

James Trotta
GEOS 206
Final Paper

Williams College Dining Services “Mooving toward a sustainable future”



Figure 1. An example of food waste in dining halls. Removing trays from the Williams College Dining Halls could potentially cut down the amount of waste generated by students at meals, the amount of water needed to wash trays, and reduce emissions from heating water.

Introduction

The Williams College Dining Halls are some of the largest, per square foot electricity users on the campus (Figure 2). Much of this electricity is used to power large, industrial sized refrigeration units; however, other electricity uses include stoves, drink machines, salad-bar coolers, toaster ovens, and other appliances. Other, unmeasured sources of emissions are fossil fuels used to grow/transport food, emissions as a result of composting, and fossil fuels used to heat the dining halls. Williams Dining Services has already taken numerous steps to reduce their impact on the environment including:

- Spending 20 cents per meal on premium local and organic foods, increasing the college's consumption of local and organic food by 30%.
- Hiring a student summer intern to research and connect with sustainable food producers in the Berkshires.

- Replaced all conventional milk with milk from the grass-fed, hormone-free cows of Highlawn Farm in Lee, MA.
- Offering local, grass-fed beef hamburgers nightly at Dodd House and Mission Park.
- Purchased virtually all of their summer vegetables, and a large proportion of their winter storage vegetables, from a 60-acre family farm located 10 minutes away from the college
- Purchasing organic shiitake mushrooms, organic honey, low-spray apples, organic granola, ice cream, and several varieties of cheeses from local purveyors.
- Recycling all used cardboard, paper, metal, plastic, and glass
- Collecting roughly 20 tons of food waste annually from dining halls, to be composted at local farms.
- Replacing all plastic and paper service ware (plates, cups, utensils) in use on campus with corn-based, biodegradable products.
- Installing new garbage disposals in Dodd and Greylock that reduced water consumption from 1,200 gallons of water to 3 gallons per meal
- Installing an energy efficient ventilation system in Greylock that uses sensors to operate only when demand requires.
- Equipping 20 (out of approximately 30) campus vending machines with Vending Miser sensors, which cut both the annual electricity use and CO2 emissions of a vending machine in half.
- Purchasing an electric vehicle for food deliveries on campus.
- Replacing all rinse jet sprayers on campus with low distribution spray heads, saving two gallons of water per minute with an accumulated water savings of over one million gallons annually—about 0.02% of the College's average annual 70 million gallons of water consumption.
- Replacing the Greylock dish machine in the summer of '06, resulting in an annual water savings of 780,000 gallons of water while also greatly reducing energy costs of the water needed to be heated.¹

Despite all of these steps, I still feel that there is much more that can be done. My project for GEOS 206 focused on Driscoll Dining Hall and ways to reduce not only electricity usage but emissions stemming from all aspects of the food service industry, along with an analysis of Driscoll's new tray-less policy.

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¹ <http://www.williams.edu/admin/dining/about/environment>

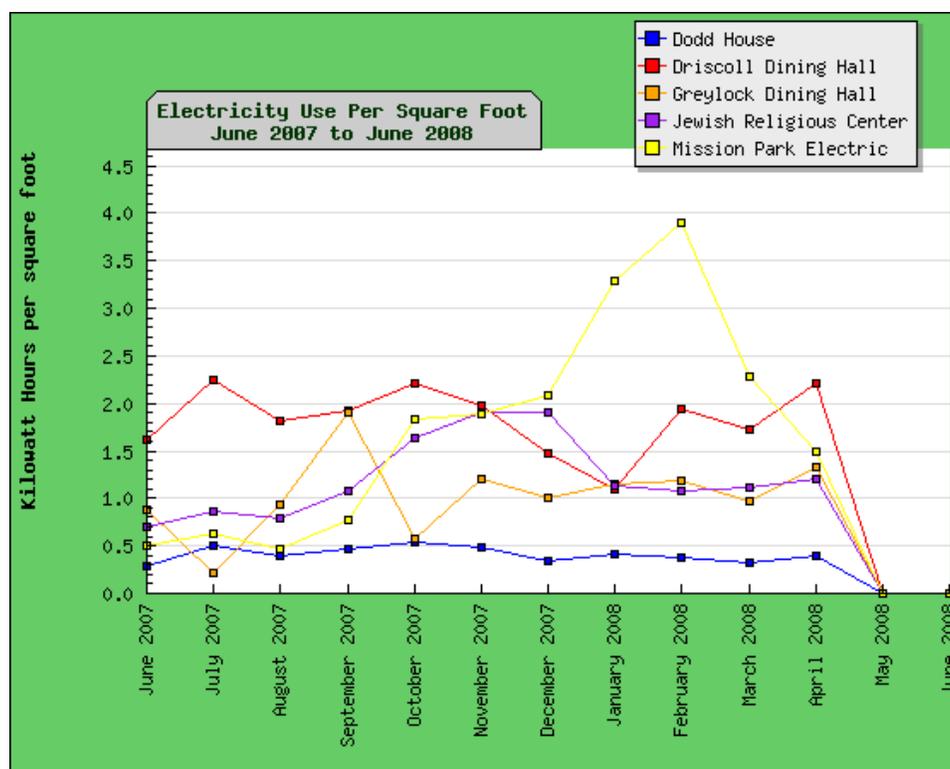


Figure 2. Electricity usage per Square foot of three major dining halls (Dodd, Greylock, and Driscoll) Mission and Whitmans Dining Halls were not included due to lack of information. The Jewish Religious Center (JRC) is included because it acts as a small kosher kitchen that regularly serves meals (about once a week.) Mission Park Electricity usage is included for comparison.

Driscoll Dining Hall Overview

Although it is one of the smaller dining halls on campus, I chose to investigate Driscoll Dining Hall (Figure 3). Driscoll is a fairly good representation of the dining halls for two main reasons: both its electricity use per square foot (Figure 2) and meals served per day (Figure 3) are comparable with the other dining halls. Driscoll is also a relatively popular dining hall (it won 3 “student choice” awards in the past 5 years.) In addition, Driscoll has also been a leader in serving local food, reducing food waste, and lowering emissions, and its programs should be considered as part of the larger initiative to make Dining Services more sustainable.

Driscoll Dining Hall, because of its non-centralized location (Figure 4) tends to service the “Odd Quad” (Resident buildings: Currier, Prospect, Fitch, Fayweather, and East). Driscoll also frequently stays open later than most dining halls to service the sports teams that arrive back on campus late after practice such as the crew team. Because of its location and hours, Driscoll tends to serve the same students every day, while larger, more central dining halls, such as Mission and Paresky, service a wider range of students. Those students who eat at Driscoll are familiar with the service and thus not afraid to voice complaints about new policies (see **Tray-less Driscoll** below).

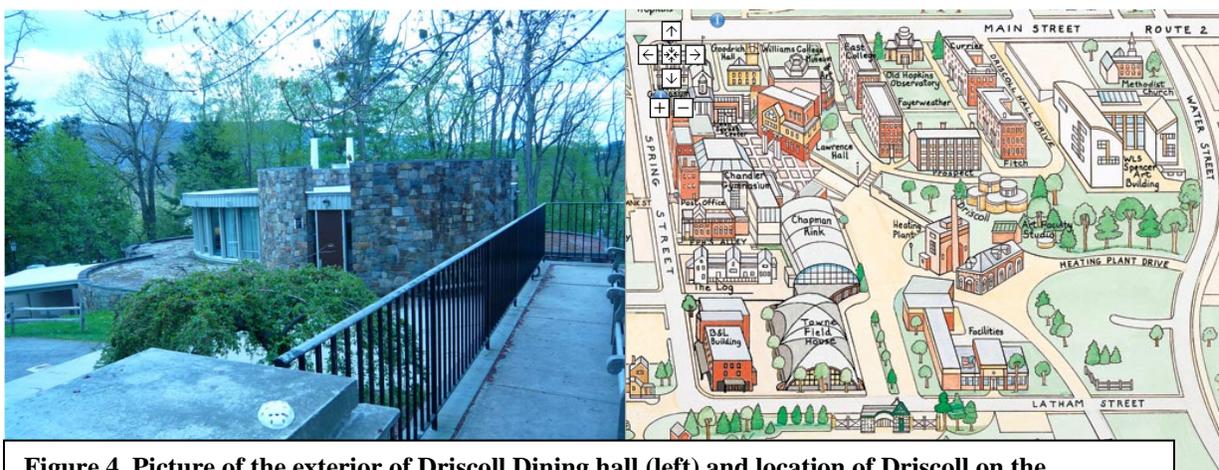


Figure 4. Picture of the exterior of Driscoll Dining hall (left) and location of Driscoll on the Williams College Campus (right)

Emissions Sources-Refrigeration

Excluding heating, Driscoll’s biggest source of emissions is electricity usage. Although the building uses most electricity between the hours of 5:00 AM and 8:00 PM,

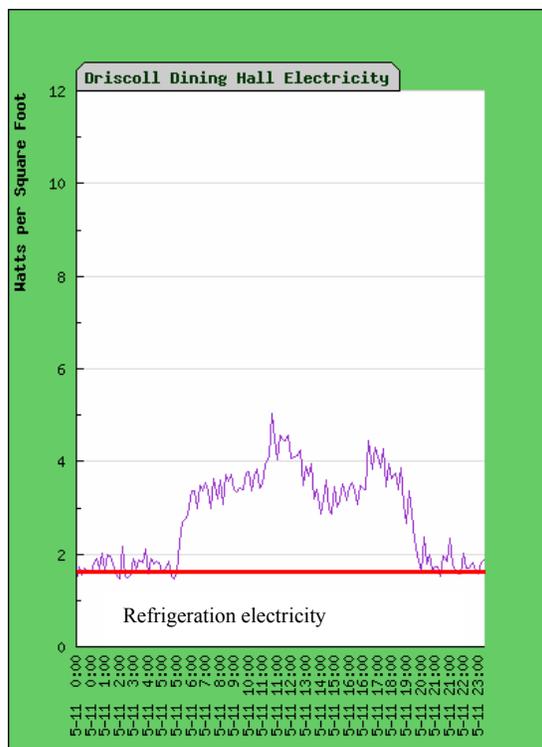


Figure 5. Electricity Usage of Driscoll Dining hall for 24 hours. The red line shows baseline electricity usage. All electricity below the red line is interpreted to be used by the refrigeration unit (an average of 15kw per hour which is 360kw per day).

usage is continuous throughout the night when the building isn't populated, due to the refrigeration unit, ventilation, and emergency lights when needed (Figure 5).

□□□□ Fortunately, I was able to talk with a representative of Four Seasons

Refrigeration, the company that installs and maintains the units used by the college. He explained that refrigeration units are

composed of two parts: the storage area and

the compressor. The compressor, or cooler, can be water, air or glycol based--the latter being the most efficient. He explained to me that the glycol unit for Driscoll was installed

outside along with the compressor due to a lack of space. This compressor is only 15 years old and relatively efficient; however, one suggestion that the representative did give to reduce electricity use was to try and move the compressor inside the building.

Currently the compressor is stored in a shed-like structure outside where it is subject to the extreme temperatures of the New England climate. These temperature fluctuations can decrease the efficiency of these units over a long period of time. As of now, however, moving the compressor might prove to be more cost than it is worth. Insulating the compressor shed is an alternative to moving the unit; however, a cost-benefit analysis has not yet been conducted.

Composting

Currently, composting programs are set up in every dining hall. Students place their excess food in bins and are asked to separate out paper napkins and cups from the food waste. In some cases (like Dodd and Greylock) this sorting is done by staff, however in other dining halls (including Driscoll) students are asked to bus their own trays. This often results in complications (almost certainly due to a lack of patience by students), and napkins and paper products end up in the compost bins due to poor signage. Farmers, who normally take this food waste to be used as compost and eventually fertilizer, will not take the College's compost if it is contaminated with paper products. Even though many of Williams's paper products are biodegradable, the farmers complain that the napkins get torn up and start to blow around.

In order to solve this problem, Driscoll has two options: The first is to have staff bus the trays, which would likely require another full time employee, and the second is to promote awareness among students and ask them to take more responsibility for their food waste. I proposed that putting up a sign to explain the composting process, and we are currently waiting for results; however, perhaps a more efficient solution would be to have the dining hall staff take care of busing trays.

Gas Usage in Driscoll

All of Driscoll's cooking appliances run on natural gas. This includes a fryer, a grill, two ovens and a large heater for keeping meals warm. Driscoll is heated via the cogeneration plant. The appliances in Driscoll are fairly old (40+ years) and will likely be replaced soon with newer, more energy-efficient models. While these models will reduce consumption of natural gas, the emissions due to cooking are low compared with those due to heating. Updating appliances will therefore not significantly reduce emissions.

Tray-less Driscoll



Figure 6. Other schools such as Middlebury College have removed trays from their dining halls. (Source: <http://media.collegepublisher.com/media/paper446/stills/edyy485o.jpg>)

Recently, Driscoll instituted a new tray-less policy whereby students, instead of using a tray to put plates, drinks, silverware etc. on are forced to make multiple trips if they want more food.

This policy was inspired by similar programs at other schools that experienced quick and noticeable

results. Dartmouth, for example, instituted an equivalent policy and food waste reportedly dropped about 50%.

Currently, Williams Dining Services produce about 20 tons of food waste every year. Although this policy originally started out only as "Tray-less Thursday," the success of the trial runs has prompted the dining hall to go tray-less every day. Since its implementation, the tray-less policy has reduced the amount of food waste by nearly 40%. Gayle Donohue, the director/manager of Driscoll Dining Hall says that this isn't as much a reduction in volume as it is in mass. She believes that the lack of trays forces

students to make multiple trips if they want more than two drinks. So instead of having the ability to balance five glasses on your tray, you have to make separate trips for all your drinks. This apparently caused a large reduction of liquid in the compost bin, which greatly reduced its weight.

There has also been a significant savings in water usage because of the tray-less policy. Driscoll, before the new policy, had to wash about 600 trays a day (4200 per week). Donohue estimates that by not having to wash all of these trays, the dining hall is saving about 70 gallons of water a day (roughly 17,000 gallons during the academic year) and as well as the energy required to heat that water (Chung, 2008.)

Student Backlash against Tray-less Driscoll

As mentioned earlier, students who regularly are patrons at Driscoll are not afraid to complain when something they don't like occurs. Student responses to the new tray-less policy were mostly negative. Students did not like the inconvenience of not having a tray. In fact, a few weeks ago some students founded the "Williams College Quality of Life Defense Council" (Figure 6). This group felt that the College made too many changes that affect students without consulting them. The group claims that any action that reduces quality of student life or increases tuition and that doesn't have a reasonable environmental impact is wrong. The creator of this group chose to remain anonymous; however here are some quotes from the Williams Students Online message board about this topic (Note: I have not included names here, but anyone with a Williams Student login can see this thread themselves at wso.williams.edu)

- "I agree that the decisions the College has been making toward becoming more environmentally friendly should be open to public discussion before the fact (like when

they changed Paresky hours), but I really don't think low-flow showers and faucets would ruin my life here..."

- I do agree that the administration tends to make decisions without, or with ignoring, student input. So I support that message, but their specific "causes" are less a big deal.
- The recent changes seem like an unnecessary inconvenience for the student body. Also, simply making the changes without giving the opposition a chance to make a case doesn't seem very progressive...
- You are free to say what you want. The administration can *choose* to listen to you, or to not listen. Why do you need your views validated by thoughtful listening from Hopkins Hall?

STUDENTS OF WILLIAMS COLLEGE

Though it is not generally known the amenities we enjoy are under threat. The college plans to make all dining halls

TRAYLESS DINING HALLS

next year, just as Driscoll is now. Furthermore they plan to replace all faucets and showerheads in all dorms with

LOW FLOW

faucets and showerheads, as recently added to Williams Hall. These decisions have been made without consultation of the body of

CONTRARY STUDENT OPINION

and must be debated before enactment. The amenities we all enjoy are in jeopardy. Their safety lies in

NOISE

which will force those who do should pay attention to student opinion and do not to listen. TELL your FRIENDS, STUDENT GOVERNMENT REPRESENTATIVES and ADMINISTRATORS what you think! Let your voice be heard!

DEFEND WILLIAMS

FOR INFORMATION CHECK OUT THE FACEBOOK GROUP: "WILLIAMS COLLEGE QUALITY OF LIFE DEFENCE COUNCIL"
A PETITION IS COMING



Figure 6. Example of one of the posters that were put up all around the Williams Campus by the “Williams College Quality of Life Defenders Council.” There was also the creation of a Facebook group in which to promote discussion of Williams Students. The founder(s) of this group have chosen to remain anonymous. According to online discussions surrounding this group, the latin phrase surrounding the seal means “Thus Always Environmentalists” a reference to the latin idiom “Sic Semper Tyrannis” (Thus Always to Tyrants).

One of the biggest electricity users per square foot on campus is the JRC, a building for Jewish students (Figure 2). The JRC includes a large kitchen with large refrigerators. Despite this large kitchen, the JRC typically only serves one meal a week (the Shabbat dinner.) However these refrigerators are left running the rest of the week. During the summer, when the JRC isn't being used, these units are shut off and all extra food is transferred to Greylock Dining Hall for storage. If this policy was also practiced throughout the entire year, and not just during the summer, there would be an annual savings of 56,800 Kwh of electricity. Although I'm not completely familiar with Jewish practices, I'm fairly certain students can store things in Greylock, cook them in the JRC (discounting energy needed to transport food), and still keep kosher; however, coordinating a more sustainable meal schedule should be brought up with the Jewish students.

Conclusions:

What we've learned from the tray-less policy is that students have mixed reactions to environmental policies that inconvenience them. While some are willing to put up with this inconvenience for the sake of environmentalism, others feel it is their right, as tuition-paying students, to be wasteful if they so choose. I cannot help but notice a similar attitude in the general American public, but with taxpayers instead of tuition payers. Although I do not agree with the Quality of Life Defense Council's objections to the new policies, I do agree with their opinion that students are not often given a choice about environmental policies. Even if such actions benefit the environment, it is unfair to force these policies upon students when they get no choice in the matter or chance to oppose.

Changes in Driscoll and any other dining hall are accepted by students when they don't notice the change; for example, replacing faucets in the kitchens with low-flow models or increasing expenditure on locally grown foods. One of the best, and most effective, suggestions that I can give is to have a staff member completely take care of all composting. Not only will this increase the efficiency of the composting programs but also reduce congestion that results

from students waiting to clear their trays. I also propose that coolers under salad bars and dining hall lights should be turned off when not in use. Thirdly, I suggest that buying local food would not only help reduce emissions associated with dining halls, but also promote local agriculture and possibly increase quality of produce. My fourth suggestion, the elimination of refrigeration units in the JRC would produce the quickest and most drastic changes. Since we are nearing the end of the school year, perhaps this policy could be implemented at the beginning of next year.

Williams Dining Services has made some great efforts to reduce their impact on the environment. Policies ranging from buying more local food to purchasing more efficient appliances are great steps in creating a more sustainable campus. We should continue to support measures to make dining halls more sustainable while still keeping in mind that meals, for students, shouldn't be an ordeal.

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Gayle Donohue: Director of Driscoll Dining Hall

Gary Phillips: Accounts Manager, Dining Services

The Entire GEOS 206 Class

And of course...Prof Art and Dethier

Works Cited

Chung, Christine. "Experimental Trayless Thursdays Begin At Driscoll." The Williams Record 5 Mar. 2008. 13 May 2008

<<http://www.williamsrecord.com/wr/?view=article§ion=news&id=9643>>.

"Williams Dining Services: Environmental Responsibility." Williams Dining. 13 May 2008. Williams College. 13 May 2008

<<http://www.williams.edu/admin/dining/about/environment/>>.

"Williams Quality of Life Defenders?" Williams Students Online. 13 May 2008.

Williams College. 13 May 2008

<http://wso.williams.edu/discuss/comments.php?DiscussionID=1449&page=1#Item_0>.