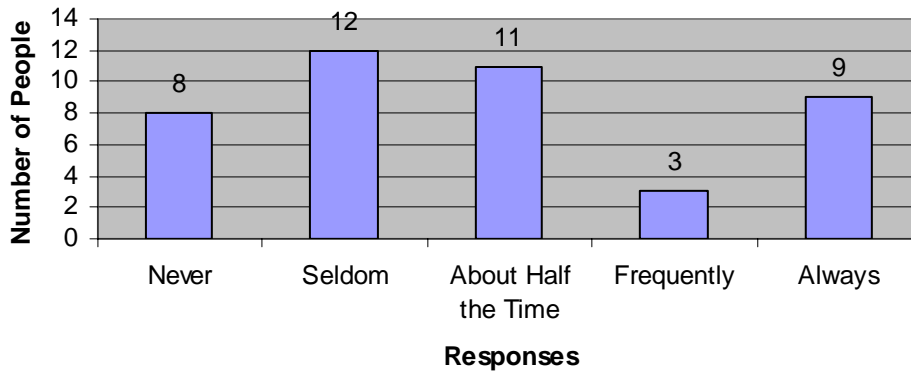
Do you compost in your dorm (room or by community)?

Non-Programmed Dorm



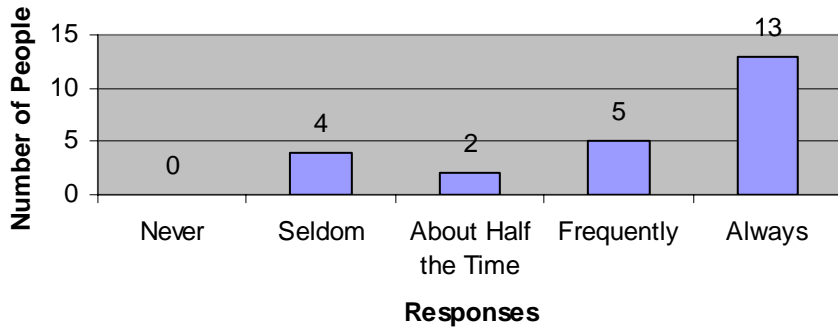
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Green House



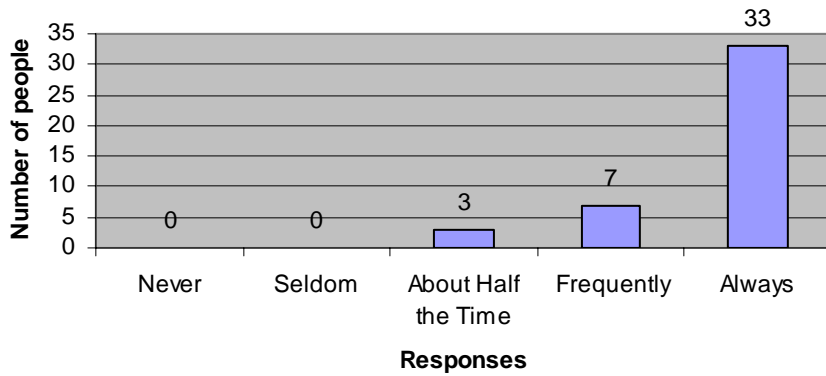
Do you separate your recycling from your other waste?

Non-Programmed Dorm



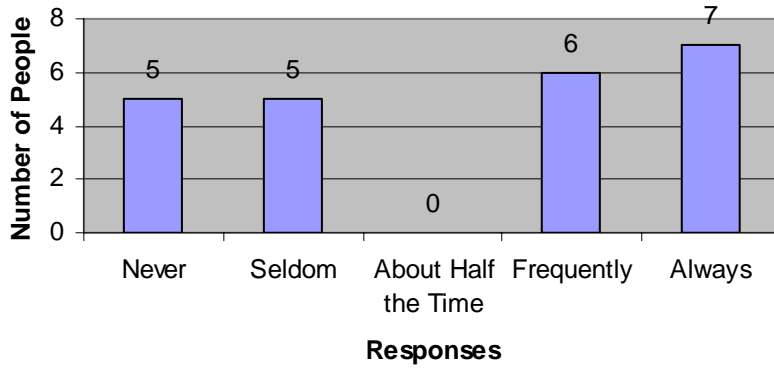
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Green House



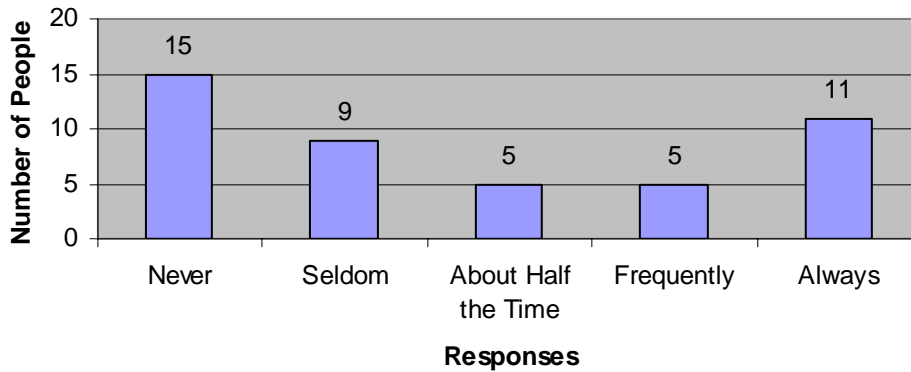
Do you compost at home (your permanent dwelling) or have you in the past?

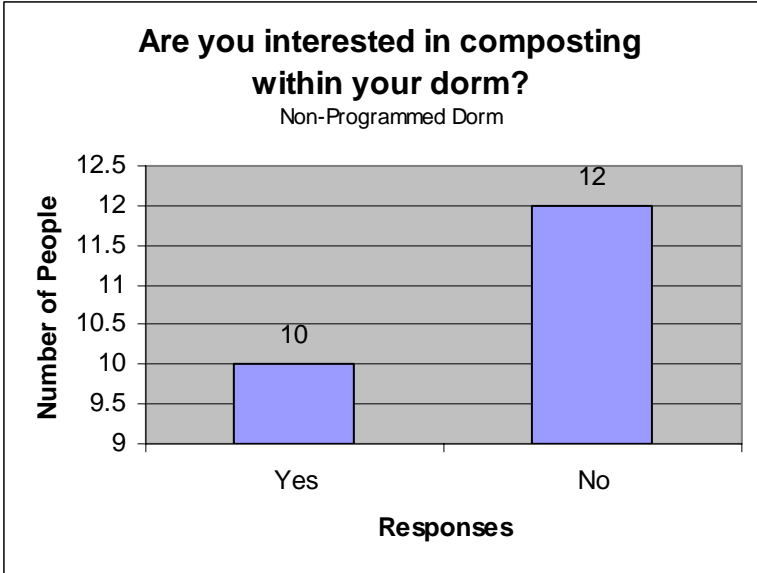
Non-Programmed Dorm



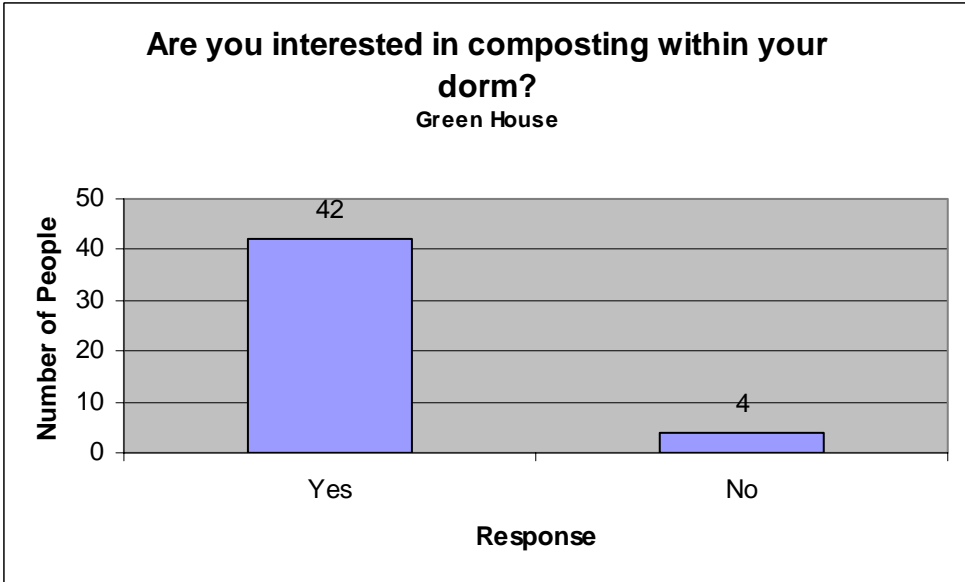
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Green House



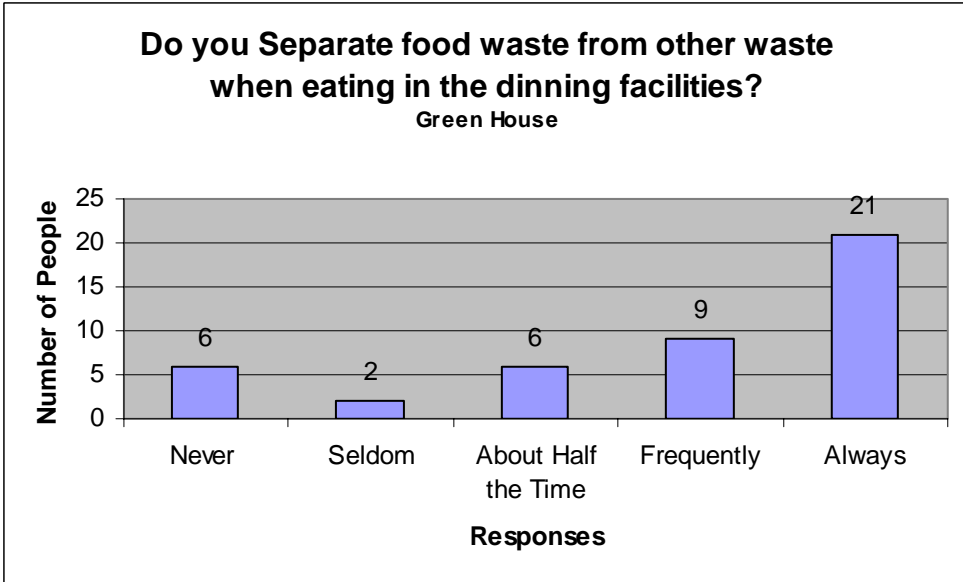


45% Yes
 55% No



91% Yes
 9% No

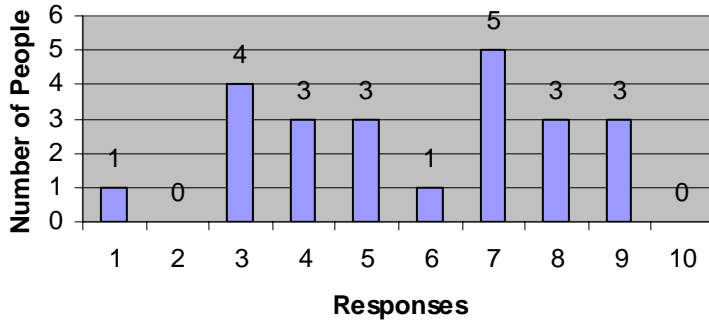
Many people left this question blank. When this occurred that survey was marked as a "No".



This question is a bit skewed. Several students replied that they never separate their food waste from their other waste when eating at the residence halls because it is done for them. At Harris/Millis dining facility plates are placed on a conveyor belt. Food and waste are then separated for the students by the dining hall staff.

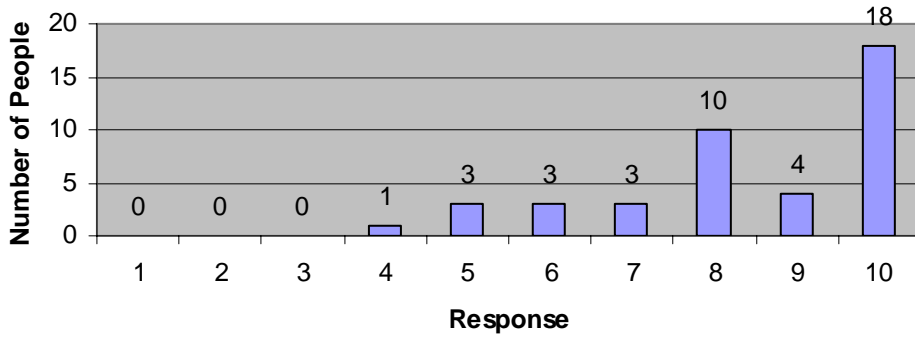
On a scale of 1-10, describe your interest in participating in a composting program within your dorm.

Non-Programmed Dorm



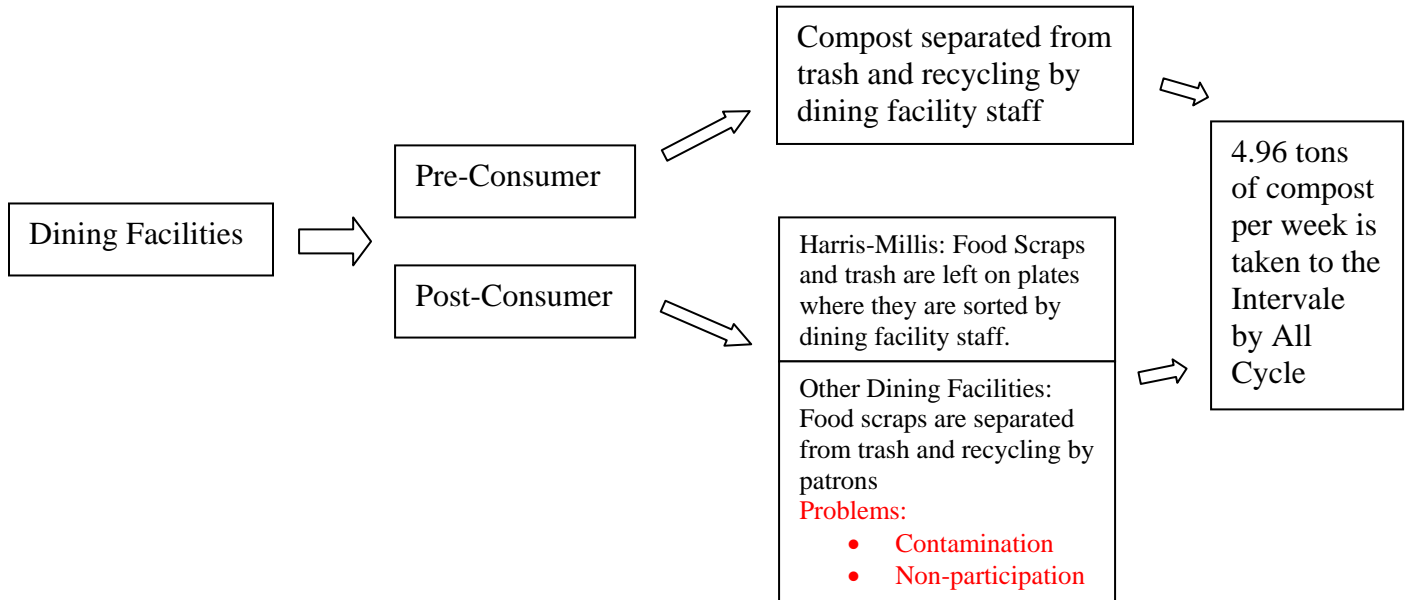
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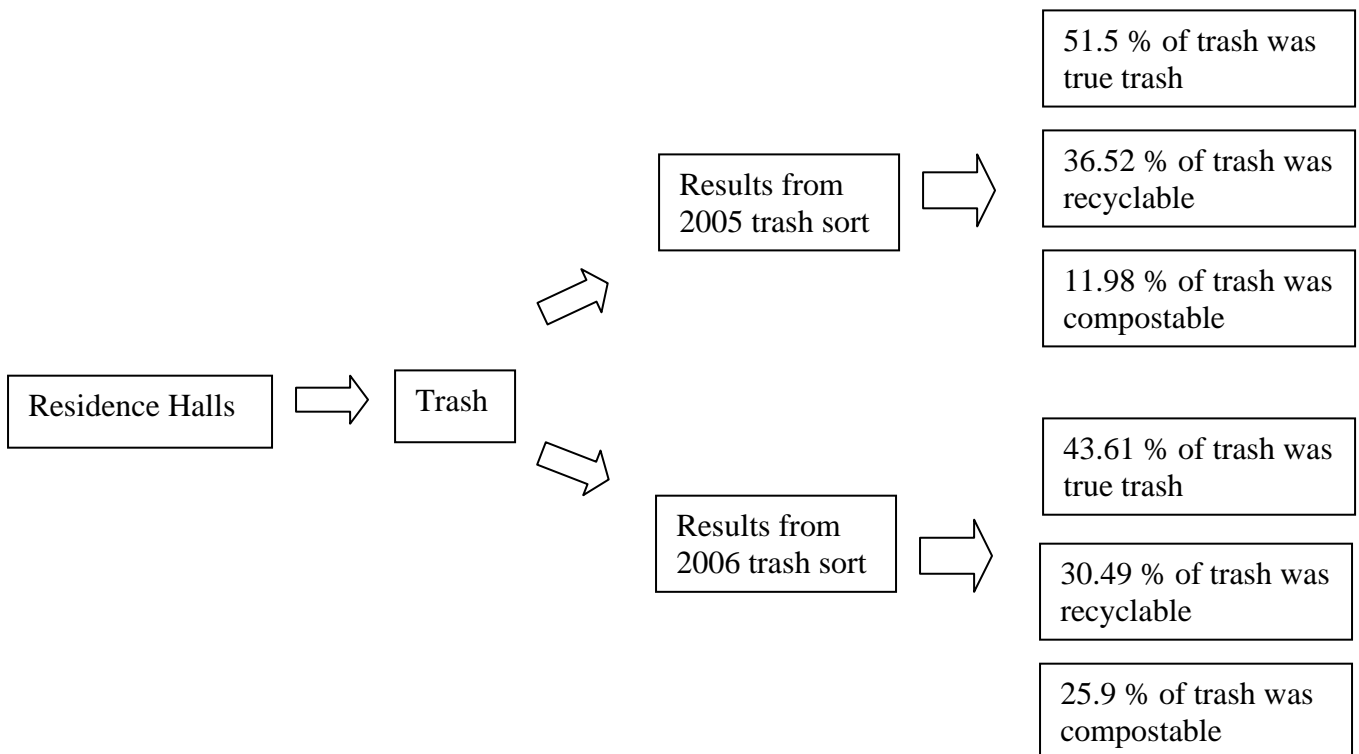


Food Waste Stream “Map”

On Average UVM collects 4.96 tons of compost per week



Currently the University is only collecting compost from the dining facilities however; pilot projects are underway to attempt to begin composting within the residence halls.



Compost makes up a significant amount of the trash that’s sent to the landfill from the dorms. This is a problem not only environmentally but economically. On average UVM pays \$ 25 per ton of compost as opposed to \$ 90.72 per ton of trash. During 2005-2006 (July-June) 76.69 tons of trash were collected from the Harris/Millis residence hall. Using the results from the 2006 trash sort 19.86 tons of compost tons of compostable materials were sent to the landfill costing UVM approximately \$ 1305.20 more than composting would.