GREEN LABS: Pilot Inventory of Equipment

Submitted to Clean Energy Fund, September 2012
By: UVM Instrumentation and Technical Services

Project Summary:
The University of Vermont has 500+ laboratories on campus. Each lab houses instrumentation for research needs. The following project entails conducting a pilot-level inventory of equipment located in the labs on campus in anticipation of a more comprehensive, campus-wide review and action plan. The pilot project will be conducting a sampling of 20 labs over a two-week period, followed by analysis and a report.

The inventory will include

- An assessment of overall energy usage per device
- Utilization of the device on an annual basis
- Preventive maintenance requirements
- Storage requirements
- Identification of equipment in need of repair.

The pilot project report will include

- The lab equipment inventory
- Energy consumption and opportunities for reduction
- Recommendations about the feasibility of using this process campus-wide
- Estimated costs and overall return on investment for campus-wide equipment inventory and upgrade project

Project Rationale:

- Laboratory equipment on campus contributes to significant energy consumption on campus
- Routine preventive maintenance can increase equipment longevity
- Unused and outdated equipment creates a life-safety hazard [Ref 10] and unnecessary space/storage requirements
- Unused resources in one lab may serve a valued purposed in another lab versus a new purchase

Pilot Project Cost and Staffing:

- The cost is estimated to be $4,200 based on Instrumentation & Technical Services (ITS) rates (FY 13 UVM rate chart).
- The project estimate is based on visiting 20 labs with an average of 15 pieces of equipment and an approximate evaluation time of 10 minutes per device, or about three hours per lab. Data analysis and report generation time is expected to be approximately 12 hours.
- The project will be led by an experienced Biomedical Equipment Technician on the staff of the Instrumentation & Technical Services department along with a student(s) apprentice employed by the department.

Milestones	Weeks 1-4	Week 5	Week 6-7	Week 8
1. Lab visits	20 labs x 3 hours = 60 hours			
2. Data analysis, draft report		12 hours		
3. Draft report reviewed			2 hours	
4. Final report released				6 hours

Milestones:

1. Lab visits completed
    - Conduct comprehensive Lab Equipment Inventory [Type, Make, Model, Department, Location, Energy Consumption, Daily usage in minutes]
    - Identify end of day sash locations on Biological Safety Cabinets
2. Analysis completed
    - Assess power consumption of devices [Ref 11]
    - Identify opportunities for either timed or occupancy-initiated power
    - Define and create lab equipment usage and equipment energy consumption report
    - Estimate cost of removal/disposal of unwanted equipment
3. Draft report reviewed by Office of Sustainability and Office of Vice Provost for Research. Based on findings, estimated cost of campus-wide lab equipment inventory program including initial and ongoing costs of the following:
    - Conducting annual visits to inventory equipment
    - Establishing database (HEMS, EQ2 Inc.) with shared access for key departments
    - Removing unused, unwanted equipment per PI's authorization
    - Annually reviewing and addressing Preventive Maintenance of devices
    - Establishing a protocol for green purchasing including standardization, where appropriate, of energy consumption and upfront maintenance standards
    - Overall return on investment expected for full-fledged program
4. Final report submitted to CEF Committee and to Vice Presidents of Research and of Finance & Administration. Presentation to CEFC

Pilot Project Support Letters:

Office of the Vice Provost for Research and the Graduate College: letter from Dan Harvey, Chief of Staff – OVPR/Assistant Dean – Graduate College (to be sent)

Risk Management: letter from Francis Churchill, Senior Assistant Director, Safety & Health

Resource Documents:

1) http://www.i2sl.org/resources/toolkit/wiki.html
2) http://www.i2sl.org/resources/toolkit.html
3) http://soa.utexas.edu/csd/symposia/campus_sustainability/PDFs/20_Nolan_LeBansky_Peterson.pdf
4) http://green.psu.edu/youCanDo/lab.asp
5) http://green.harvard.edu/fas/labs
6) http://www.chem.harvard.edu/resources/green_labs/green_lab_equipment.php
7) http://www.cdc.gov/dls/pdf/ILA/QS%20-%20Equipment-4.ppt
8) http://wwwn.cdc.gov/dls/pdf/ILA/QS%20-%20Equipment-4.ppt
9) http://www.epa.gov/lab21gov/pdf/revised%20form.pdf
10) http://www.healthsafe.uab.edu/pages/home/safetyshorts/ss_2005_08_lab_clutter.pdf
11) http://www.firefold.com/Kill-a-Watt-Power-Meter-P2825.aspx?afid=31utm_source=google&utm_medium=base&gclid=CPuenYKy7rACFWQDQAoddWR-vA