Project: Energy Efficient Freezers
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Description: Tufts has the opportunity to cause a guaranteed, measurable, and significant reduction in energy usage that will pay for itself by encouraging labs to switch to energy efficient freezers. One of the largest energy users in research labs are ultra-low temperature (ULT) freezers. Old, inefficient ULT freezers not only use as much energy as it takes to run an average household (17-30kWh/day) but also produce large amounts of heat, increasing HVAC energy costs. New, energy efficient models (8-9kWh/day) can reduce energy usage and costs by as much as 75%, or over $1500 per year.
Tufts has already performed analyses showing the energy and cost savings of efficient freezers in the past, has had freezer challenges to encourage better freezer habits, and has highlighted researchers who switched to more energy efficient models in sustainability reports. So why are there still 10 to15 year-old energy hogging freezers on Tufts' campuses? Energy efficient freezers can cost anywhere from $11,000-$30,000. Research labs work on constrained budgets, and do not necessarily have funds to replace their old freezers. Even when labs are in the position to purchase a new freezer, a cost difference of $3000+ between an efficient and inefficient freezer can make a significant impact on their budget. While the energy cost savings of efficient models more than make up for this additional cost, these savings are not passed on to the lab. By providing monetary incentives for labs to purchase energy efficient ULT freezers, Tufts could transfer some of the cost saving it receives back to the people who initiated the change, encouraging others to switch to more efficient freezers as well.

People Involved: This project would require collaboration between the Tufts sustainability office, biomedical research departments, and purchasing department, to advertise the promotion and identify eligible freezers that need to be replaced. The equipment managers and facilities departments can also be involved in helping to determine how these freezers can have the most significant impact.

Budget: There are 2 methods that can make this project successful:
1: When labs purchase a new ULT freezer, provide a monetary incentive to cover the cost differential between an inefficient and efficient unit ($2,000- $5,000 per freezer). This option has a lower upfront cost, but will not necessarily lead to older inefficient freezers being decommissioned. New efficient models (8-9kWh/day) are still better than new less efficient models (11-14kWh/day), but older freezers (17-30kWh/day) are the worst offenders.

2: A larger difference could be made by allocating funds to replace energy inefficient ULTs over 10 years old still at the school. This cost could be $12,000+ per freezer, however the energy savings would pay for the entire cost of the freezer over the life of the unit.

Timeline: Many steps of this project have already begun. Tufts has identified preferred efficient freezers to purchase, and has calculated the cost savings. The next steps will depend on which version of the budget we receive:

Budget option 1: To make this project successful, one of the most important steps will be properly advertising the program so that labs know they can take advantage of it. I imagine it could take 1-2 months to prepare an information campaign about the program. This includes preparing literature to send out to research labs informing them of the program, and for the sustainability office to have on-hand for the future. We will also work with other stakeholders involved in the purchasing process, such as vendors and the purchasing department, to make them aware of the program. By having multiple stakeholders aware of the program, labs will be more likely to learn about it whenever they make their purchasing decision, and not just at the time of the initial campaign.

It would be on the schedule of the labs to purchase the freezers and receive their incentive. I am currently not aware of any lab who will be looking to purchase a freezer in February. The Garlick lab, which I am a part of, is in the process of purchasing one, but cannot wait until this project is funded. I am also aware of 2 other freezer purchases since September, so I believe this happens on a semi-regular bases.

Budget option 2: If we decide to fully fund the replacement of old freezers, the process would involve surveying the campus to determine who has older freezers. Then criteria would need to be determined to figure out which freezers to replace. This could be based on which freezers are the least efficient, or making sure that energy efficient models are in high visibility locations, as an advertisement to labs in the future looking to make freezer purchases. We could also ask labs to make other sustainable changes in order receive these funds.

Benefit to Tufts Community: This project is an already researched way for Tufts to make measurable and significant reductions in energy usage that will pay for themselves. Even after the funding is spent, the location of efficient freezers around campus can be cataloged, and serve as advertising to encourage future research lab to make sustainable freezer purchases.