



Lehigh University

Green Labs Program

Summary

The Green Labs Pilot Program is a voluntary, self-guided program dedicated to helping research laboratories adopt more sustainable behaviors. The certification process includes specific questions that address day-to-day behaviors in labs such as fume hood and ultra low temperature freezer best practices. Depending on the number of action items completed, a lab will receive bronze, silver, gold, or platinum certification.

Purpose

Research laboratories use a large amount of resources such as energy. On average, labs use 4 times more energy than an equivalent size office space. In fact, one fume hood uses as much energy as about 2 houses (~\$3,000 per year). Additionally, lighting energy intensity in labs is up to twice that of a typical office space and accounts for 8 to 25% of total electricity use in the building. By implementing more sustainable practices in these spaces, labs will reduce their operating costs, be responsible stewards of resources, and contribute to Lehigh's sustainability goals.

Objectives

- Raise awareness and provide measureable actions for reducing impact of lab operations
- Conserve resources, reduce environmental impact, and save operational costs
- Support the Campus Sustainability Plan 2020
- Recognize and reward leadership in sustainability

Areas of Focus

Water	Waste & Recycling	Energy	Purchasing
Chemical Use	Participation & Engagement	Transportation	Meetings & Field Work

Process

- **Step 1:** Discuss at a research group meeting and identify a Green Labs Representative
- **Step 2:** Fill out the [commitment form](#)
- **Step 3:** Meet with Green Labs Program team member
- **Step 4:** Complete and submit [baseline survey for wet labs](#) or [baseline survey for dry labs](#)
- **Step 5:** Download the [checklist of actions for wet labs](#) or [checklist of actions for dry labs](#) and complete as many actions as you can
- **Step 6:** Submit the checklist at the end of the semester

- **Step 7:** Receive certification and celebrate with your lab mates!

Pilot Results from STEPS Labs 371 & 321/331

Total Usage (KWh/yr)			
Equipment	Baseline	Suggested Changes	Savings
Ultra Low Freezer (-80C)	2592	1920	672
Freezer (-20C)	1623	1156	467
Lighting	9417	8317	1100
Incubator	822	420	401
Autoclave	4400	3890	510
Fumehood	3894	2721	1173

- Total savings: ~\$1,700/year
- Potential savings for whole STEPS building: ~\$5,000/year

Quantitative Successes from Green Labs Programs at Other Institutions

School	Impact
Penn State	<ul style="list-style-type: none"> ● Research labs occupy 26% of the campus footprint, but consume 47% of campus energy ● Closing the fume hood sashes when not in use, especially on variable air volume hoods, in many cases saved over \$1,000 per hood annually.
Cornell	<ul style="list-style-type: none"> ● Anticipate Cornell laboratories' carbon footprint will be reduced by 20% over a 10 year period ● Cornell is currently working to improve the effectiveness of airflows in lab spaces. This should result in a savings of \$2 million per year (\$1 for every square foot of Cornell's 2 million square feet of lab space).
Harvard	<ul style="list-style-type: none"> ● 30% reduction in fume hood exhaust levels as of 2010 ● Savings = \$240,000 ● Reductions = 300 metric tons of GHG emissions
University of Washington	<ul style="list-style-type: none"> ● Installed water misers on autoclaves and sterilizers ● Reduced water consumption by 50%
UC Davis	<ul style="list-style-type: none"> ● Recycling program for nitrile gloves ● Diverted 12 tons of lab glove waste out of landfills ● Used to make plastic products, such as outdoor chairs or park benches