



EXECUTIVE ORDER 13514: Implementation Status Update

Larry Stirling
Office of Environmental Policy & Assistance (HS-22)

Environmental Sustainability Network
February 18, 2010



Executive Order 13514 (October 5, 2009)



“To establish an integrated strategy towards sustainability in the Federal Government and make reduction of greenhouse gas (GHG) emissions a priority for agencies.”



E.O. 13514: Four Key Aspects



1. GHG emission reduction is now an overarching, integrating performance metric for all Federal agencies;
2. Agencies must use a deliberative planning process, including a Strategic Sustainability Performance (SSP) Plan (due June 2, 2010);
3. E.O. goals are to be linked to budget allocations and scored by OMB; and
4. E.O. 13423, *Strengthening Federal Environmental, Energy, and Transportation Management* (January 29, 2007) remains in effect.



Senior Sustainability Officer: Deputy Secretary



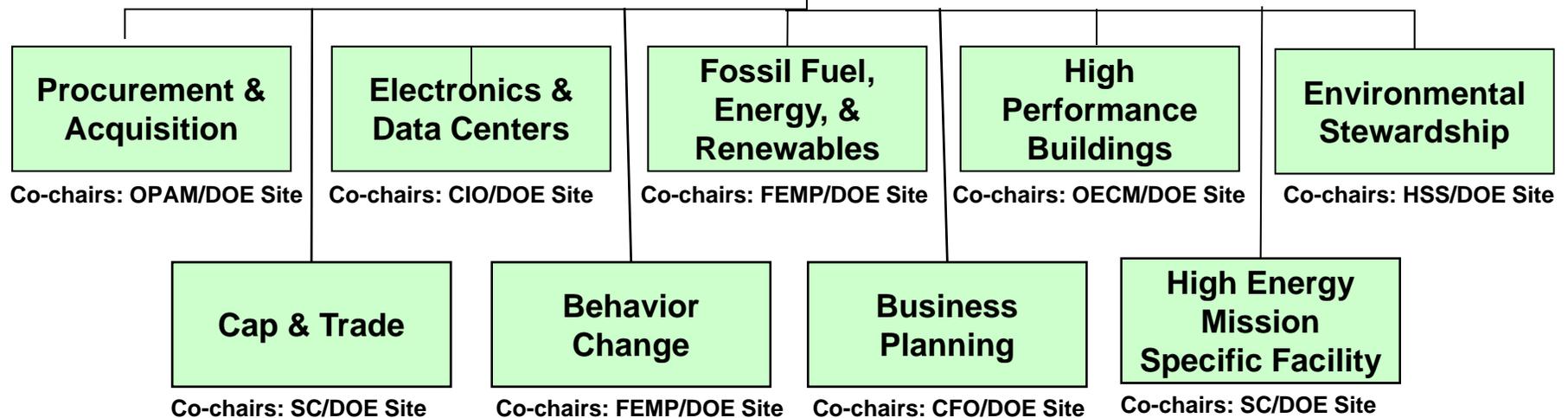
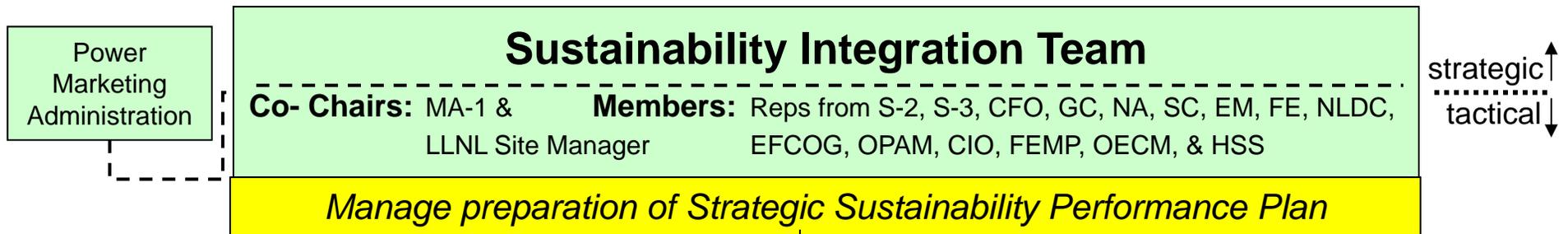
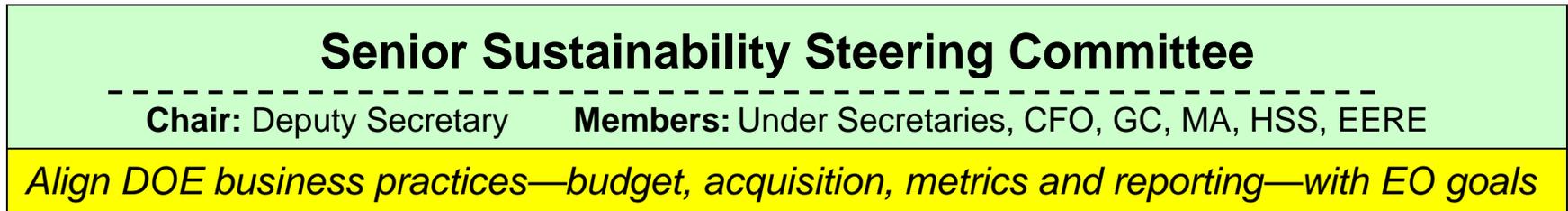
Secretary Chu has named Deputy Secretary Daniel Poneman as DOE's Senior Sustainability Officer (SSO)

- Staffing support to come from Ingrid Kolb, Director of Management (MA-1)

SSO Responsibilities include:

- Prepare the DOE-wide GHG inventory
- Develop DOE targets for GHG emissions reductions
- Prepare and implement the SSP Plan, in coordination with appropriate offices and organizations
- Monitor DOE's performance and progress in implementing the Plan and report to CEQ and OMB.

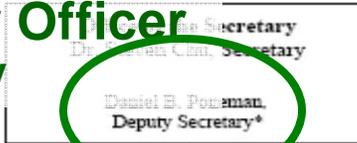
E.O. 13514 Governance Model





DEPARTMENT OF ENERGY

**Senior Sustainability Officer
Deputy Secretary**



Departmental Staff and Support Offices

3 Under Secretaries:

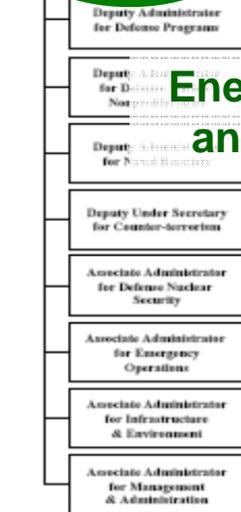


General Council

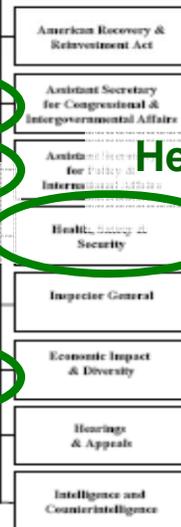
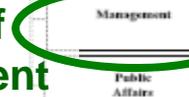
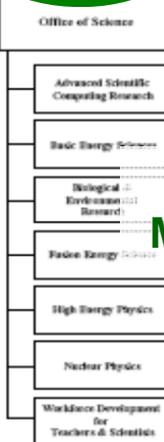
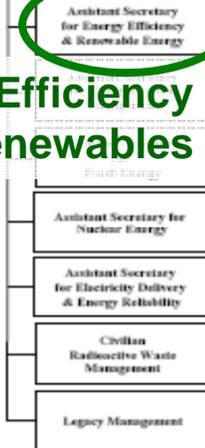
Chief Financial Officer

Office of Management

Health, Safety & Security



Energy Efficiency and Renewables



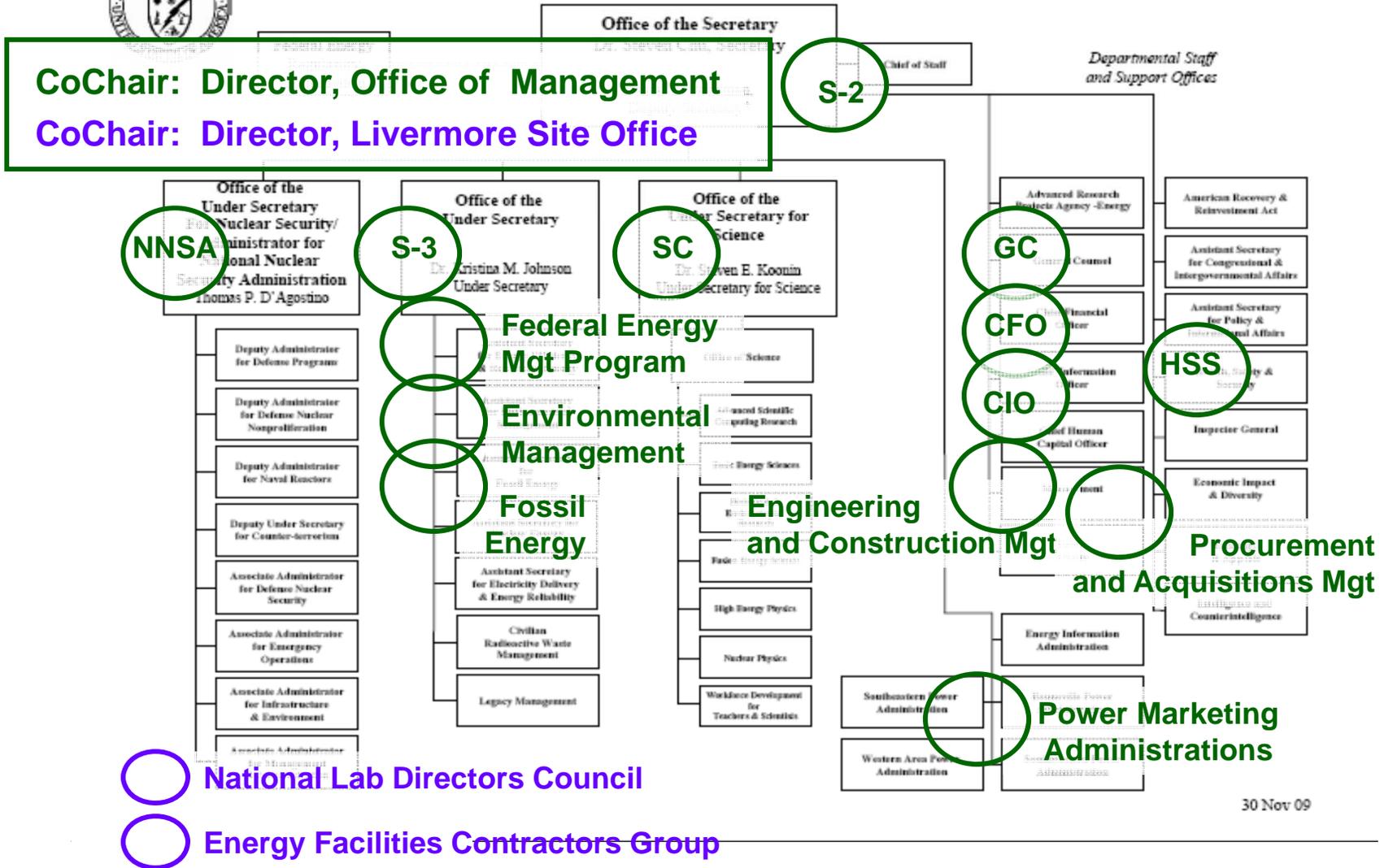
* The Deputy Secretary also serves as the Chief Operating Officer

DOE's Senior Sustainability Steering Committee

Align DOE business practices – budget, acquisition, metrics and reporting – with EO goals



DEPARTMENT OF ENERGY



30 Nov 09

DOE's Sustainability Integration Team
 Manage preparation of Strategic Sustainability Performance Plan



Sustainability Management Principles



DOE's Senior Sustainability Steering Committee has adopted the following four principles:

- ✓ Drive personal and organizational **behavior change** across the complex as a fundamental strategy to reduce energy use at minimal cost
- ✓ Employ a corporate-wide **portfolio approach** to share energy and greenhouse gas reduction responsibilities
- ✓ Safeguard mission, yet revisit and challenge previously excluded facilities and processes. **Everything is on the table**
- ✓ Showcase R&D **demonstration projects** at DOE Sites (Highlight technological leadership while meeting goals of E.O.)



Strategic Sustainability Performance Plan



- Establishes DOE actions to achieve the goals and targets of the E.O., including the GHG reduction targets;
- Is to be integrated into DOE's strategic planning and budget process;
- Identifies DOE activities, policies, plans, procedures and practices that are relevant to E.O. implementation;
- Identifies specific DOE goals, milestones, and quantifiable metrics for E.O. implementation.;
- Considers environmental measures as well as economic and social benefits and costs in evaluating projects and activities based on lifecycle return on investment;
- Includes annual reviews and continuous improvement.

Key Milestones Accomplished

- January 5 – Formal Designation of Senior Sustainability Officer (SSO)
- January 6 – Established Agency-wide Target for Scope 1 and 2 Greenhouse Gases (28% reduction)
- January 15 – Implemented Governance Model to Ensure Headquarters and Field Partnership & Prepared Master Schedule of Critical Milestones
- January 21 – 1st of the meeting Sustainability Integration Team
- January 29 – 1st meeting Senior Sustainability Steering Committee



Date to Remember: June 2, 2010 – Strategic Sustainability Performance Plan (SSPP) and Scope 3 Target Due to OMB

Critical Milestones Ahead

| Task Description | Target |
|---|-----------------|
| Complete technical analysis of Executable Plans | 2/15/2010 |
| Identify missing critical data and issue data-call | 3/1/2010 |
| Complete financial analysis and rank projects identified in site Executable Plans | 3/1/2010 |
| Provide sustainability cost data for FY12-16 budget to the Programs | 3/20/2010 |
| Complete analysis of DOE's ability to meet GHG and non-GHG targets | 4/1/2010 |
| Verify sustainability funding incorporated into Program Budgets for FY12-16 | 4/7/2010 |
| Select and approve Scope 3 Greenhouse Gas (GHG) reduction target | 4/10/2010 |
| Distribute draft SSPP for internal DOE review | 4/15/2010 |
| Conduct Senior Sustainability Steering Committee (SSSC) meeting to review and comment on the SSPP – review impact to budget | 5/1/2010 |
| Submit Scope 3 GHG reduction target to OMB/CEQ | 6/2/2010 |
| Submit SSPP in concert with FY12 budget submission to OMB/CEQ | 6/2/2010 |

Supporting Information

E.O. 13514 – Requirements & DOE Status

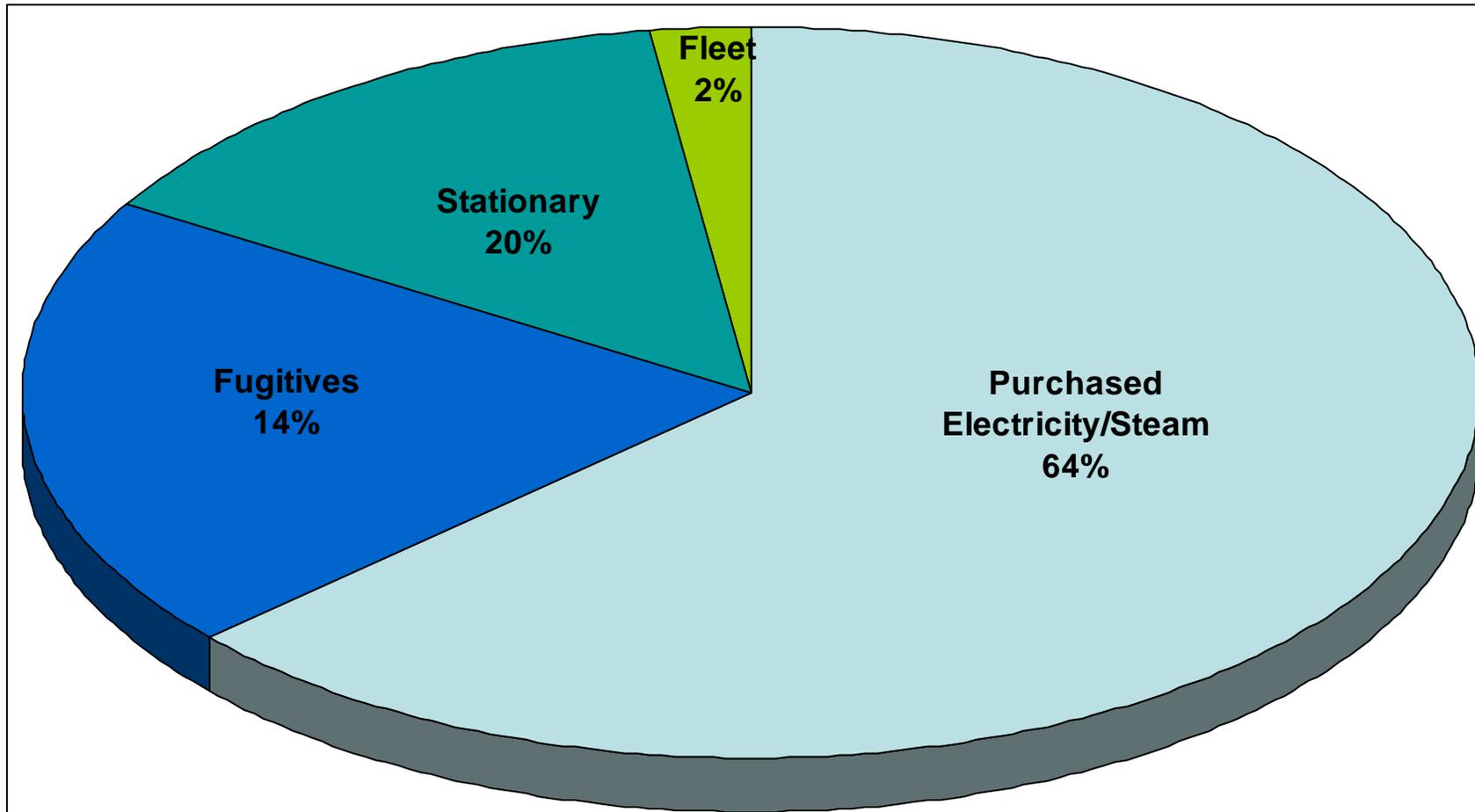
| | Requirement | FY 09 Status |
|--|-----------------|--------------|
| Scope 1&2 Greenhouse Gas (GHG) emission reduction from 2008 to 2020 | 28% | new |
| • Energy Intensity reduction (Btu/ft ²) | 30% (2003-2015) | 17.2% |
| • Renewable electricity use | 7.5% (2013) | 4.2% |
| • Fleet petroleum reduction | 30% (2005-2020) | 16.3% |
| Other sustainability goals: | | |
| • Select scope 3 GHG reduction target | June 2, 2010 | new |
| • Potable water intensity reduction (gal/ft ²) | 26% (2007-2020) | 2.6% |
| • Industrial/other water consumption reduction | 20% (2010-2020) | new |
| • Recycling & waste diversion | 50% (by 2015) | 49% |
| • Sustainable Procurement | 95% | new |
| • Buildings meet sustainability principles | 15% (by 2015) | 1.6% |
| • Net-zero energy in new facilities | 100% (by 2030) | new |

DOE Scope 1 and 2 GHGs

- DOE calculated an FY08 baseline of 4.1 million metric tons of carbon dioxide equivalent (MMTCO₂e)
- DOE established a 2020 Reduction Target of 28%
 - Reductions to be achieved on absolute basis, regardless of budget or mission change

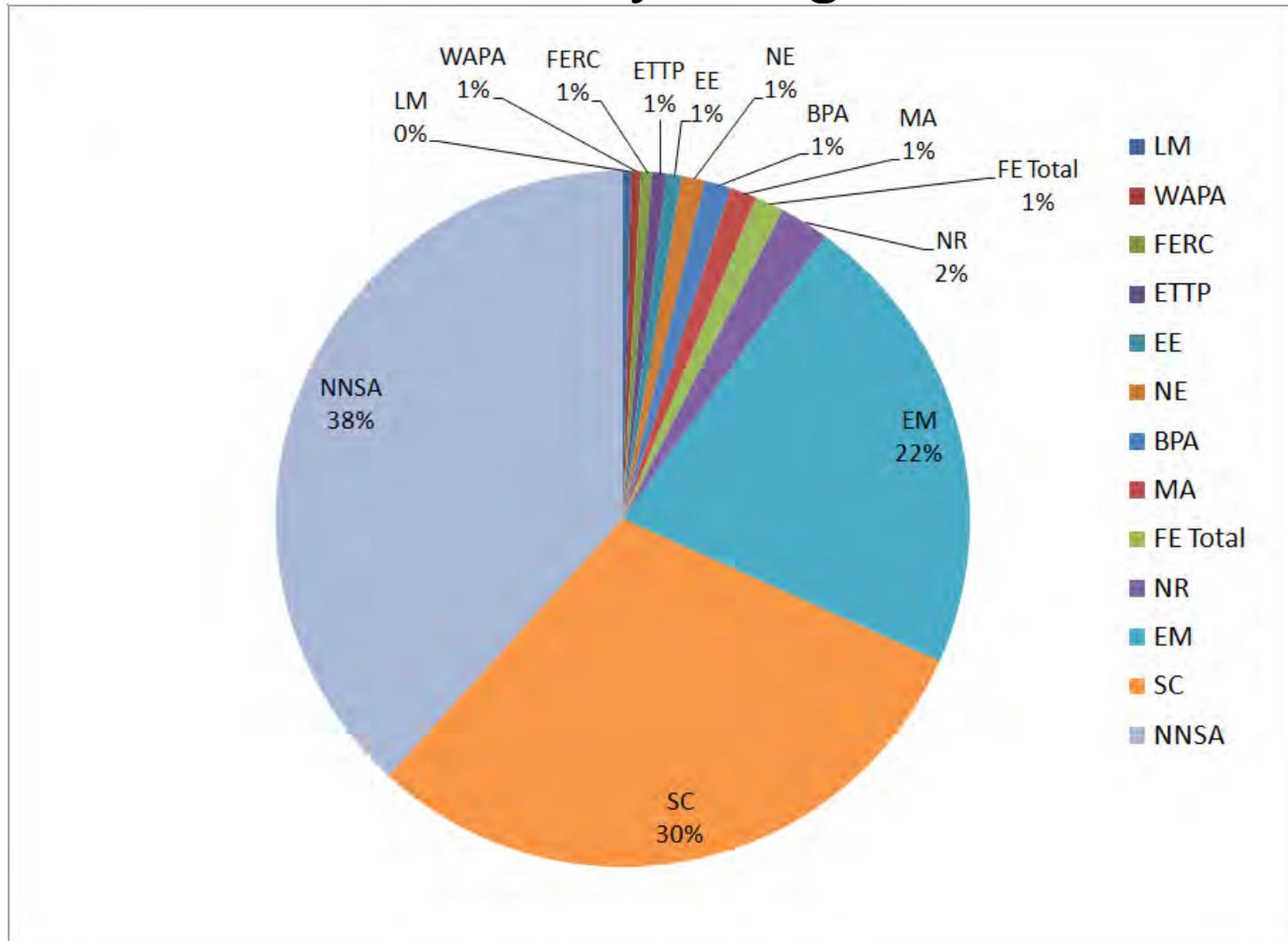


DOE Scope 1 and 2 Emissions (4.1 MMTCO₂e)



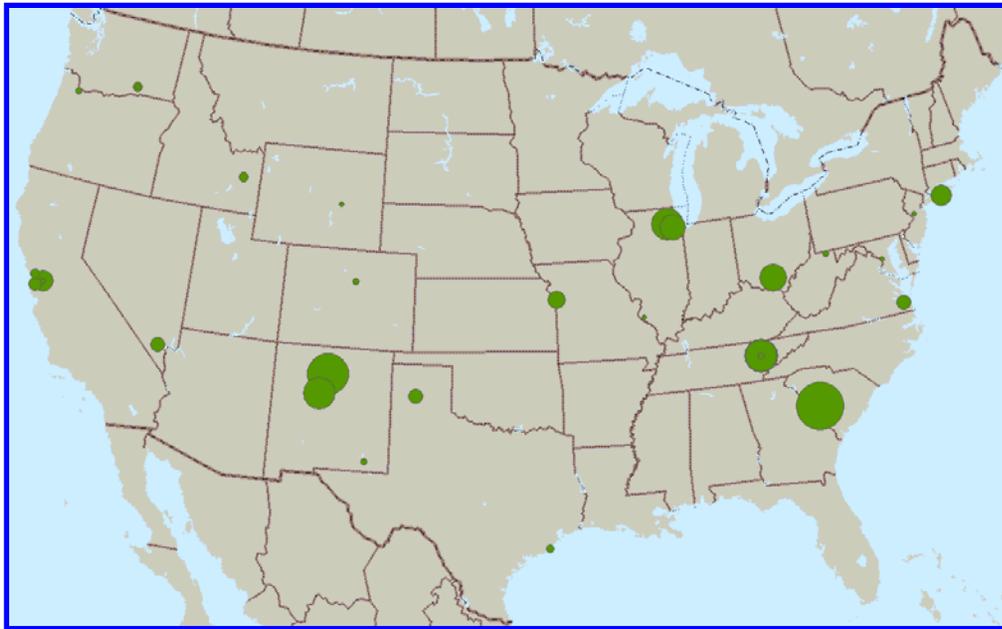
DOE GHG Emission Profile

GHG by Program



DOE GHG Emission Profile

Top Ten Scope 1 and 2 GHG Emitting Sites in FY 2008



| Program | Site | State | FY08 GHG (MtCO ₂ e) |
|---------|--------|-------|--------------------------------|
| EM | SRS | SC | 515,779 |
| NNSA | LANL | NM | 410,896 |
| NNSA | Y-12 | TN | 272,560 |
| NNSA | SNL-NM | NM | 266,087 |
| Science | ORNL | TN | 258,597 |
| Science | Fermi | IL | 252,791 |
| EM | PORTS | OH | 203,260 |
| Science | ANL | IL | 183,510 |
| NNSA | LLNL | CA | 123,506 |
| Science | BNL | NY | 123,273 |



LEED 2009 EB O&M & High Performance Buildings



To create the innovations which will make fusion power a practical reality.

ESN Conference Call 1-21-2010

Thomas J. McGeachen, PE, LEED AP

Environmental Sustainability Coordinator

tmcgeachen@pppl.gov

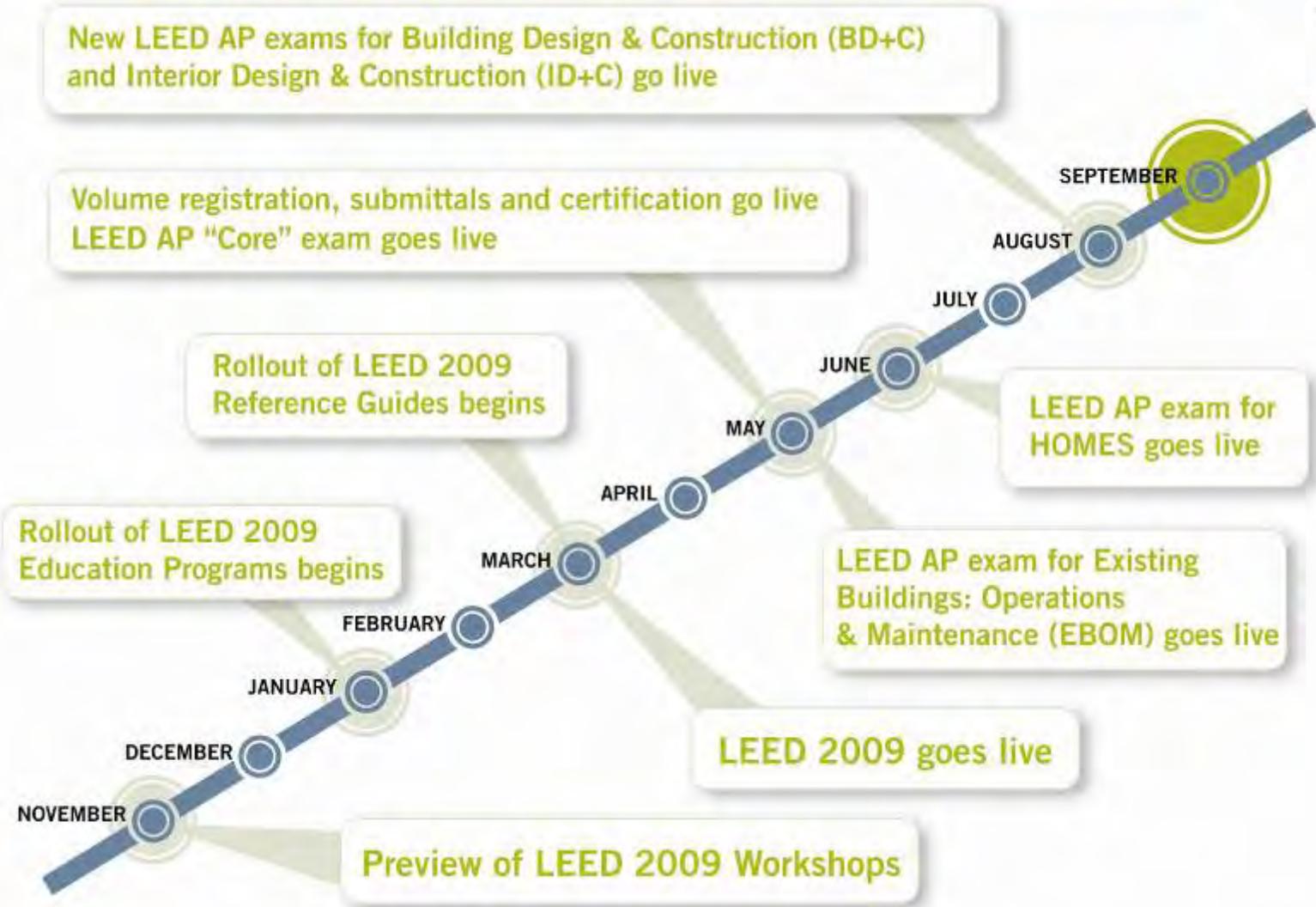
The DOE Princeton Plasma Physics Laboratory

Princeton, New Jersey

Source USGBC



Rollout will be completed by **September 1**



Federal High Performance/Green Buildings

E.O. 13423: 15% of Federal buildings to be High Performance/Green buildings by 2015

- IF the building is LEED certified Silver; THEN it can be considered High Performance/Green Building
 - OPTION EB-1 An agency can demonstrate that a building is compliant with each of the five *Guiding Principles for Sustainable Existing Buildings*
 - OPTION EB-2 A documented commitment to third-party existing building certification was made (e.g., registering a project) prior to October 1, 2008 AND the building is third-party certified to meet the requirements of a multi-attribute green building standard
- http://www.wbdg.org/pdfs/hpsb_guidance.pdf

Federal High Performance/Green Buildings

Suggested plan of action:

- ENERGY STAR Portfolio Manager tool and benchmark building for an EPA rating:
<http://www.energystar.gov/benchmark>
 - » Rating => 75 for (HPSB Guiding Principals)
- Meet all other LEED 2009 v3 EB O&M prerequisites; matches Guiding Principles
- Obtain at a minimum of LEED EBOM 50 points
- **Three results for one effort!**
 - High Performance Sustainable Building
 - ENERGY STAR label
 - LEED 2009 v3 EB O&M certified Silver

The Basics

LEED EB O&M v3 2009

Source USGBC

9

prerequisites

PLUS

Full occupancy one year
ALL Federal, state & local
environmental law
compliance

56

credits

3

- month performance period

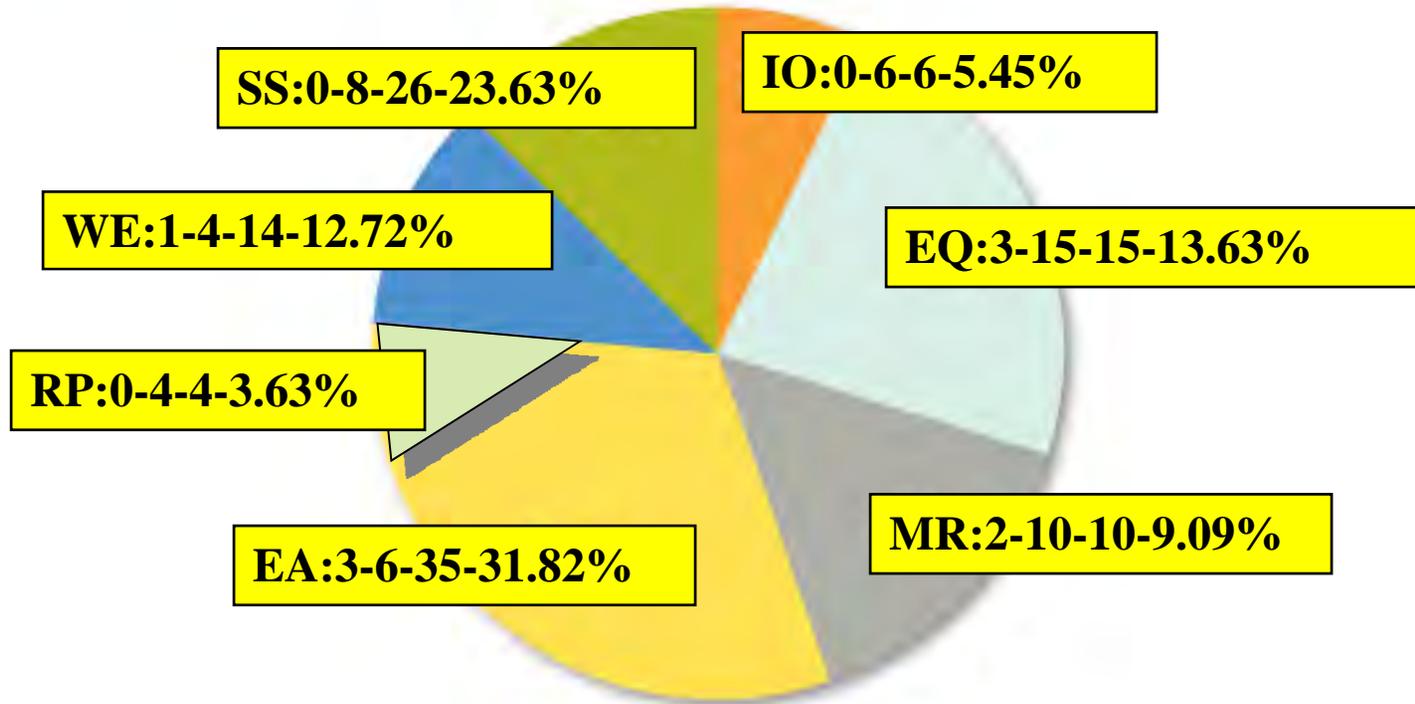
LEED EB O&M v3 2009

Point Distribution Comparison

Source USGBC

Key: SS WE EA MR EQ IO

#Pr-#Cr-#Pts-% total 110 Pts Max.



LEED for Existing Buildings:
Operations & Maintenance

USGBC LEED 2009 Certification Requirements

**All four rating systems [NC, CS, CI, EB O&M]
re-weighted & standardized with 110 points**

- Certified.....40-49 points
- Silver.....50-59 points
- Gold.....60-79 points
- Platinum.....80 plus points
- Now have 6 Innovation points & 4 Regional points



Maximum points = 110 points

Sustainable Sites (SS)

Source USGBC

| Yes | ? | No | Sustainable Sites | | 12 Points |
|--------------------------|--------------------------|--------------------------|-------------------|--|-----------|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Credit 1 | LEED Certified Design and Construction | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Credit 2 | Building Exterior and Hardscape Management Plan | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Credit 3 | Integrated Pest Management, Erosion Control, and Landscape Management Plan | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Credit 4 | Alternative Commuting Transportation | 4 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 10% | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 25% | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 50% | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | 75% or greater | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Credit 5 | Reduced Site Disturbance - Protect or Restore Open Space | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Credit 6 | Stormwater Management | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Credit 7 | Heat Island Reduction | 2 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | Non-Roof | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | Roof | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Credit 8 | Light Pollution Reduction | 1 |
| Yes | ? | No | Water Efficiency | | 10 Points |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | Minimum Indoor Plumbing Fixture and Fitting Efficiency | Required |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | Water Performance Measurement | 2 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | Whole-Building Water Use Reduction | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | | Water Conservation | 1 |

Sustainable Sites (SSc2 Hardscape Management)

B-20 powered
four- wheel drive
utility vehicles
using biobased
treated deicers



Sustainable Sites (SSc2 Building Exterior)



Green cleaning
products for
exterior building
cleaning

Sustainable Sites (SSc4 Alternative Commuting Transportation)

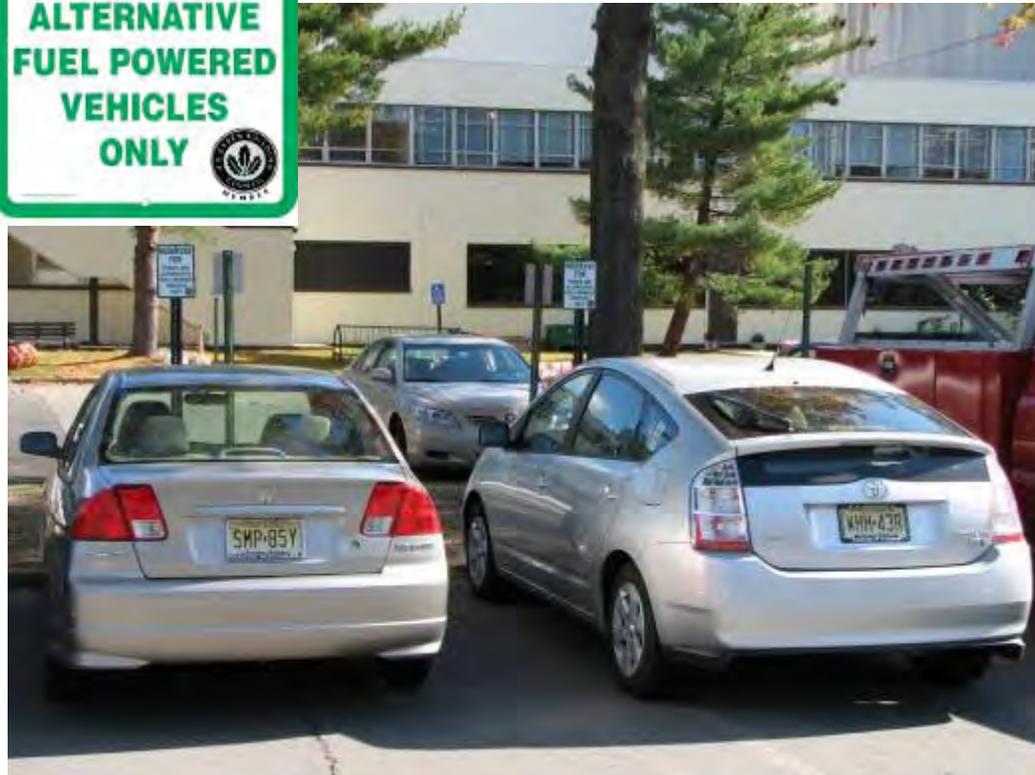
Bike Racks



PPPL has added mass transit



Provide Preferred parking for alternative-fuel vehicles



Sustainable Sites (SSc5 Protect & Restore Open Space)

Restore areas to native
vegetation



Sustainable Sites (SSc6 Stormwater Management)



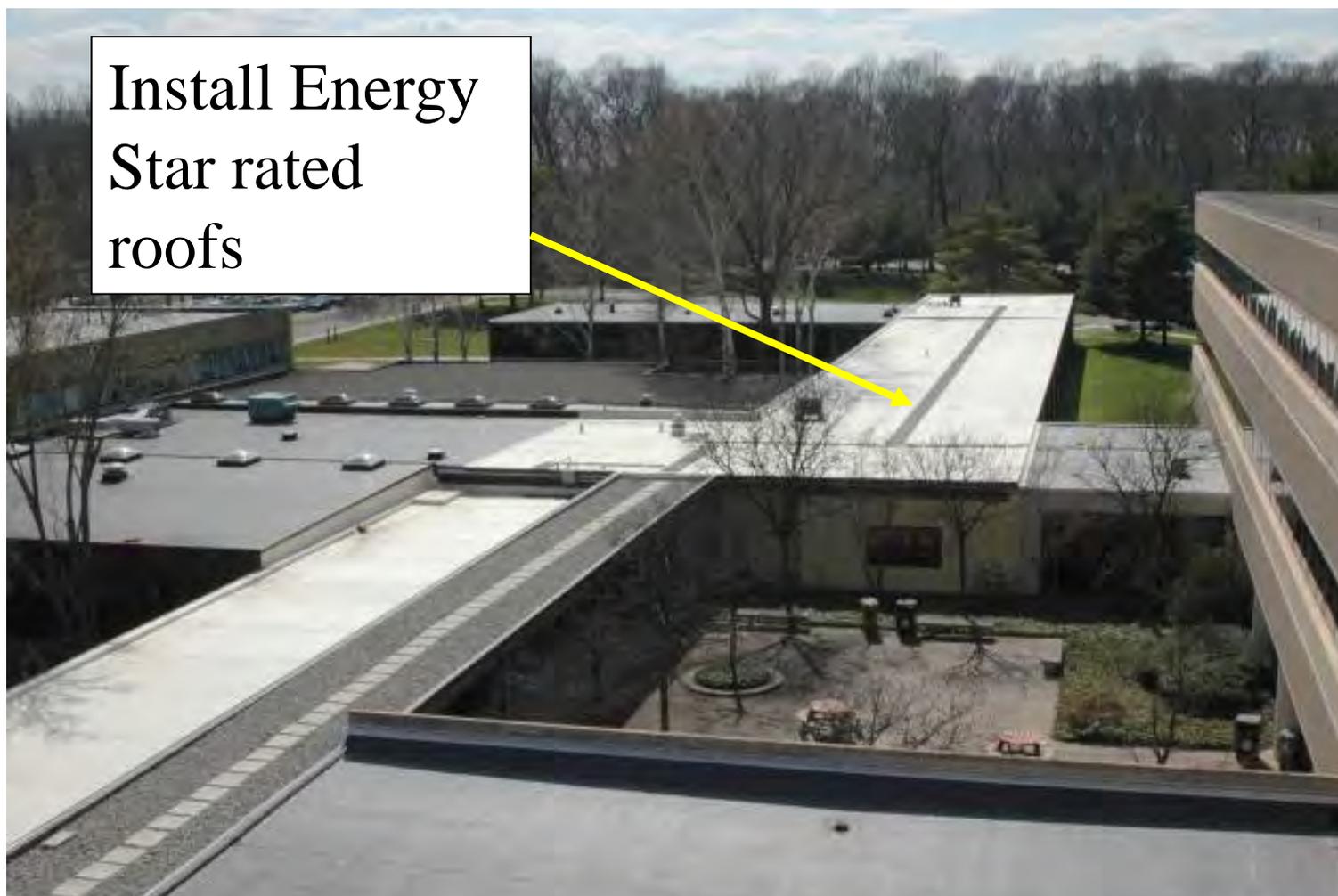
Storm water Drainage Ditch flow restored with curved stepped channel. Native grasses grew back.



Storm water Drainage Ditch flow restored with removal of brush & saplings; native ferns grew back.



Sustainable Sites (SSc7.2 Heat Island Reduction –Roof)



Install Energy
Star rated
roofs

Best info at:<http://www.epa.gov/heatisland/mitigation/coolroofs.htm>

Sustainable Sites (SSc8 Light Pollution Reduction)



Partially or Fully shielded exterior lighting $> 50\text{W}$ so fixtures do NOT emit light directly to the night sky.



All interior lights in areas with a view to exterior MUST automatically turn OFF during the night time unoccupied period.

Water Efficiency (WE)

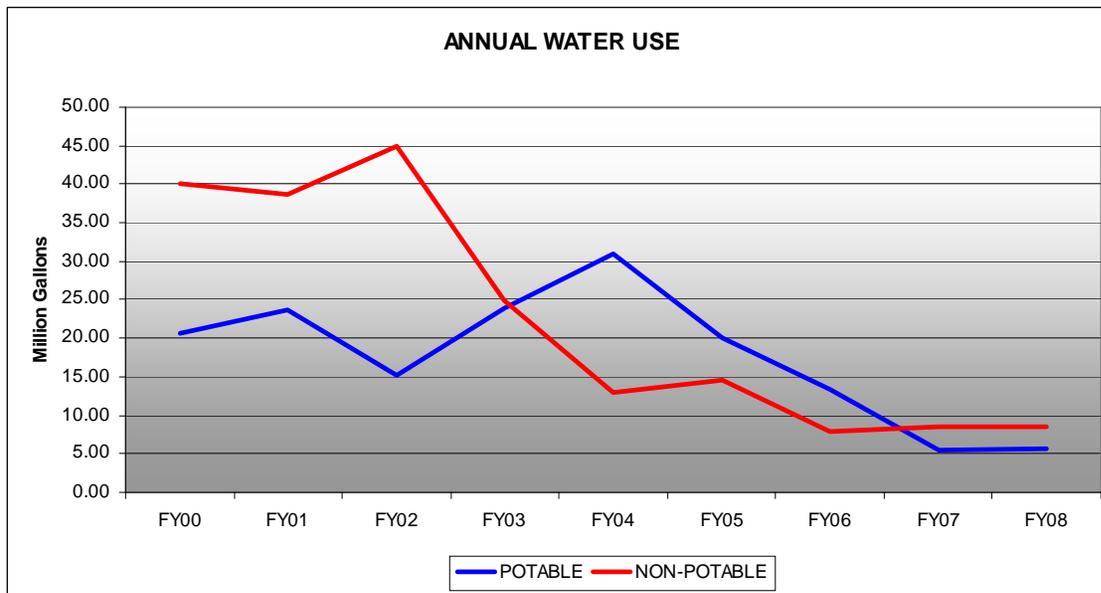
Source USGBC

| Yes ? No | | Water Efficiency | | 10 Points |
|-------------------------------------|--------------------------|--|--------------------------|-----------------|
| <input checked="" type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| Y | Prereq 1 | Minimum Indoor Plumbing Fixture and Fitting Efficiency | | Required |
| | Credit 1 | Water Performance Measurement | | 2 |
| | | Whole building metering | | 1 |
| | | Submetering | | 1 |
| | Credit 2 | Additional Indoor Plumbing Fixture and Fitting Efficiency | | 3 |
| | | 10% | | 1 |
| | | 20% | | 1 |
| | | 30% | | 1 |
| | Credit 3 | Water Efficient Landscaping | | 3 |
| | | Reduce Potable Water Use by 50% | | 1 |
| | | Reduce Potable Water Use by 75% | | 1 |
| | | Reduce Potable Water Use by 100% | | 1 |
| | Credit 4 | Cooling Tower Water Management | | 2 |
| | | Chemical Management | | 1 |
| | | Non-Potable Water Source Use | | 1 |
| Yes ? No | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | |
| | | Energy Efficiency Best Management Practices - Planning, Documentation, and Opportunity Assessment | | Required |
| | | Minimum Energy Efficiency Performance | | Required |
| | | Commissioning Requirements - Commissioning | | Required |

Water Efficiency (WEp1 & WEc2.1-2.5 Min. & Additional Indoor Plumbing Fixture Efficiency)



Perform a potable water usage audit and reduce potable water usage below (120% or 160%) the UPC or IPC 2006 requirements.



Since 2000, PPPL has reduced total water use by 76.4%

Water Efficiency (WEc3 Water Efficient Landscaping)



For landscaping gardens only utilize efficient water methods and Xeriscaping.



Water Efficiency (WEc4.1-4.2 Cooling Tower Water Management)



Conductivity cycles of concentration automatically controlled

Non-potable make up water



Energy & Atmosphere (EA)

Source USGBC

| Yes ? No | | Energy & Atmosphere | | 30 Points |
|----------|---|---------------------|--|-----------|
| 0 | 0 | 0 | | |
| ✓ | | Prereq 1 | Energy Efficiency Best Management Practices - Planning, Documentation, and Opportunity Assessment | Required |
| ✓ | | Prereq 2 | Minimum Energy Efficiency Performance | Required |
| ✓ | | Prereq 3 | Refrigerant Management - Ozone Protection | Required |
| ✓ | ✓ | Credit 1 | Optimize Energy Efficiency Performance | 15 |
| ✓ | ✓ | Credit 2 | Existing Building Commissioning | 6 |
| ✓ | ✓ | | Investigation and Analysis | 3 |
| ✓ | ✓ | | Implementation | 2 |
| ✓ | ✓ | | Ongoing Commissioning | 1 |
| ✓ | ✓ | Credit 3 | Performance Measurement | 3 |
| ✓ | ✓ | | Building Automation System | 1 |
| ✓ | ✓ | | System-Level Metering, 40% | 1 |
| ✓ | ✓ | | System-Level Metering, 80% | 1 |
| ✓ | ✓ | Credit 4 | Renewable Energy | 4 |
| ✓ | ✓ | | On-site 3% / Off-site 25% | 1 |
| ✓ | ✓ | | On-site 6% / Off-site 50% | 1 |
| ✓ | ✓ | | On-site 9% / Off-site 75% | 1 |
| ✓ | ✓ | | On-site 12% / Off-site 100% | 1 |
| ✓ | ✓ | Credit 5 | Refrigerant Management | 1 |
| ✓ | ✓ | Credit 6 | Emissions Reduction Reporting | 1 |
| Yes ? No | | | | |
| 0 | 0 | 0 | | |

Energy & Atmosphere (EAp2 & EAc1)



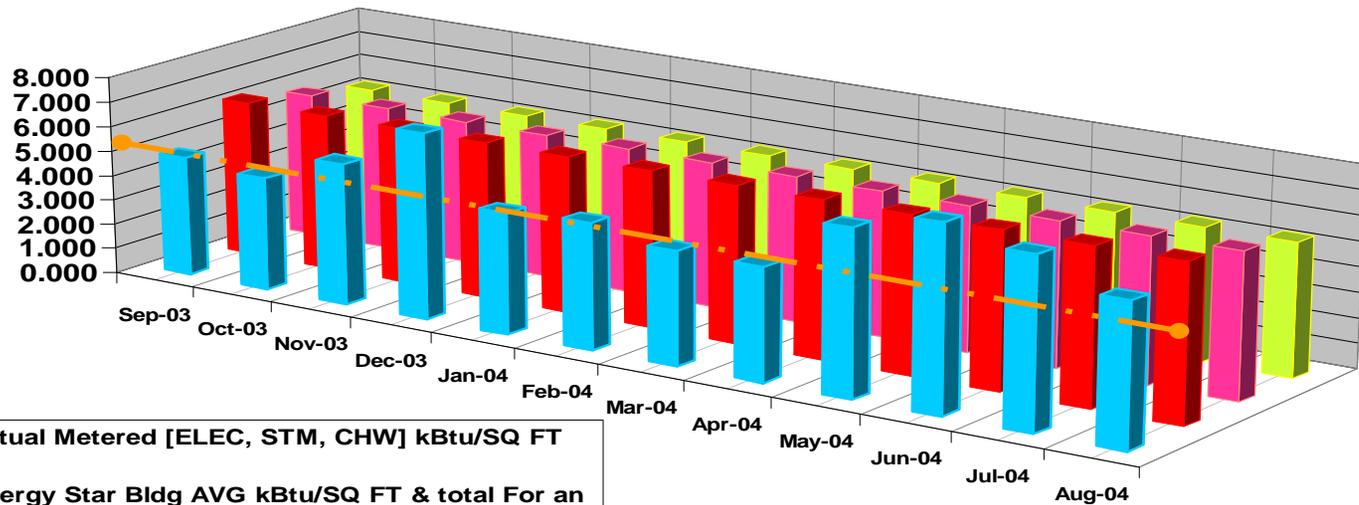
LEED-EB O&M Building Energy Star Benchmark => 69

Energy Star Portfolio Manager "LABEL" Rating =>75

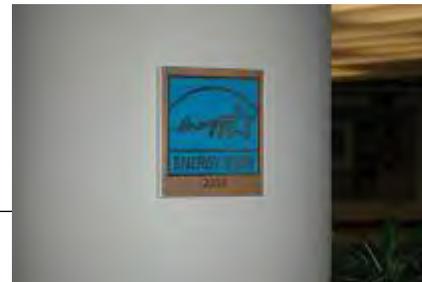
LSB LEED-EB Energy STAR Portfolio Mgr & Target Finder Tracking

Site [Bldg]
kBtu/SQ FT

Average YTD FY08
5.664 Site [Bldg] kBtu/SQ FT
Estar Target Finder rating of ~ 85



- Actual Metered [ELEC, STM, CHW] kBtu/SQ FT
- Energy Star Bldg AVG kBtu/SQ FT & total For an Estar rating of 75
- Energy Star Bldg AVG kBtu/SQ FT & total For an Estar rating of 80
- Energy Star Bldg AVG kBtu/SQ FT & total For an Estar rating of 85





www.energystar.gov

- Portfolio Manager generates a Statement of Energy Performance for any building in your portfolio.
- The Statement of Energy Performance must be validated by a Professional Engineer.
- You must become proficient with ENERGY STAR® Portfolio Manager.
- 12 Months of metered energy data is **REQUIRED!!!**



STATEMENT OF ENERGY PERFORMANCE

Sample Facility

Building ID: 123456

For 12-month Period Ending: July 31, 2007¹

Date SEP becomes Ineligible: November 30, 2007²

Date SEP Generated: August 1, 2007

DWS Control No.: 3095-2347

Facility Being Labeled

Sample Facility
1234 Main Street
Springfield, VA, 10000

Facility Owner

Sample Owner
4557 Peach Ave.
Springfield, VA, 10000
555-555-5555

Primary Contact for this Facility

Jane Smith
7890 Columbia Way
Springfield, VA, 10000
555-555-5555
jsmith@jasmith.com

Year Built: 1999
Gross Building Area (ft²): 20,000

Energy Performance Rating³ (1-100): 80

Facility Space Use Summary

| Space Type | Area (ft ²) | Occupants | Operating Hours | Number of PCs |
|------------------|-------------------------|-----------|-----------------|---------------|
| Garage | 5,000 | 2 | 40 | 0 |
| Office (General) | 15,000 | 40 | 40 | 40 |

Site Energy Use Summary

| | |
|---------------------------------|----------------|
| Electricity (kBtu) | 123,456 |
| Natural Gas (kBtu) ⁴ | 123,456 |
| Total Energy (kBtu) | 246,912 |

Energy Intensity⁴

| | |
|-----------------------------------|------|
| Site (kBtu/ft ² -yr) | 6.3 |
| Source (kBtu/ft ² -yr) | 19.5 |

Emissions (based on site energy use)

| | |
|------------------------------|-----|
| CO ₂ (1000lbs/yr) | 253 |
|------------------------------|-----|



Professional Engineer Stamp
I certify that the information contained within this statement is accurate and in accordance with the PE Guidelines.

Indoor Environment Criteria⁵

| | |
|-----------------------------------|-----|
| Indoor air pollutants controlled? | Yes |
| Adequate ventilation provided? | Yes |
| Thermal conditions met? | Yes |
| Adequate illumination provided? | Yes |

Professional Engineer

License Number: 0000001
State: VA
John Doe
1234 Vineyard Lane
Springfield, VA 10000
555-555-7768

Notes

- Application for the ENERGY STAR icon is submitted to EPA within 45 days of the Period Ending date. Award of the ENERGY STAR is not final until approval is received from EPA.
- The EPA Energy Performance Rating is based on total source energy. A rating of 75 is the minimum to be eligible for the ENERGY STAR.
- Natural Gas values in units of volume (e.g., cubic feet) are converted to kBtu with adjustments made for elevation based on Facility zip code.
- Values represent energy intensity annualized to a 365 day calendar.
- Based on meeting ASHRAE Standard 55-1999 for indoor air quality, ASHRAE Standard 90.1-1992 for thermal comfort, and IESNA Lighting Handbook for lighting quality.

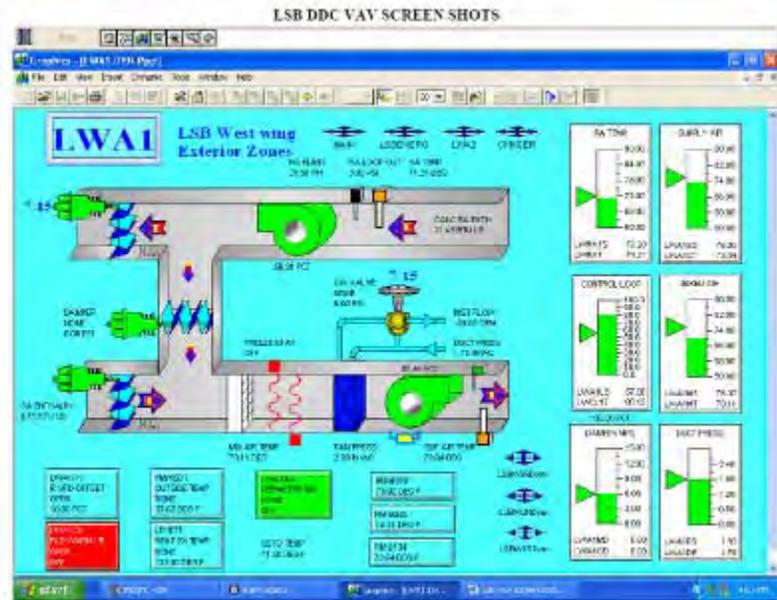


Tracking Number: SEP20070101000001234

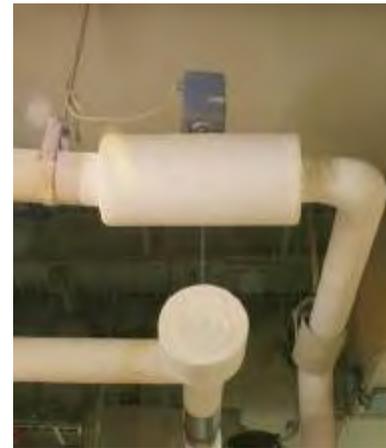
The government estimates the average time needed to fill out this form is 8 hours (includes the time for entering energy data, PE facility inspection, and notifying the SEP) and welcomes suggestions for reducing this level of effort. Send comments (including DWS control number) to the Director, Systems Strategies Division, U.S. EPA (2622), 1200 Pennsylvania Ave., NW, Washington, D.C. 20460.

EPA Form 3905-15

Energy & Atmosphere (EAc3.1-3.2) Building Automation System



Utilize your Building Automation System (BAS) to maximum possible extent



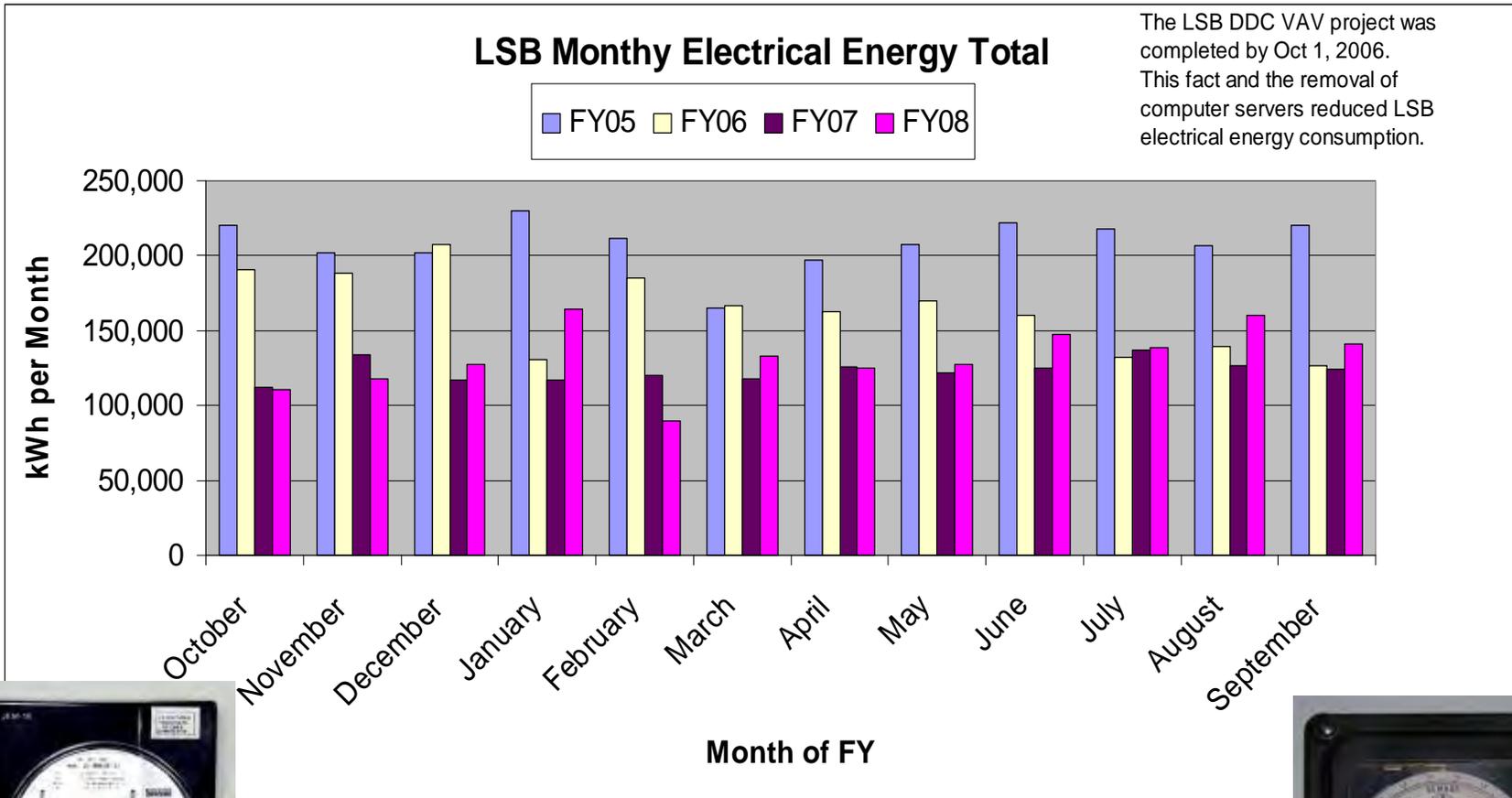
The existing VAV box dampers were removed from the abandoned VAV boxes.



85 pneumatic VAV systems converted to Direct Digital Control & BAS

Convert 3-way chilled water valves to 2-way valves with Direct Digital Control & BAS

Electric Energy Consumption Metering (EAc3.2)



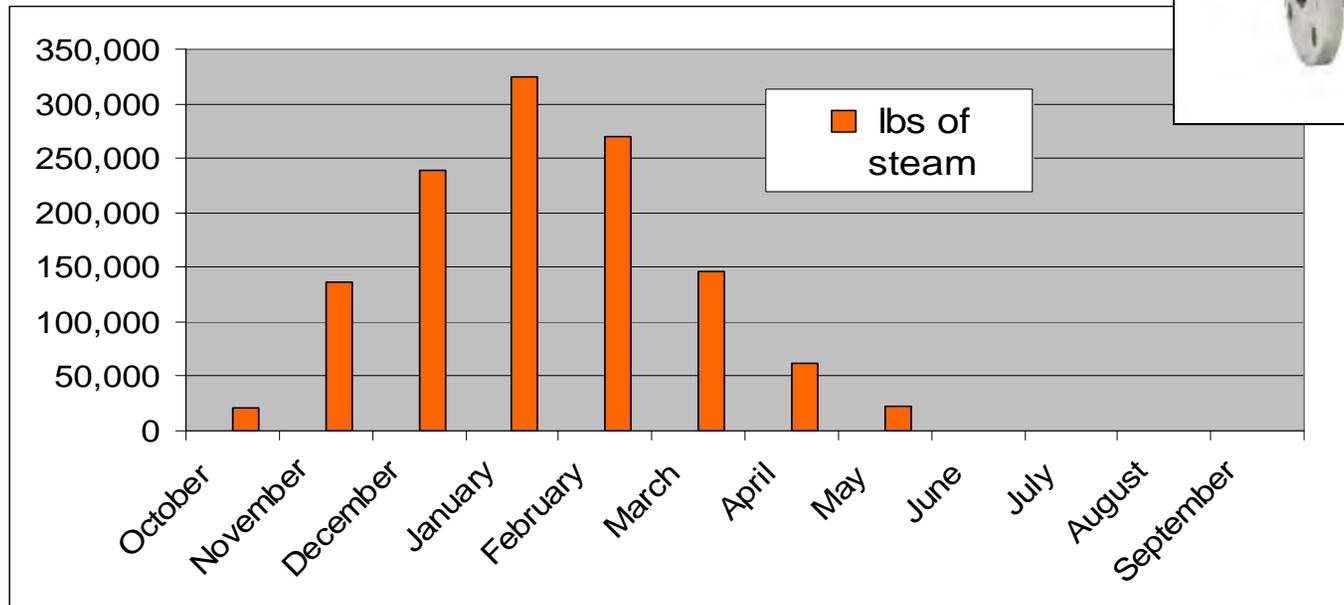
JEMstar Ethernet connected electric meter with automatic reports and remote reading. Replacing electro-mechanical meters.



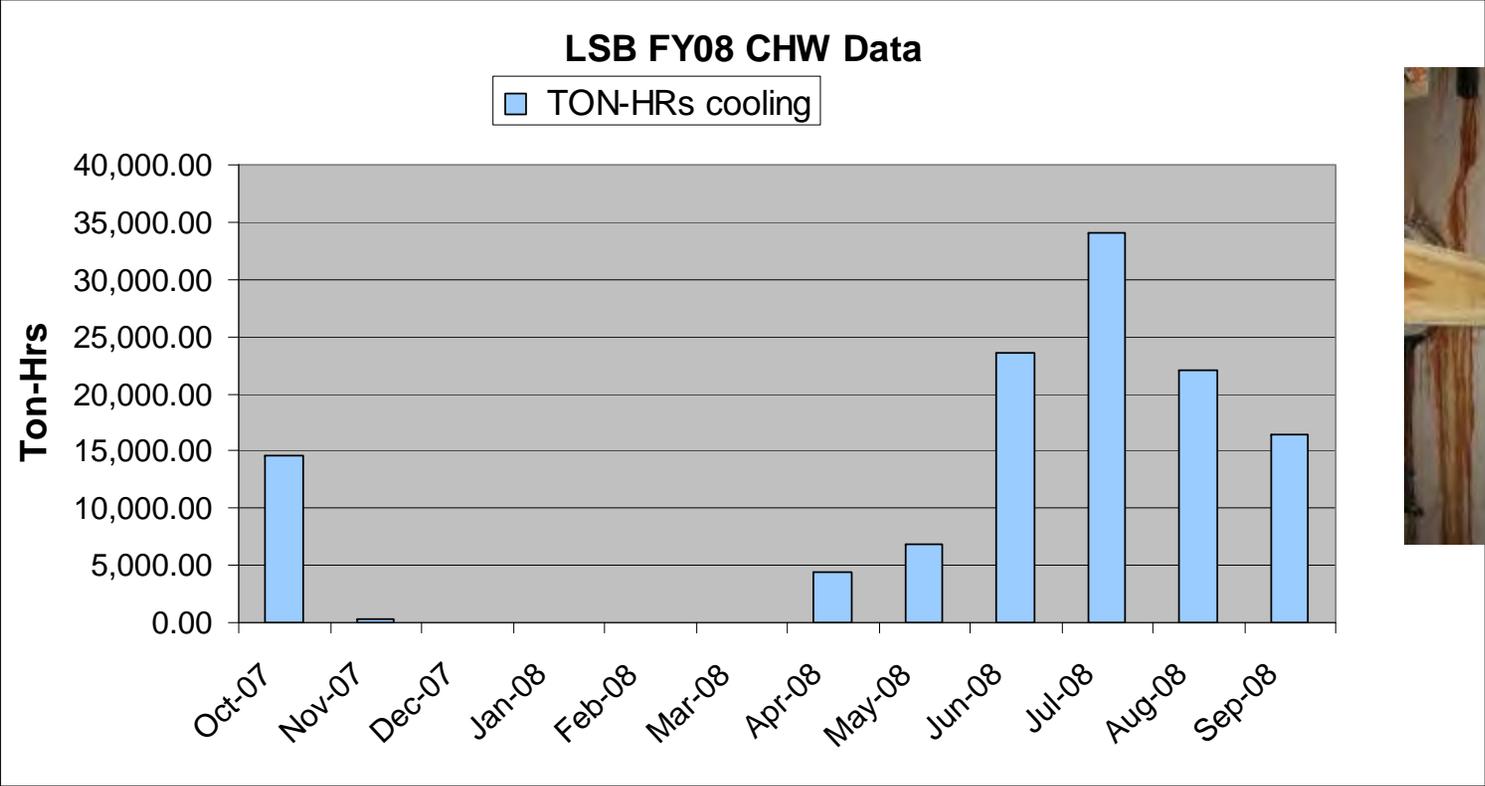
Steam Energy Consumption Metering (EAc3.2)



Vortex Shedding Steam Meter
connected to Building
Automation System.



Cooling Energy Consumption Metering (EAc3.2)



Annubar Chilled Water meter connected to Building Automation System.

Energy & Atmosphere (EAc4)

On-Site & Off Site Renewable Energy

PPPL Purchased Power Agreement current procurement effort is for ~ 1 MW peak power DC photovoltaic system



1 MW peak power DC:
~30% of non-experimental base electric load & ~4% of total electric load based on FY2008 data

Materials & Resources (MR)

Source USGBC

| Yes ? No | | Materials & Resources | | 14 Points |
|--------------------------|--------------------------|-----------------------|--|-----------|
| <input type="checkbox"/> | <input type="checkbox"/> | Prereq 1 | Sustainable Purchasing Policy | Required |
| <input type="checkbox"/> | <input type="checkbox"/> | Prereq 2 | Solid Waste Management Policy | Required |
| <input type="checkbox"/> | <input type="checkbox"/> | Credit 1 | Sustainable Purchasing | 3 |
| <input type="checkbox"/> | <input type="checkbox"/> | | Ongoing Consumables, 40% | |
| <input type="checkbox"/> | <input type="checkbox"/> | | Ongoing Consumables, 60% | |
| <input type="checkbox"/> | <input type="checkbox"/> | | Ongoing Consumables, 80% | |
| <input type="checkbox"/> | <input type="checkbox"/> | Credit 2 | Sustainable Purchasing | 2 |
| <input type="checkbox"/> | <input type="checkbox"/> | | Durable Goods, electric | |
| <input type="checkbox"/> | <input type="checkbox"/> | | Durable Goods, furniture | |
| <input type="checkbox"/> | <input type="checkbox"/> | Credit 3 | Sustainable Purchasing - Facility Alterations and Additions | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | Credit 4 | Sustainable Purchasing | 2 |
| <input type="checkbox"/> | <input type="checkbox"/> | | Reduced Mercury in Lamps, 80 pg/lum-hr | |
| <input type="checkbox"/> | <input type="checkbox"/> | | Reduced Mercury in Lamps, 70 pg/lum-hr | |
| <input type="checkbox"/> | <input type="checkbox"/> | Credit 5 | Sustainable Purchasing - Food | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | Credit 6 | Solid Waste Management - Waste Stream Audit | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | Credit 7 | Solid Waste Management | 2 |
| <input type="checkbox"/> | <input type="checkbox"/> | | Ongoing Consumables, 50% | |
| <input type="checkbox"/> | <input type="checkbox"/> | | Ongoing Consumables, 70% | |
| <input type="checkbox"/> | <input type="checkbox"/> | Credit 8 | Solid Waste Management - Durable Goods | 1 |
| <input type="checkbox"/> | <input type="checkbox"/> | Credit 9 | Solid Waste Management - Facility Alterations and Additions | 1 |
| Yes ? No | | | | |
| <input type="checkbox"/> | <input type="checkbox"/> | | | |

Material & Resources

(MRp1 Sustainable Purchasing Policy)

EPA CPG guidelines for Environmentally Preferred Purchasing (EPP) Products

A key component of the EPP program is EPA's list of designated products and the accompanying recycled-content recommendations. EPA has already designated products which are grouped into 8 categories:

Construction Products

Landscaping Products

Non-paper Office Products

Paper and Paper Products

Park and Recreation Products

Transportation Products

Vehicular Products

Miscellaneous Products

Ref: <http://www.epa.gov/epaoswer/non-hw/procure/index.htm>

Material & Resources

(MRp1 Sustainable Purchasing Policy)



Cool-Zero®
(carbon neutral)
carpeting

Recycling
stations made
with recycled
content



Material & Resources (MRp2 Solid Waste Management Policy & MRc4 Reduced Mercury Lamps)

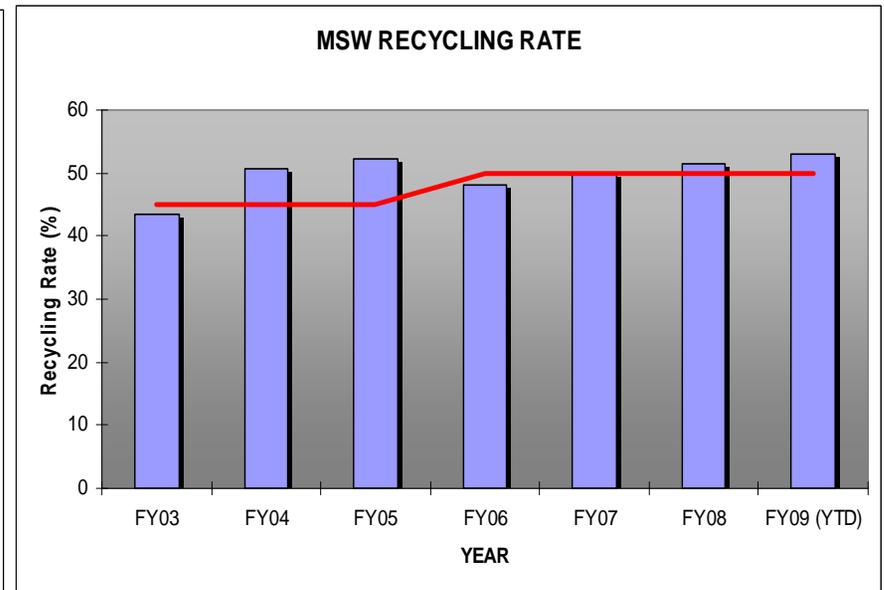
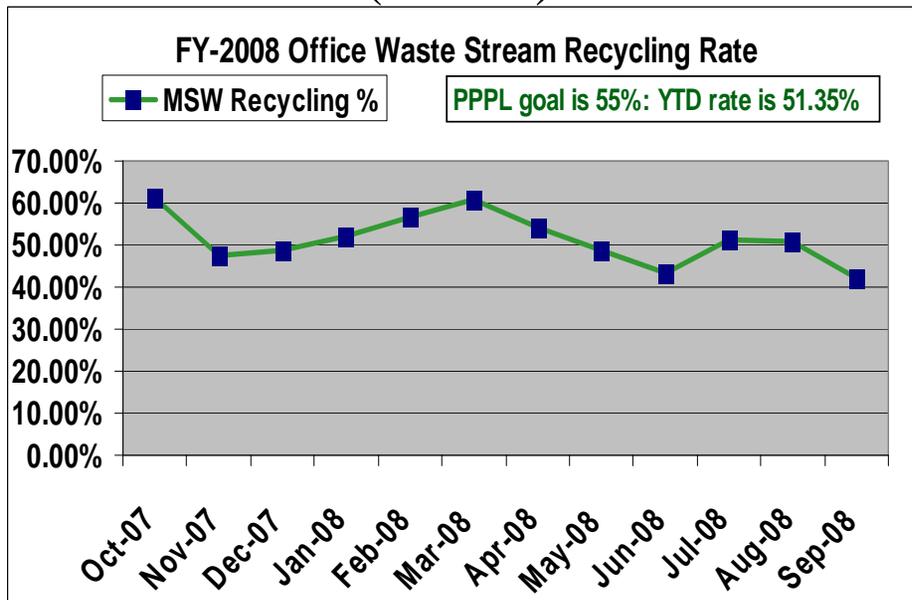
In addition to Solid Waste Management for MSW, all mercury containing lamps **MUST** be recycled.



PPPL recycled 962 pounds of fluorescent bulbs in FY07; in FY08 1,451 pounds

Material & Resources (MRc6, 7, & 8 Solid Waste Management MSW Recycling)

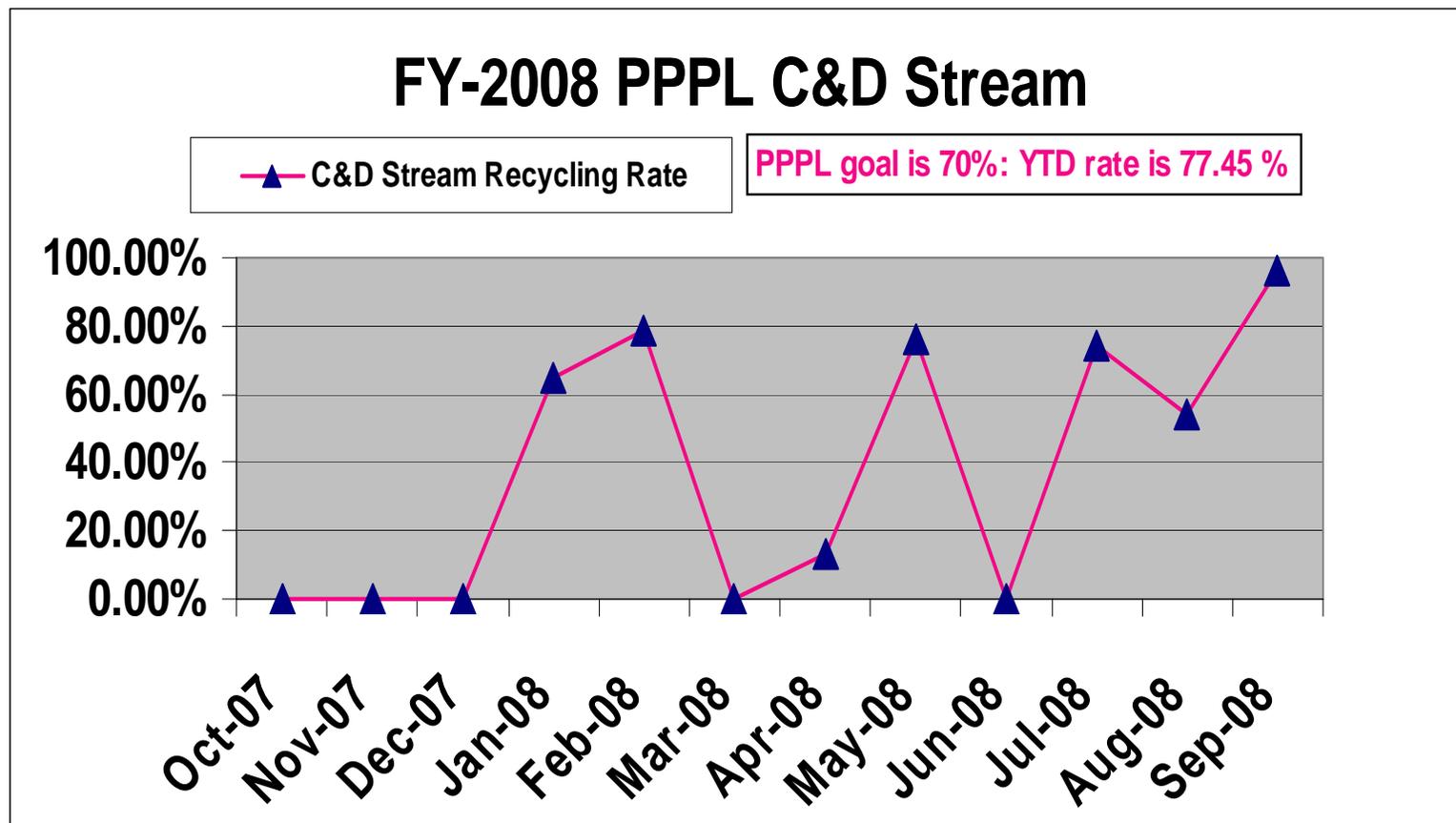
Reduce, Reuse, Recycles a minimum of 50% of the ongoing consumables (MSW)



- FY09 (YTD) = 53%
- DOE goal = 50%
- PPPL stretch goal = 55%

Material & Resources (MRc9 Alterations & Additions C&D Recycling)

Divert Construction & Demolition Waste at a minimum of 70% recycling rate.



Indoor Environmental Quality (EQ)

Source USGBC

| Yes | No | NA | Indoor Environmental Quality | Points |
|---|--------------------------|--------------------------|--|-----------|
| 0 | 0 | 0 | | 13 Points |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Prereq 1 Outdoor Air Introduction and Exhaust Systems | Required |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Prereq 2 Environmental Tobacco Smoke (ETS) Control | Required |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Prereq 3 Green Cleaning Policy | Required |
| Credit 1 IAQ Best Management Practices | | | | 5 |
| IAQ Management Program | | | | 1 |
| Outdoor Air Delivery Monitoring | | | | 1 |
| Increased Ventilation | | | | 1 |
| Reduce Particulates in Air Distribution | | | | 1 |
| IAQ Management for Facility Alterations and Additions | | | | 1 |
| Credit 2 Occupant Comfort | | | | 5 |
| Occupant Survey | | | | 1 |
| Occupant Controlled Lighting | | | | 1 |
| Thermal Comfort Monitoring | | | | 1 |
| Daylight and Views, 50% Daylight / 45% Views | | | | 1 |
| Daylight and Views, 75% Daylight / 90% Views | | | | 1 |
| Credit 3 Green Cleaning | | | | 9 |
| High Performance Cleaning Program | | | | 1 |
| Custodial Effectiveness Assessment, < 4 | | | | 1 |
| Custodial Effectiveness Assessment, < 3 | | | | 1 |
| Sustainable Cleaning Products and Materials, 30% | | | | 1 |
| Sustainable Cleaning Products and Materials, 60% | | | | 1 |
| Sustainable Cleaning Products and Materials, 90% | | | | 1 |
| Sustainable Cleaning Equipment | | | | 1 |
| Entryway Systems | | | | 1 |
| Indoor Integrated Pest Management | | | | 1 |

Indoor Environmental Quality (EQp1, c1.1, c1.2, c1.3)



Establish minimum Indoor Air Quality performance

Utilize your Building Automation System monitor & TREND: outside air ventilation rates, CO₂ levels, occupant comfort levels

| LEED-EB O&M Building Automation System Report: Office Building #123 | | | | | Gross SQ FT | 100,000 | |
|--|-----------|--------------|----------------|------------------------|-----------------|---|-------------------|
| Report Data | kWh | CHW MMbtu | Steam MMbtu | Potable H2O kGal | % OA average | CO2 average PPM Above OA Value | EUI kBTU/SQ FT |
| Current Month to Date | 150,000 | 70,000 | 40,000 | 20 | 15 | 550 | 5.1191 |
| Previous Month total | 300,000 | 140,000 | 80,000 | 40 | 20 | 500 | 10.2382 |
| Current Year to Date | 900,000 | 420,000 | 240,000 | 120 | 23 | 530 | 30.7146 |
| Previous Year total | 2,100,000 | 980,000 | 560,000 | 280 | 20 | 525 | 71.6674 |

Indoor Environmental Quality (EQp2)

Prevent or minimize exposure of building occupants, indoor surfaces & systems to environmental tobacco smoke.



Indoor Environmental Quality (EQp3 & EQc3.1-3.5 Green Cleaning Policy Items)

Document your Green Cleaning practices which reduce or ELIMINATE the exposure of the workers & occupants to potentially hazardous chemicals.



Indoor Environmental Quality (EQc2.1 & c2.2)

EQc2.1 requires that your building occupant survey has to include lighting levels.

EQc2.2 requires that 50% of your building occupants can utilize controls to adjust lighting levels.



Also encourage use of energy efficient TASK lighting fixtures.



Indoor Environmental Quality (EQc2.3)

Requirements

Have in place a system for continuous tracking and optimization of systems that regulate indoor comfort and conditions (air temperature, humidity, air speed and radiant temperature) in occupied spaces.



All Building Automation System will allow you to track (TREND) indoor comfort parameters.

Indoor Environmental Quality (EQc2.4)

Whenever possible & practical use natural day light !!

EQc2.4 requires that 50% of all occupied spaces achieve a 2% daylight factor or 45% have a direct line of sight to vision glazing.

EQc2.5 requires that 75% of all occupied spaces achieve a 2% daylight factor or 90% have a direct line of sight to vision glazing.

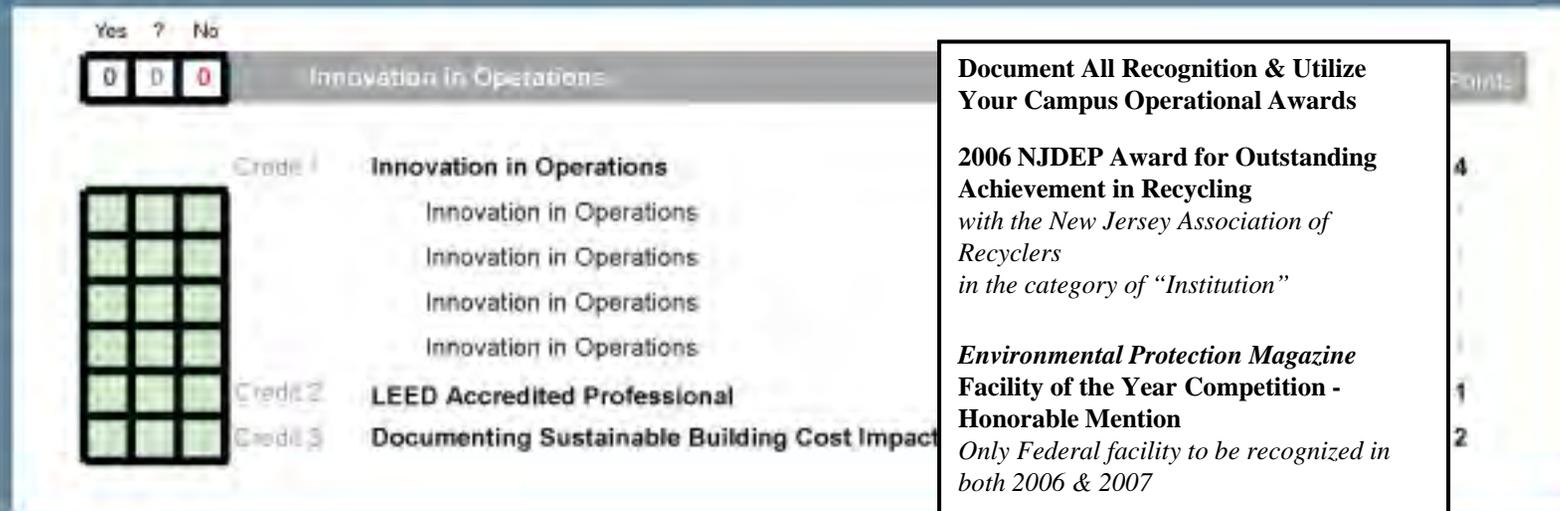
Occupants must have a means to control the “free” day lighting glare!



Employee operated shades at Novo Nordisk
Installed on ALL windows

Innovation in Operations (IO)

Source USGBC



IO Credit 2

Encourage employees to attain LEED-AP status

IO Credit 3

Document all your performance metrics for

- Energy
- EPP
- Water
- Recycling
- Sustainability



Document All Recognition & Utilize Your Campus Operational Awards

2006 NJDEP Award for Outstanding Achievement in Recycling
with the New Jersey Association of Recyclers
in the category of "Institution"

Environmental Protection Magazine Facility of the Year Competition - Honorable Mention
Only Federal facility to be recognized in both 2006 & 2007

Sustained Recycling Performance

- Office of Science "Best Practice" Pollution Prevention Award
- DOE "Pollution Prevention Star" Award

Alternative Fleet Fuels

- Office of Science "Noteworthy Practice" Award
- DOE "Pollution Prevention Star" Award" Honorable Mention
- FEMP national Award

HPAC Magazine Award for HVAC Retrofit of Lyman Spitzer Building

- 25 year old pneumatic controlled VAV system was replaced with Building Automation System Direct Digital Controlled VAV system



Regional Priority Credits

What are Regional Priority Credits (RPCs)?

Regional Priority Credits are introduced in the LEED 2009 rating systems to incentivize the achievement of credits that address geographically specific environmental priorities.

RPCs are not new LEED credits, but instead are existing credits that USGBC chapters and regional councils have designated as being particularly important for their areas. The incentive to achieve the credits is in the form of a bonus point.

If an RPC is earned, then a bonus point is awarded to the project's total points. Each specific area – referenced by ZIP code – has six RPCs per rating system.

A project may earn up to four bonus **Maximum** points as a result of earning RPCs, with one bonus point earned per RPC.



Sustainable

ENERGY • AIR • WATER • EARTH



**Sustainability begins with YOU; but
success depends the actions of ALL.**

