



# Princeton Plasma Physics Laboratory

## Energy Management Plan

Revision 0

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Initiated by: Signatures on File  
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## **Applicability**

The PPPL Energy Management Plan applies to all PPPL employees, contractors, on-site collaborators and students.

## **Purpose**

Federal Law and Regulations set multiple energy management requirements. As a National Laboratory funded by the U.S. Department of Energy the Princeton Plasma Physics Laboratory is required to implement energy management practices that use energy efficiently, facilitate the use of renewable energy and provide environmental stewardship. This plan sets forth the guidelines and steps to be taken to move towards a higher standard in energy and water utilization that represents PPPL's commitment to fiscal and environmental responsibility.

## **Goals and Objectives**

- Reduce building energy intensity 3% annually through FY 2015, or 30% total reduction by FY 2015 (baseline FY 2003.) [1]
- Unless determined uneconomical by a life-cycle cost analysis, roof replacements and roofs for new construction shall be cool roofs. New roofs must have thermal resistance of at least R-30. [6]
- 7.5% of annual electricity consumption from renewable sources by FY 2013 and thereafter. [3]
- 15% of existing buildings greater than 5,000 gross square feet (GSF) are compliant with the Guiding Principles (GPs) of HPSB by FY 2015. [1, 2]
- 26% water intensity reduction by FY 2020 from a FY 2007 baseline. [2]

## **Strategies**

- Perform energy audits of 25% of PPPL Buildings annually.
- Create and maintain a list of energy conservation projects. Projects will be documented in the PPPL CEDR.
- Implement Energy Conservation Measures listed below in support of PPPL's Energy Policy.
- Continue to evaluate feasibility of on-site renewable energy.
- Update the Energy Management Plan at least once during each two fiscal year period.
- Continue to seek and evaluate new strategies and technologies for feasibility of integration into PPPL's standards for energy management.

## Energy Conservation Measures

### Occupied Hours

The normal operating hours of the Laboratory are 8:00 a.m. to 5:00 p.m., Monday through Friday. Technically, the week begins at 12:01 a.m. on Monday and ends at midnight on the following Sunday. [11]

### Heating and Cooling Standards for PPPL Buildings

Temperatures in PPPL buildings will be set as follows:

Season	When Occupied	When Unoccupied
Summer	76 to 78 degrees Fahrenheit	83 degrees Fahrenheit
Winter	68 to 70 degrees Fahrenheit	55 degrees Fahrenheit

- Temperature set points are based on ANSI/ASHRAE Standard 55-2010 for occupied spaces. These temperatures set points are within a range that is acceptable to most occupants who are dressed appropriately for the season.
- The Facilities Division is responsible for coordinating implementation of these temperature standards according to PPPL's occupancy schedules as specified above under Occupied Hours.
- During holiday periods building lighting, heating and cooling will be set to unoccupied with the exception of where temperature is a critical factor for equipment or material integrity. Buildings will not be designated officially open to accommodate individuals that take upon themselves to come to the site during holiday periods. Approval requests to designate a building officially open during a normally closed period must be made formally to the Associate Director of Engineering and Infrastructure and approval be obtained prior to the period in question.
- Office temperatures are not individually controlled. Temperatures are controlled at the location of the thermostat. Individual office temperatures may differ due to solar radiation or internal loads, e.g. office equipment, lighting, occupancy level.

### Lighting

- To the extent possible lighting levels shall be maintained in accordance with recommendations from the Illuminating Engineering Society (IES) for common tasks performed in buildings. The Facilities Division is responsible for coordinating implementation of these lighting standards according to PPPL's occupancy hours as specified above.
- When replacing or installing new fixtures, lamps and ballasts the most energy efficient products available shall be considered and used whenever economically feasible.
- Where appropriate occupancy/vacancy sensors and/or day light controls shall be considered and installed when economically feasible.

## **Purchasing**

- Energy efficiency should be standard criteria in all requests for proposals, specifications and contracts for products and services. Federal laws, regulations and Executive Orders require the purchase of certain types of energy efficient equipment. Refer to PPPL's Environmental Preferable Purchasing Policy (P-082).
- Prohibited equipment includes
  - Incandescent and halogen lighting.
  - Space heaters (use of space heaters will be restricted to one of two conditions: 1) emergency use in the event of central heating equipment failure and must be approved by the Facilities and Site Services Division Head or 2) Experimental needs and must be approved by the Associate Director for Engineering and Infrastructure. In both cases heaters shall meet the requirements of ES&HD 5008, Section 5 Chapter 7, current revision.)
- Discouraged equipment includes (and requires Department Head approval):
  - Personal refrigerators.
  - Personal appliance including, but not limited to, microwaves, toasters, toaster ovens and hot plates (e.g. coffeepots that stay on for more than 20 minutes without an automatic shutoff timer.)
  - Personal printers.

Note: Personal equipment purchased by employee or Laboratory.

## **New Construction and Renovations**

- Per EO 13514 all new construction, major renovation, or repair and alteration of Federal buildings must comply with the Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings, [2]
- New building construction and renovations shall comply fully with the latest American Society of Heating, Refrigerating, and Air-Conditioning Engineers Standard 90.1. Adherence to this standard will ensure that energy efficient building systems are installed at PPPL.

## **PPPL Community**

Employees, contractors, on-site collaborators and students are instrumental to the success of the Energy Policy. To support the energy conservation measures outlined in this plan, members of the PPPL community can take the following actions:

- Ensure that no obstructions are blocking vents and that no temperature affecting devices (e.g. coffee maker, task light, printers, etc.) are placed near thermostats.

- Dress for the weather, local weather information directly from the PPPL weather station can be viewed at <http://weather.pppl.gov/>.
- Lights and equipment should be turned off when leaving a room, even for a short time.
- Report to Facilities lights and equipment in common areas that are not turned off at the end of the workday.
- Ensure doors and windows are properly closed and report to Facilities if door and/or windows do not close properly or are not adequately sealed.

## **References**

- [1] Executive Order 13423, Strengthening Federal Environmental, Energy, and Transportation Management
- [2] Executive Order 13514, Federal Environmental, Energy and Economic
- [3] Energy Policy Act of 2005
- [4] Energy Independence and Security Act of 2007
- [5] American Society of Heating, Refrigerating, and Air-Conditioning Engineers Standard 55-2004
- [6] The Secretary of Energy Memorandum for Heads of Departmental Elements, June 1, 2010
- [7] U.S. DOE Data Center Optimization Plan, Public Release 9/30/11
- [8] American Society of Heating, Refrigerating, and Air-Conditioning Engineers Standard 90.1-2004
- [9] P-082 – Environmental Preferable Purchasing
- [10] PPPL Energy Management Policy
- [11] PPPL Personnel Practices Manual
- [12] ES&HD 5008, Section 5 Chapter 7 – Fire Prevention Practices
- [13] PPPL FY2013 Site Sustainability Plan
- [14] PPPL Environmental Management System Description