



# Plug Load Measurement and Control in Commercial Buildings

Michael Sheppy  
NREL

# Plug Load Measurement and Control in Commercial Buildings

1:00-2:15PM

# Agenda

- Welcome and overview of BBA PPL project team
- Round the room introductions
- Goals for the meeting
- Presentation on the results from the FY13 PPL Power Requirements and Capacity Analysis project
- Presentation on the Sustainable Facilities Tool
  - Michael Bloom – U.S. General Services Administration
- Presentation on energy data standardization
  - James Guang – ISOCKETS, Inc.
- Brainstorming session focusing on overcoming high-impact barriers that members are currently facing

# Introductions

- **Please state:**

- Your name
- Your company
  
- One barrier that you have encountered this year in trying to reduce plug loads

**OR**

- One success that you have had this year in reducing plug loads

# Goals for the Meeting

1. Review state-of-the-art resources, standards, and technologies.
2. Identify high-impact barriers to plug load reductions.
3. Brainstorm potential solutions that the project team can address.

# Results from the Plug Load Capacity Analysis Project

# PPL Capacity Analysis Project Results

## Problem Background:

- Commercial building occupants and real estate brokers need better information about realistic plug and process load capacities when they set infrastructure needs.

## Solution:

- Collect data on PPL power densities (W/SF) during building operation. Develop and publish findings in two forms: a technical report and simple brochure.

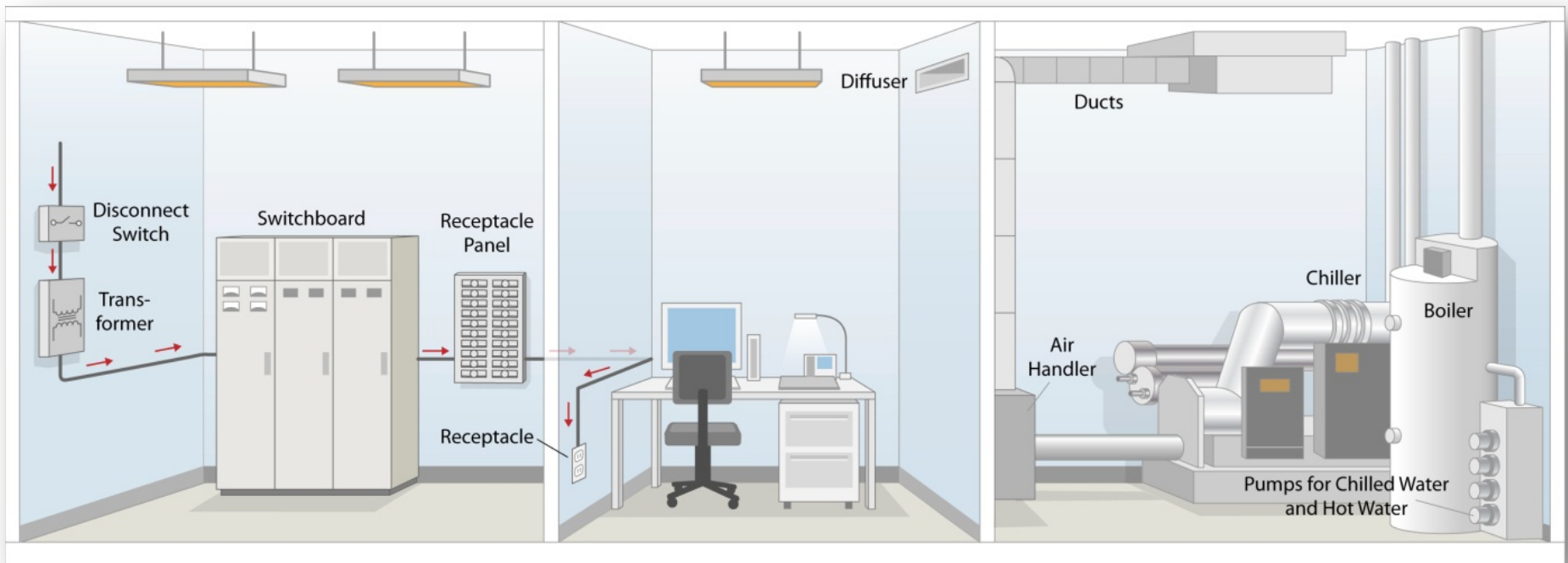
# PPL Capacity Analysis Project Results

## Key Takeaways:

- Overestimating PPL capacity leads designers to oversize electrical infrastructure and cooling systems, increasing upfront capital costs and energy costs.
- PPL densities are significantly lower (by a factor of 5 to 10) than what is typically requested, negotiated, or required in leases.
- On average, the annual PPL energy use intensity for offices (without laboratories or data centers) is around 0.50 W/ft<sup>2</sup>, and 0.27 W/ft<sup>2</sup> for higher education buildings.
- Offices with data centers or laboratories do exhibit higher PPL energy use intensities (up to 2.27 W/ft<sup>2</sup>).



# PPL Capacity Analysis Project Results



Systems that are affected by plug and process load densities specified in lease agreements (Photo credit: Alfred Hicks/NREL)

# PPL Capacity Analysis Project Results

Building Type	Average W/SF	Total SF	No. of Buildings
Office – Multi-Tenant w/ Data Center	0.58	607,524	3
Office – Single Government Tenant	0.24	18,818	1
Office – Single Government Tenant	0.16	138,000	1
Office – Single Government Tenant w/ Data Center	0.34	18,755	1
Office – Single Government Tenant w/ Data Center <sup>1</sup>	0.77	220,000	1
Office – Multi-Tenant	0.49	173,302	1
Office – Municipal	0.40	172,000	1
Office – Single Tenant w/ Warehouse	0.19	94,621	1
Office – Single Corporate Tenant w/ Data Center	0.47	293,221	2
Office – Single Corporate Tenant w/ Kitchen	0.64	91,980	1
Office – Single Corporate Tenant w/ Laboratories	2.27	222,616	1
Higher Education –Classrooms, Meeting Areas, and Faculty Offices	0.27	387,510	7

<sup>1</sup> Data from a commercial office building with net zero energy (NZE) goals



# Sustainable Facilities Tool

*Building sustainable practices one decision at a time*

**Michael Bloom**

U.S. General Services Administration

# What we believe...

- We believe we can achieve transformative change when we empower people to make informed decisions where they live, work, learn and play.
  - We create healthful and productive workplaces by modeling an integrated, systems-based approach to sustainable practices moving beyond large mechanical systems & expert-led construction projects.
  - We clarify the relationship between sustainability guidance and the physical, financial and human resources they seek to conserve.
  - We shape and capture the net effect of everyday projects and behaviors that occur without the oversight of design & workplace professionals.
  - We encourage people to explore sustainability options, engaging them in the experience of a virtual space walk-through that introduces opportunities, prompts questions and provides answers-- regardless of their previous knowledge level.
- Welcome to [SFTool.gov](https://www.sftool.gov) where you can identify and prioritize cost-effective green building and procurement strategies to improve environmental performance.**

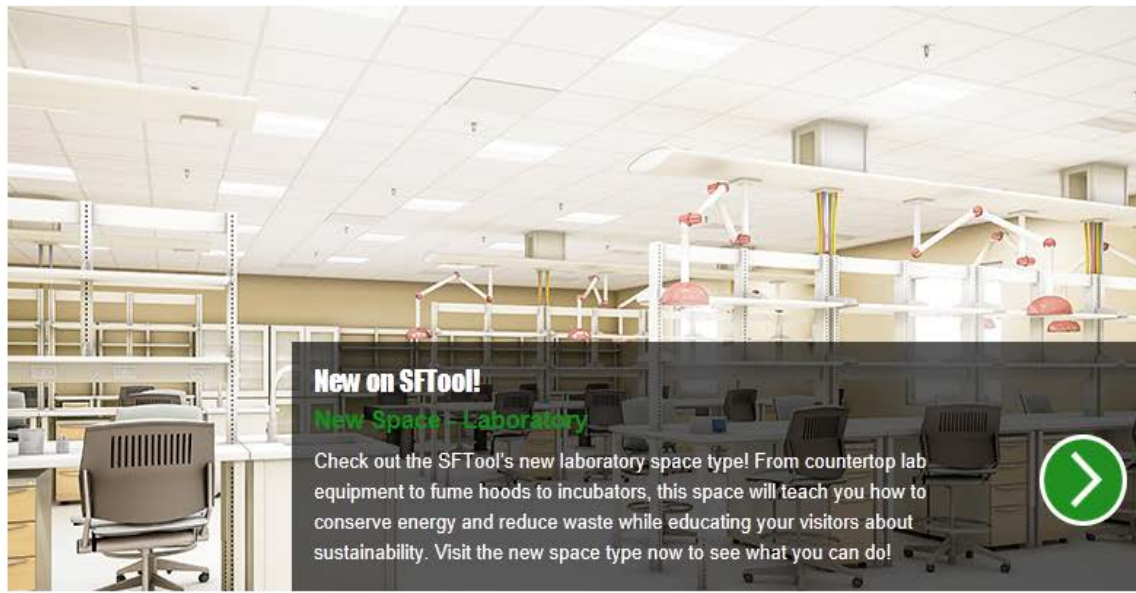
[Get Value with the SFTool](#)

# Learning Objectives

This presentation will provide an overview of [sftool.gov](https://sftool.gov), GSA's popular and free-to-use online tool for learning sustainability terms and concepts, planning projects, exploring sustainable practices in whole building systems and interior spaces, procuring products and sharing knowledge and case studies.

## Learning Objectives: Participants will learn:

- to identify and prioritize cost-effective green building and procurement strategies to improve environmental performance
- how to compare products and materials along multiple sustainability attributes
- how to integrate sustainable practices into projects and procurements beyond large mechanical systems & expert-led construction projects
- how quantifiable savings can result from an interactive online sustainability tool in the areas of training, professional services, research time, operations and more



**New on SFTool!**

**New Space - Laboratory**

Check out the SFTool's new laboratory space type! From countertop lab equipment to fume hoods to incubators, this space will teach you how to conserve energy and reduce waste while educating your visitors about sustainability. Visit the new space type now to see what you can do!



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LEARN



PLAN



EXPLORE



PROCURE



SHARE



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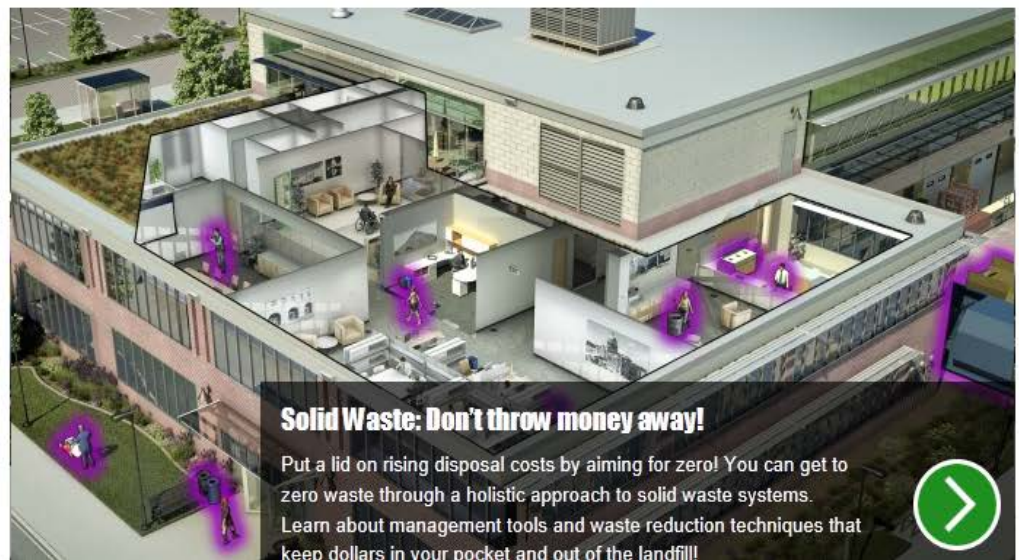
PROCUREMENT PROFESSIONAL



LEASING SPECIALIST



PROJECT MANAGER



**Solid Waste: Don't throw money away!**

Put a lid on rising disposal costs by aiming for zero! You can get to zero waste through a holistic approach to solid waste systems. Learn about management tools and waste reduction techniques that keep dollars in your pocket and out of the landfill!







# Explore

Select



Spaces

Systems

Cafeteria

Open Office Area

Open Teaming Space

Enclosed Conference

Private Office

Reception/Lobby

Support Area

Break/Pantry

Computer/LAN room

Tenant Corridor

Tenant Restroom

Laboratory **New!**



## Open Teaming Space

Teaming spaces are flexible areas designed to foster collaboration and innovation. They should include easily to re-configurable work surfaces, where groups can spread out and vertical surfaces for making work visible. Seating should be agile and **passively ergonomic**; occupants should be able to move around the space easily and comfortably.

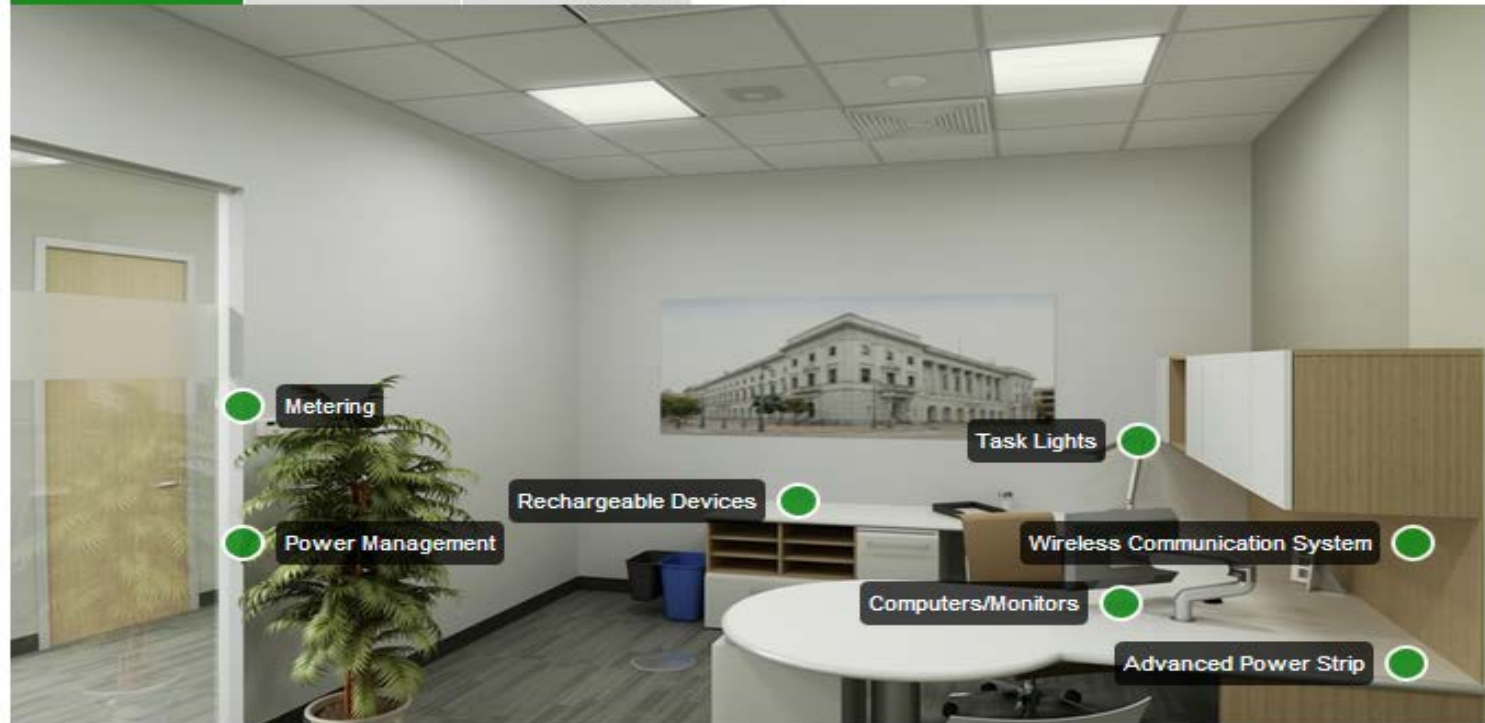
Explore

# Plug Loads Components

Private Office

Break Room

Support Area



## Plug Load Management

<a href="#">Plug Load Nuggets</a>	Best practices and key strategies in short form (250 words) covering seven plug load topics. Learn what you need to know, fast!
<a href="#">Plug Load FAQ</a>	Find out the "what", "why", and "how" needed to effectively manage plug loads.
<a href="#">Plug Load Checklist</a>	Utilize the checklist to assist your integrated team execute and monitor a plug load reduction program.
<a href="#">Plug Load Research Review Summary</a>	For those really looking to learn more, get summaries of the forefront research findings that serve as the plug load knowledge foundation.
<a href="#">Plug Load Control and Advanced Power Strips</a>	Discover what GSA's Green Proving Ground (GPG) found when studying plug loads and different advanced power strips (APS) in their own facilities.



# SFTool: Overview

- [www.SFTool.gov](http://www.SFTool.gov) (Launched 2/2011)
- [SF Mobile App](#) (Launched 6/2011)
- [Green Products Compilation](#) (Launched 2/2012)
- [Whole Building Systems](#) (Launched 6/2012)
- [Life Cycle Approach](#) (Launched 6/2012)
- [User Guides](#) (Launched 6/2012)
- [Improved Search](#) (Launched 6/2012)

# SFTool: New in FY2013

- [Solid Waste Module](#)
- [Cafeteria Module](#)
- [Green Services](#)
- [Facebook](#), [Twitter](#) & [Pinterest](#)
- [Hot Annotated EO 13514](#)
- [NetZero Energy](#)

# New in FY2014

- [Lab Module](#) (FY14)
- [Customized Agency Content w/in GPC](#) (FY14)
- [Responsive Design](#) (FY14)
- [Water Efficient Fixtures](#) (FY14)
- [Plug Load Module](#) (FY14)
- [Hot Annotated EO 13653](#) (Climate Adaptation) (FY14)
- [API and Developer Page](#) (FY14)
- [New Share Format w/curated social media feeds](#) (FY14)

# Coming Soon

- My Projects : goal-based, algorithm-driven project tracking
- Guiding Principles Integration
- Climate Adaptation Module
- Green Roof Module
- Green Cleaning Module
- Green Team Toolkit: Engagement, Human Behavior & Design
- Green Renovation Simulation

# Office of High-Performance Green Buildings Links

- [Office of Federal High-Performance Green Buildings](#)
  - [Research into Practice Program](#)
  - [Strategies and Approaches for Transformational Change](#)  
(National Academy of Sciences Report)
  - [Facility Management Institute](#)
  - [Climate Adaptation Policy and Planning](#)
  - [Green Roofs](#)
  - [Green Building Certification System Review](#)
  - [Sound Matters](#)

# Additional Sustainability Links

- [GSA Green Proving Ground](#)
- [Whole Building Design Guide](#)
  - [Guiding Principles for Existing Buildings](#)
- [FEMP](#)
  - Federal Energy Management Program
  - [Lightingfacts.com](#)
- [FedCenter](#)
  - Environmental Stewardship & compliance assistance information

# User Statistics (March 21, 2014)

- 100,670 visits to the site (GSA-16%; DOD- 8%; NASA- 3%; EPA- 1%)
- 404,289 page views: current rate = over 1250 per week
- The average new user spends 4.10 minutes on the site, visiting an average of 4.02 pages each visit. (rising consistently over time)
- The average returning user spends 5:35 minutes on the site per visit, visiting an average of 5.13 pages each visit (47% more than new users). Traffic from Facebook stays for over 9 minutes! Traffic from Pinterest , more than 14 minutes!
- 37.5% of traffic on the site is from Returning Visitors
- Of site visitors, 564 have created a log-in enabling them to create and track material projects of their own; 180 have created such a project, including representatives from over 30 Federal agencies.
- While over 47% of the traffic comes to the site directly, 15% now comes from search engines and 38% from referring sites and 128 countries and territories.
- 4.47% of traffic comes through mobile devices (33.8% iPad/29.12% iPhone)

# Questions?



**Sustainable Facilities Tool**

<http://www.SFtool.gov>

**Michael Bloom**

**Sustainability and Green Buildings  
Program Advisor**

[Michael.Bloom@gsa.gov](mailto:Michael.Bloom@gsa.gov)

[SFTool Feedback Survey](#)



**Office of Governmentwide Policy**

**Office of Federal High-Performance Green Buildings**



# Brainstorming Session

- Discuss high-impact barriers that members and stakeholders are currently facing
  - Recap barriers that were brought up during introductions
- Commercial Real Estate
  - Does the type of lease affect how motivated the tenants are to reduce plug loads?
  - Is there a “fast track” to plug load savings program/guidance that we can create for new tenants or tenants that are renewing their leases?
- Healthcare
  - Would it be helpful to create a brochure that highlights the worst “energy hogs” in medical office buildings (and strategies to mitigate them)?
- Retail
  - Would it be helpful to create a leasing language that highlights how to reduce the energy consumption of beverage refrigerators?

# Plug Load Measurement and Control in Commercial Buildings

**2:30-3:45PM**

# Introductions and Agenda Recap

- Introductions and agenda review
- Goals for the meeting
- Presentation from James Guang (iSockets) on the standardization of plug load data
- Brainstorming session



# Plug Load Data: Standardization

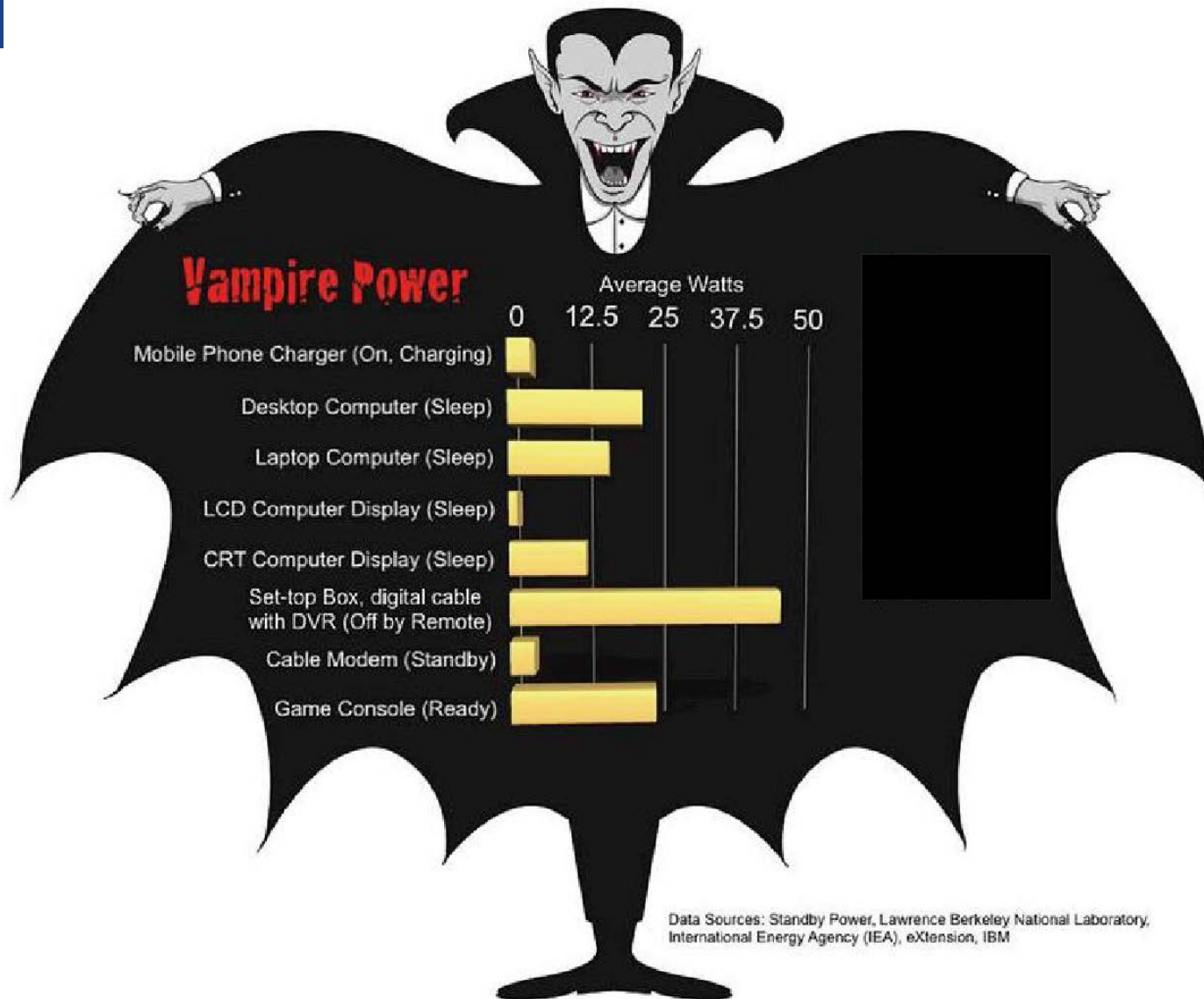
Jichang (James) Guang, Ph. D.  
President, iSockets, Inc.

# Agenda

- You can't manage what you can't measure
- Energy data standard examples
- The requirements of energy data standard:
  - Data transmission
  - Data format
- Energy data standard for energy saving
  - Make it simple, make it cheap!

# Energy Data → Behavior Change → Saving

- Edward Lu (former astronaut) testimony before Congress on behalf of Google, 3/3/2009
  - When consumers can see in real time how much energy they are using, they save 5 to 15 percent on their electricity use with simple behavioral changes. ....
  - Savings simply based on a real-time feedback monitor could amount to \$60 to \$180 per year.
- Smart meter rollout report, UK House of Commons, 7/13/2013
  - Positive net present benefit of £6.7 billion over the period to 2030, by delivering total benefits of around £18.8 billion and costs of around £12.1 billion
- The Guardian: 1/14/2014
  - A third of smart meter customers saving up to £75 a year, British Gas says
  - Survey finds smart technology helping nine out of 10 people cut energy consumption and bills



Data Sources: Standby Power, Lawrence Berkeley National Laboratory, International Energy Agency (IEA), eXtension, IBM

Stand by power:  
A perfect example  
of the benefits of  
measuring plug  
load

Courtesy: NY Times  
Data: Lawrence Berkeley Lab



# Energy Data Standard Examples

- **Industry Forum\***
    - **OASIS: Energy Interoperation 1.0**
      - Very inclusive but complex
    - **Zigbee: SEP 2.0 (Smart Energy Profile)**
      - Covers one specific technology group
    - **OpenADR: OpenADR 2.0 Profile**
      - Focus on DR mode for utilities
  - **Companies\***
    - **EnergyWise:**
      - Simple but not complete, also need special routers
    - **MQT: Also accepted by OASIS**
      - Very simple, most on data transmission methodology
- \* Not a complete list



# Energy Data Standard: Transmission

- The factors affecting the transmission standards:
  - Data customer at receiving end: utility or end users
    - Need one standard focusing on end user's side
  - Topology: one level or multi-level gateway
    - TCP/IP based: device directly to server
    - Zigbee, Z-wave etc: device to gateway to server
  - Technology: XMP, HTTP, MQTT etc.
    - Security considerations
    - Future trends: mobile devices

# Energy Data Standard: Data Format

- Deciding factor for data format: purpose
  - Utility: Fee calculation, compliance
  - Energy management: energy history
  - End users: cost history
    - Itemized cost: plug load
- Next factor: device cost
  - Very important for plug load measurement
    - Embedded devices are not designed for computing
- Different level of complexity:
  - Utility level: interoperation, no big problem
  - End users: lack of a low cost standard
    - Especially true for plug loads

# Standard for Energy Saving

- Focus on end user: with energy saving in mind
  - Cost history
  - Need to specify data control mechanism
    - Missing in current energy data standard, because it focuses on utility's need
    - Binary control: On/Off
    - Analog control: dimmer, voltage regulator for LED etc.
    - Device specific control: HVAC control.
  - Interfacing with building management system and resource management
    - Time and duration of electronic device usage: very important parameter in property management such as utilization analysis
    - Communication interface with other subsystems such as security management and office automation.

# Make It Simple, Make It Cheap!

- Huge cost for plug load measurement
  - Device quantity: many times more than smart meters
  - Device cost: end user acceptable
    - Do not have to be revenue grade power meters
- Make it simple, make it cheap
  - Standardization: unified data communication between devices and server
    - Do not have to govern the communication between devices and gateway
  - Data format standard: need to be simple
  - Simplicity brings cost down



**Thanks!**

[james.guang@i-sockets.com](mailto:james.guang@i-sockets.com)



# Brainstorming Session

# Brainstorm

- Recap barriers that were brought up during the first session
- New challenges and opportunities
  - Plug Load Reduction Strategies for Medical Office Buildings
- Potential solutions
- Identify potential projects for FY15



# Brainstorming Session – Commercial Real Estate

- New Ideas:
  - Leading questions
    - Does the type of lease affect how motivated the tenants are to reduce plug loads?
    - Is there a “fast track” to plug load savings program/guidance that we can create for new tenants or tenants that are renewing their leases?
  - Plug load metering
    - Pros?
    - Cons?

# Brainstorming Session – Healthcare

- New Ideas:
  - Leading questions
    - A recent study deployed “dense” metering of plug loads in a medical office building.
      - Would it be helpful to create a brochure that highlights the worst “energy hogs” in medical office buildings (and strategies to mitigate them)?

# Brainstorming Session – Retail

- New Ideas:
  - Leading questions
    - In a recent study, beverage refrigerators in two big-box stores were powered off at key times for energy savings.
      - Schedule-based advanced power strips were used (\$10 to \$20 per unit)
      - Energy savings of roughly 20 to 25% per refrigerator.
      - Would it be helpful to create a brochure that highlights how to implement this efficiency strategy in stores?
      - Would it be helpful to create an RFP that would enable a third party to implement this efficiency strategy in stores?
    - Are there other “problem” plug loads in stores that are difficult to address?

# Questions?

Thank you!

Michael Sheppy, P.E.  
National Renewable Energy Laboratory

[Michael.Sheppy@nrel.gov](mailto:Michael.Sheppy@nrel.gov)

Phone: (303) 275-4327



# Sustainable Facilities Tool

*Building sustainable practices one decision at a time*

Better Buildings Summit 5-7-14

# What we believe...

We believe we can achieve transformative change when we empower people to make informed decisions where they live, work, learn and play.

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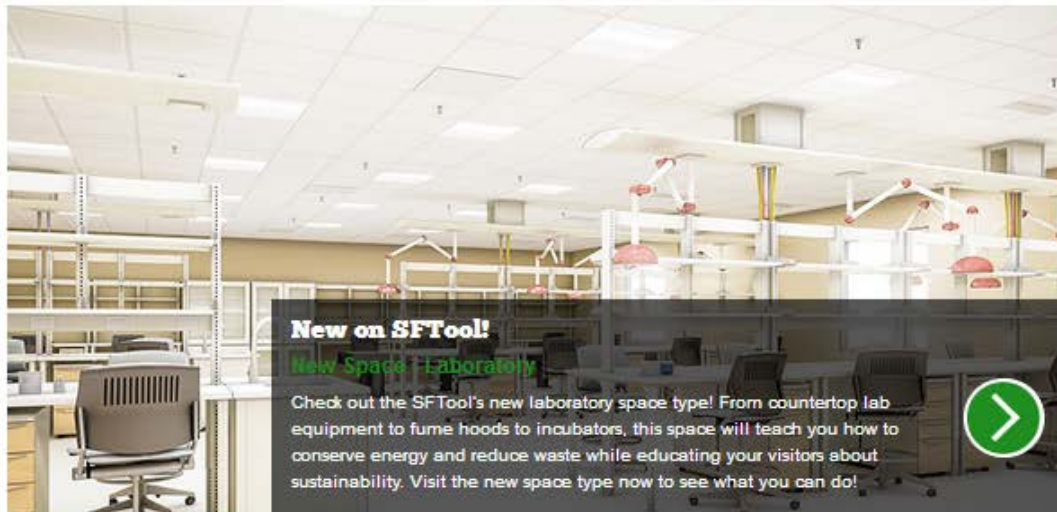


# Key Features

- Valuable resources for **sustainable building principles** and **concepts**
- **Consolidated sustainability-related procurement requirements** in one easily searchable place
- **3-D interactive walkthrough** of office interiors, whole building systems & **material comparisons**
- **Complex Subjects Simplified** including Net Zero Energy, Life Cycle Approaches, and Climate Adaptation
- Essential **regulations & guidelines**, and case studies
- **Take-away checklist** for tracking sustainable design
- **Intuitive and easy-to-navigate** user interface

# Key Benefits

- Empowers decision-making for **sustainable goals & objectives** to meet the Guiding Principles
- Promotes the use of **energy efficient, sustainable design** and **environmentally preferable materials** in renovations, alterations & leases
- Enhances skill sets to assess **green procurements, leases & architect/design team deliverables**
- **Supports green practices** throughout the life of a facility



**New on SFTool!**

**New Space - Laboratory**

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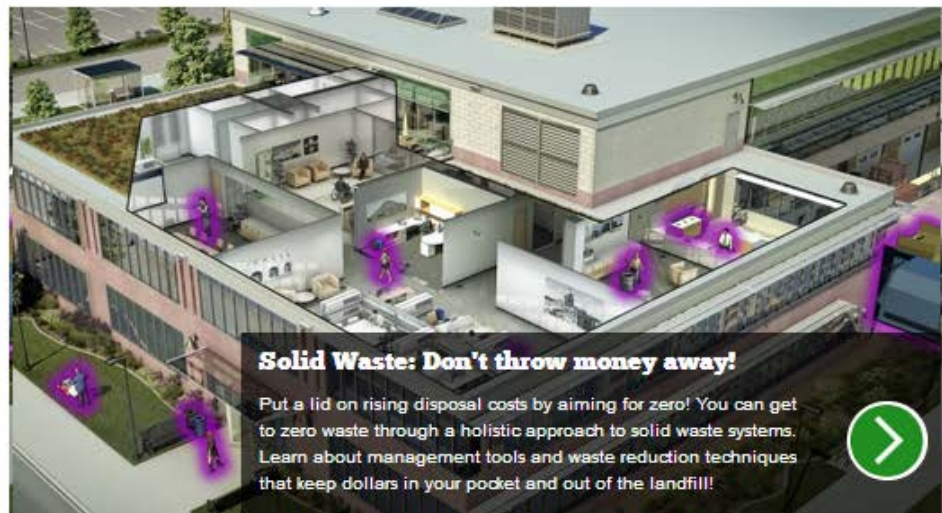
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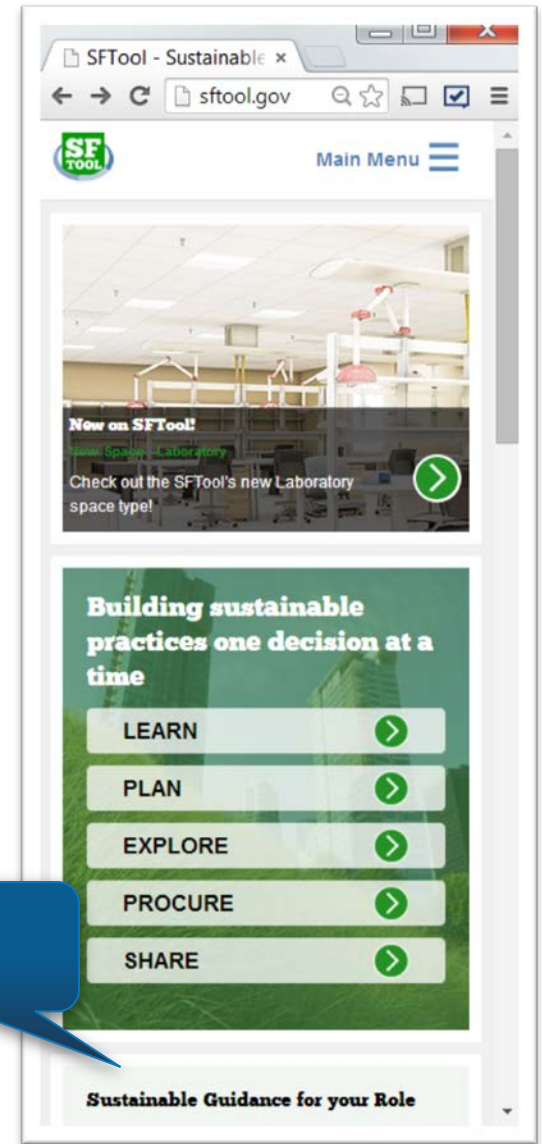
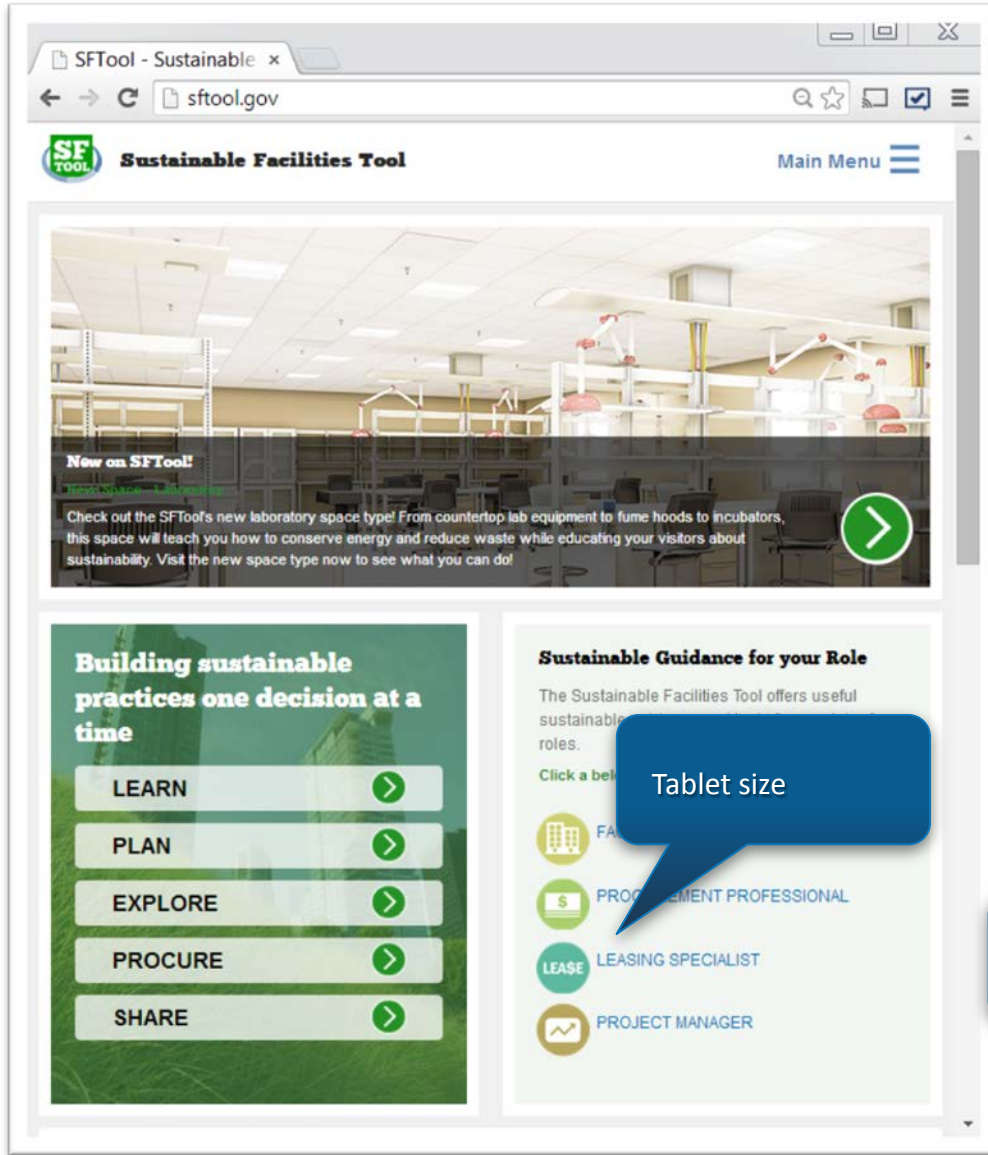


**Hot Annotations**

Need help understanding Executive Order (EO) 13653? Want to learn more about

**Custom Product Lists**

Use custom lists to track products that are of interest to you and download the list

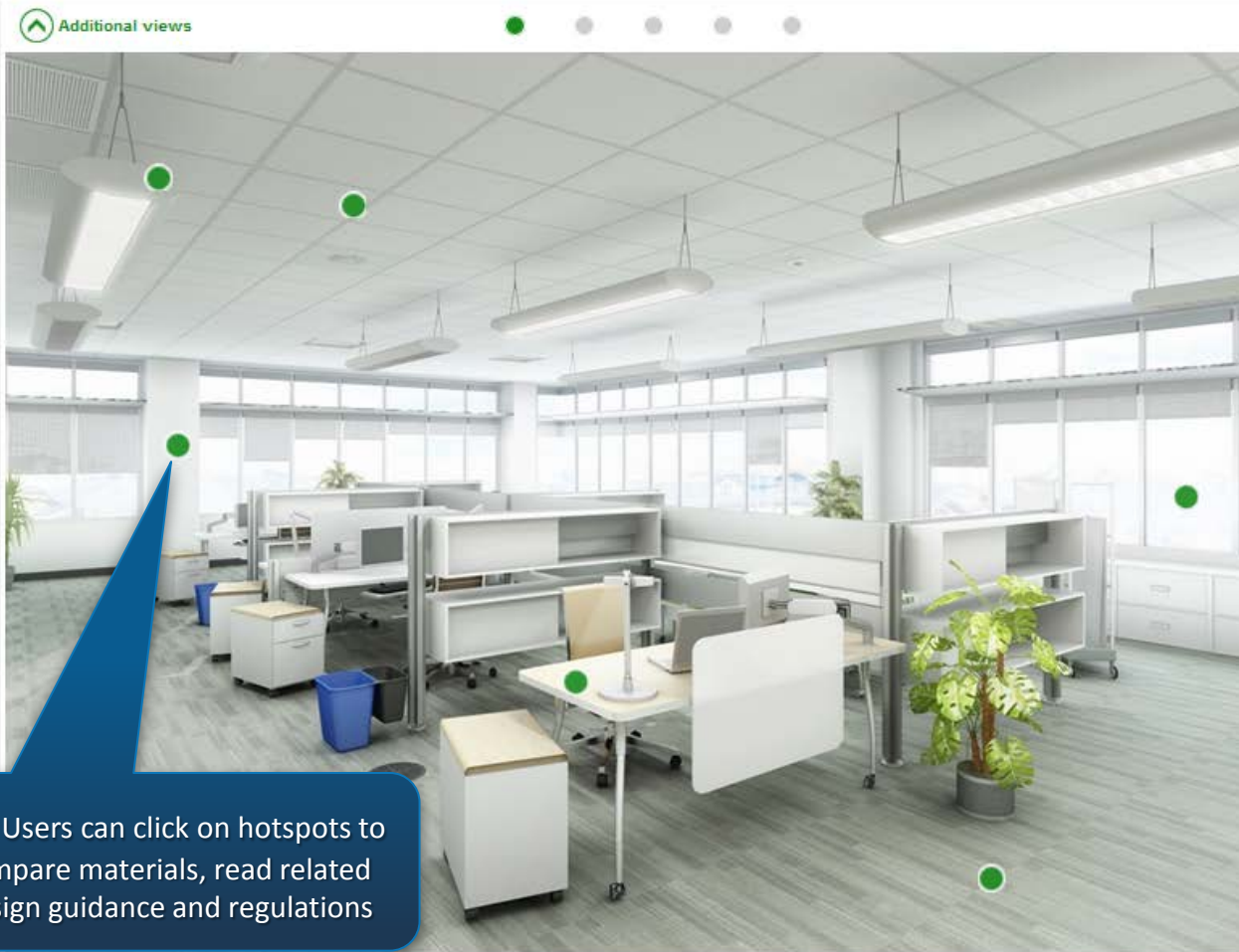




## Open Office Area ▾

An open office area supports work productivity for groups of employees. Design this space to be flexible, allowing for quick transition from collaborative to individual setup. Optimize daylight and views, and avoid blocking views by using low cubicle dividers or dividers made of transparent material. Utilize [occupancy sensors](#) and [zones](#) for maximum efficiency of HVAC and lighting systems. Design HVAC systems to have multiple zones to increase thermal comfort, and consider using [under floor](#) air to provide occupant control of diffusers. Allow for task lights for all abilities and tasks. Support the type of work with [active ergonomics](#). Pay careful attention to acoustics by selecting materials that absorb sound or installing a [white noise](#) system to limit noise levels from one work station to the next. [View Planning Strategies](#)

Click on a hotspot to learn sustainable strategies and compare materials for that system



Interested in Open Office Area-related products?

[View related green products and services on the Green Procurement Compilation](#)

Share



## Select a System to Compare Materials

[Flooring](#)

[Walls](#)

[Ceiling](#)

[Lighting](#)

[HVAC](#)

[Windows and Daylighting](#)

[Furniture / Furnishings](#)

## Flooring

### Design Guidance

### Compare Options

### Legal Requirements

### Design Guidance

Overall Strategies

Broadloom Carpet

Carpet Tile

Carpet tile flooring is composed of individual carpet sections installed in sequence. Carpet tile fibers can be made of a variety of materials, but the most common is Nylon. Carpet fibers can also be made of [bio-based](#) (e.g. corn), natural (e.g. wool) or [recycled materials](#). Consider products from manufacturers who will reclaim and recycle carpet at the end of its life.

Ceramic Tile

Linoleum

Wood Flooring

Rubber Flooring

Cork

Bamboo

Cut Natural Stone

Porcelain Tile

Bio-Based Tile

### Additional Design Guidance and Product Info

[BuildingGreen - Flooring & Floor Coverings](#)  
GreenSpec® approved products and insights

### Green Tips

- ✓ Dry vacuum regularly and follow with a wet vacuum water extraction machine when necessary to protect [indoor air quality](#).
- ✓ Evaluate sustainable attributes such as high [recycled content](#) and [low VOC's](#) to determine the most appropriate sustainable product for the space. Remember that adhesives may be required for flooring, and these may add VOC's even if the finish flooring does not.
- ✓ Prevent stains by cleaning up spills promptly, starting with cold water and blotting cloths.
- ✓ Keep extra carpet tiles on hand to replace stained or damaged tiles.
- ✓ Use carpet to absorb sound and reduce noise pollution.
- ✓ Use carpet tile rather than broadloom carpet for increased flexibility and the ability to replace selected areas without having to remove carpet from the entire room.
- ✓ Look for [CRI Green Label](#) and [Green Label Plus](#) certified carpet which emits fewer emissions than standard carpet.

## Flooring

Design Guidance

Compare Options

Legal Requirements

## Compare Flooring Options

[Back to material selection](#)

**i** The intent of the 'Evaluate Section' is to assist users in understanding the sustainable attributes of various materials and systems. Please note that this tool does not promote any particular material or system, since all may have benefits and considerations as they relate to greening a project.

**+** Benefit **-** Consideration **i** Information

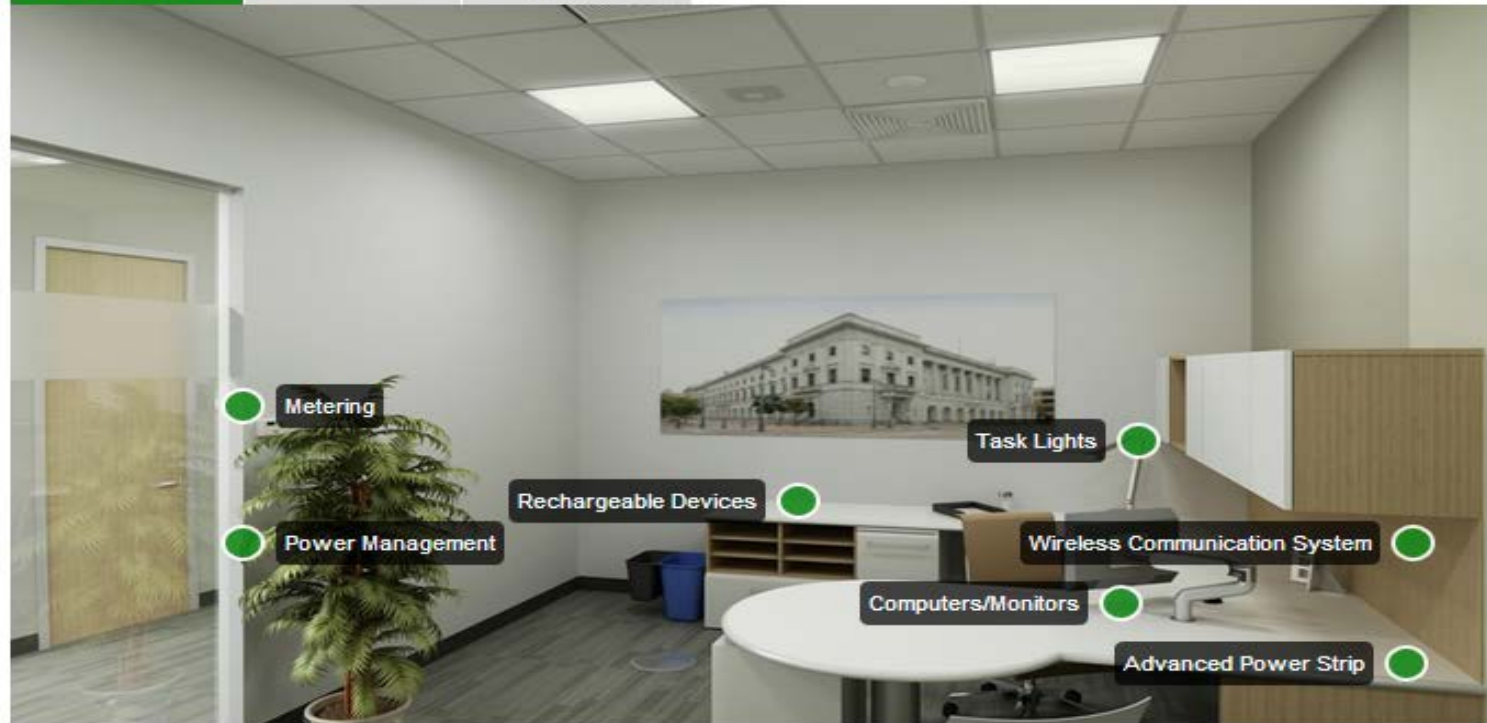
	Wood Flooring	Cork	Bamboo
<b>Description</b>	Wood is a natural material and flooring that generally comes in plank form. There are many different species of wood and types of wood flooring including <b>reclaimed</b> , <b>suppressed</b> , and wood from <b>responsibly managed forests</b> . Wood is not a rapidly renewable resource and requires several years growth before harvesting. Consider <b>reclaimed</b> wood or product from certified forests.	Cork flooring is made from the bark of cork oak trees. The bark can be stripped without introducing damage to the tree, making it a rapidly renewable resource.	Bamboo is a grass that has a short growth cycle and continues to grow after it is cut without replanting or cultivating, making it a rapidly renewable resource. Durability is dependent upon the maturity of the bamboo. Bamboo provides for extremely durable commercial grade floors when fully mature, usually 8-10 years.
<b>IEQ</b>	<b>Wood Flooring</b>	<b>Cork</b>	<b>Bamboo</b>
<b>Pollutants</b>	<b>+</b> Does not retain pollutants, easy to clean.	<b>+</b> Does not retain pollutants, easy to clean.	<b>+</b> Does not retain pollutants, easy to clean.
<b>VOC - Binders, Adhesives, Finishes</b>	<b>i</b> VOC emitting products are used during <b>finishing</b> of material or system. Ensure that low-VOC <b>finishes</b> are used. Use nails or staples to install.	<b>i</b> VOC emitting products are used during <b>production, installation</b> and <b>finishing</b> of the material or system. Ensure that low-VOC <b>adhesives, binders</b> and <b>finishes</b> are used.	<b>i</b> VOC emitting products are used during <b>production</b> and <b>finishing</b> of the material or system. Ensure that low-VOC <b>binders</b> and <b>finishes</b> are used. Use nails or staples to install.
<b>Ergonomics</b>	<b>-</b> Wood flooring is hard and does not provide comfort or decrease stress on the feet and legs if standing for long periods of time.	<b>+</b> Consider installing in areas of the building where occupants primarily stand, such as a mail room, security, or possibly break room, to help alleviate foot and back pain as cork can naturally compress and absorb pressure.	<b>-</b> Bamboo is a hard material that does not provide comfort or decrease stress on the feet and legs if standing for long periods of time.

# Plug Loads Components

Private Office

Break Room

Support Area



## Plug Load Management

<a href="#">Plug Load Nuggets</a>	Best practices and key strategies in short form (250 words) covering seven plug load topics. Learn what you need to know, fast!
<a href="#">Plug Load FAQ</a>	Find out the "what", "why", and "how" needed to effectively manage plug loads.
<a href="#">Plug Load Checklist</a>	Utilize the checklist to assist your integrated team execute and monitor a plug load reduction program.
<a href="#">Plug Load Research Review Summary</a>	For those really looking to learn more, get summaries of the forefront research findings that serve as the plug load knowledge foundation.
<a href="#">Plug Load Control and Advanced Power Strips</a>	Discover what GSA's Green Proving Ground (GPG) found when studying plug loads and different advanced power strips (APS) in their own facilities.

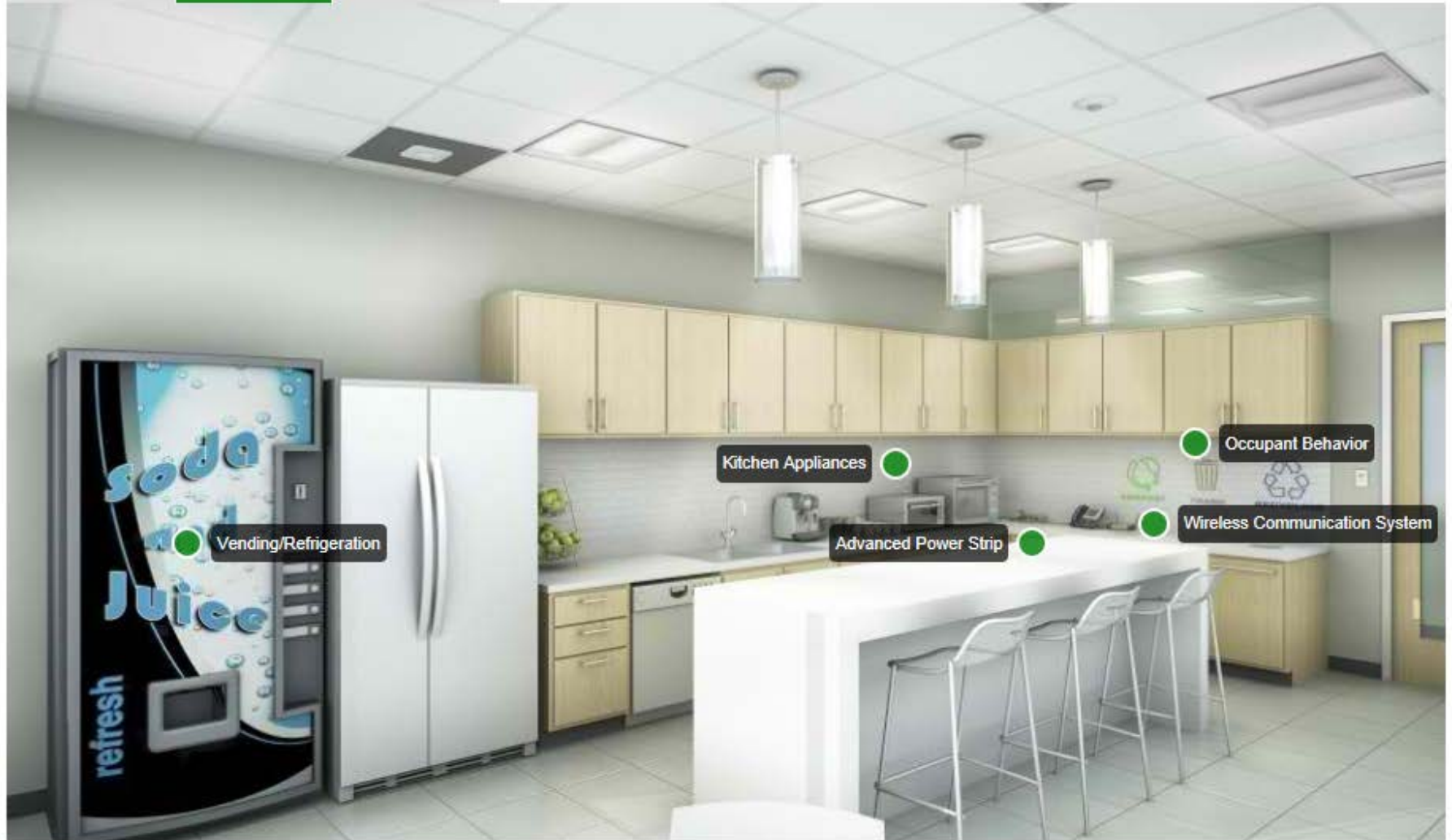


# Plug Loads Components

Private Office

**Break Room**

Support Area



Vending/Refrigeration

Kitchen Appliances

Advanced Power Strip

Occupant Behavior

Wireless Communication System



## PLUG LOAD REDUCTION CHECKLIST

Plug loads refer to energy used by equipment that is plugged into an outlet. In an office, computers and monitors represent the largest plug loads. The next largest are printers, faxes, multifunction devices and computer speakers. Other devices include portable lighting, telephones, battery chargers, vending machines and coffee makers. General building lighting, heating, ventilation, cooling, and water heating are not considered plug loads.

Plug loads are big energy users, consuming approximately 30% of electricity used in offices. For example, California's office plug loads consume more than 3,000 gigawat hours annually, costing business owners more than \$400 million each year. This is the equivalent to the carbon dioxide emissions of 140,000 cars (700,000 metric tons) per year.

Unfortunately, plug loads are essentially "orphans." They are not high priorities; they are not managed by any one person or department. Research shows that the most successful approach to reducing plug loads is an integrated team approach.

This checklist is intended to assist an integrated team in developing and implementing a plug load reduction program. It is a result of information compiled from research on plug and process load programs addressing energy impacts in government, private, and institutional facilities. It functions as a "to do" tool as well as a tracking tool. The checklist describes a general sequence of activities that may happen concurrently. In addition, it provides a framework for continual retuning. The user should note that information developed or progress made in one activity is likely to affect work in other activities.

For more information on how to save energy by reducing plug loads, go to: ["Plug Loads: The Overlooked Energy Hog"](#)

For more information on plug load impacts, go to: Plug Load FAQ ["Why do we care about plug loads?"](#)

**TASK: Establish a plug load champion. Plug loads are essentially "orphans." They are not high priorities; they are not managed by any one person or department. Plug load reduction efforts need a leader and an integrated team that understand the importance of "adopting" plug loads.**

Activity	In Progress	Achieved	N/A	Helpful Links & Info
Select a leader who understands plug load opportunities and strategies.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<p><b>goals and options</b>, go to: <a href="#">"What outcomes can we target?"</a></p> <p><b>program leadership</b>, go to: <a href="#">"Who needs to know about plug loads?"</a></p> <p><b>integrative design process</b>, go to: <a href="#">SFTool Integrative Design Process</a></p>
Select a leader who has the ability to independently and objectively apply business model cost justifications.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Select a leader that has the authority to make changes.	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	
Select a charismatic leader who understands the dynamics of facilitating an integrated team, and is enthused with rallying people around the "cause."	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	

**Notes:**

WHAT GSA OFFERS

DOING BUSINESS WITH GSA

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BLOG

[Home](#) > [How We Help](#) > [Areas of Interest](#) > [Sustainability](#) > [Green Proving Ground](#) > [Published Findings](#) > [HVAC/Energy Management](#) >

**Green Proving Ground**

• [Overview](#)

• [What is GPG?](#)

• [Preliminary Assessments](#)

• [Published Findings](#)

[Building Envelope](#)

[HVAC/Energy Management](#)

[Condensing Boilers](#)

[Fan Belts](#)

[Indirect Evaporative Cooler](#)

▶ [Plug Load Control](#)

[Variable Refrigerant Flow](#)

[Variable Speed Mag-Lev Chiller](#)

[Wireless Sensor Networks](#)

[Lighting](#)

[On-Site Power Generation](#)

[Water](#)

• [Request for Information](#)

• [Technology Deployments](#)

# Plug Load Control

Findings #3, September 2012

“Plug loads are an increasingly large portion of building energy profiles. Managing those loads is key to making federal buildings energy efficient.”

John Remis

Facility Services Manager, Richmond Federal Building, GSA

**READ 4-PAGE FINDINGS**

[Findings: Plug Load Control >](#)



**DOWNLOAD FULL REPORT**

[Plug-Load Control and Behavioral Change Research in GSA Office Buildings >](#)



## Advanced Power Strips Decrease Energy Consumption

Desk-based technologies and other electronics that plug into office building receptacles draw a considerable amount of power, some of it 24/7. In fact, “plug loads” account for roughly 25% of total electricity consumed within office buildings. GSA currently owns and leases more than 370 million square feet of building space in some 9,600 buildings nationwide. The size of this real estate portfolio alone suggests the possibility of enormous energy savings, if plug loads can be reduced. With this in mind, GSA’s Green Proving Ground (GPG) program recently assessed the effectiveness of advanced power strips (APS) in managing plug-load energy consumption in eight of its buildings. Three types of plug-load reduction strategies were evaluated: schedule timer control, which allows the user to set the day and time when a circuit will be energized and de-energized; load-sensing control, which monitors a specific device’s (master) power state and de-energizes auxiliary devices (slaves) if the master’s power

Article Title

## **After-Hours Power Status of Office Equipment and Energy Use of Miscellaneous Plug-Load Equipment**

Citation

Judy A. Roberson, C. A. W., Marla C. McWhinney, Richard E. Brown, Margaret J. Pinckard, and John F. Busch. (2004). After-hours power status of office equipment and energy use of miscellaneous plug-load equipment.

Justification

this survey of plug-load equipment provides an inventory of equipment with trends in usage patterns typical in commercial buildings. Their conclusions define products with the highest energy saving potential and the use of power management best practices by users. This article will be helpful for those developing plans to reduce plug loads and to IT departments as policies for organization computer settings for power management are developed.

Introduction &  
Methodology

The study surveyed the number of units and total energy consumption of plug loads and IT equipment, more than 10k total devices, from 16 commercial sites in Pennsylvania, Georgia, and California; 4 educational buildings, 2 medical buildings, 2 large offices (>500 employees), 3 medium offices (50-500 employees), and 5 small offices (<50 employees). Their results included the common types of plug loads, the percentage of those plugs which were turned off, in low-power mode, or on, the density of units per square foot and per employee, and the total energy consumption. Energy of devices was not monitored, instead it was estimated using data from previous studies. In summary, this article provides a weighted



# System Overview

People living in the United States, in 2011, generated 250 million tons of municipal solid waste (MSW), or 4.4 pounds per person per day. While people recycle more, they also generate 39% more MSW today than they did in 1960.<sup>2</sup> These MSW figures include common trash or garbage, excluding construction and demolition waste and hazardous waste.

In federal buildings, solid waste management is a system whereby there are inputs of materials through purchases, consumption of materials, and outputs of waste as by-products (example, cardboard packaging) and end products (example, discarded lamps). The Waste Management Hierarchy<sup>1</sup> illustrates a basic framework for managing materials to reduce waste, from most sustainably preferable at the top to least sustainably preferable at the bottom.

## Waste Management Hierarchy



<sup>1</sup>Source: U.S. EPA Waste Hierarchy Pyramid.

Total MSW Generation (by material), 2011 250 Million Tons (before recycling)



- Reducing the amount of waste that is generated is at the top of the list. Individuals can choose to reduce the amount of waste that they generate. Organizations that provide goods and services, can reduce waste through changes in the design, manufacture, purchase, or use of materials or products, including packaging. Source reduction is at the top of the hierarchy, in part, because the Earth has limited and finite natural resources to meet human and ecosystem needs.
- Reusing, Repairing, and Repurposing products and materials prevents or delays the entry of those items into the waste collection and disposal system.
- Recycling is the series of activities—including collection, separation, and processing—by which products or materials are recovered from the solid waste stream for use in the manufacture of new products. Composting is the recycling of organic wastes, like food scraps, grass clippings, and other organic materials. Composting provides several environmental and economic benefits, particularly for agriculture and landscaping. The world population in 2013 is 7.1 billion, and it is expected to reach 9.6 billion by 2050. To meet materials demand, innovative technologies are needed for resource recovery and the use of waste material in the manufacturing process.
- Recovery of Energy, or Waste to Energy (WTE), is the conversion of waste materials into usable heat, electricity, or fuel. Ash or metals, generated after the combustion process, can be recovered for commercial use or sent to a landfill. Landfills generate carbon dioxide and other greenhouse gas emissions, which contribute to climate change.
- Treatment & Disposal (landfill or incineration without energy recovery), is the least environmentally preferable waste management option because there is no beneficial use of the material to offset virgin material extraction. Landfills generate methane, a potent greenhouse gas that contributes to climate change.

## Solid Waste



### System Overview

### Integrative Design Process

### System Impacts

#### Resources

#### Human Behavior

#### Financial

#### O&M

### System Bundling

### Mandates / Rating Systems

### Resources / Case Study

## Solid Waste Components



# Learn

[Home](#) [Sustainability Topics](#) [Legal Requirements](#) [Did You Know](#) [Case Studies](#)

## Sustainability Topics

### Indoor Environmental Quality (IEQ)

[Edit](#)

Indoor Environmental Quality (IEQ) is most simply described as the conditions inside a building. It does not refer to the air quality alone, but the entire environmental quality of a space, which includes air quality, access to daylight and views, pleasant acoustic conditions, and occupant control over lighting and thermal comfort.

[Continue reading: Indoor Environmental Quality \(IEQ\)](#)

### What is Sustainability

[Edit](#)

Sustainability is best thought of as a process, rather than a thing. [US Executive Order 13423](#) states that sustainability "means to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations." In order to achieve such conditions, new ways of designing, constructing and operating buildings and facilities must be identified.

[Continue reading: What is Sustainability](#)

### Materials & Resources

[Edit](#)

In the construction and day-to-day operations of buildings, many materials and resources are used and a great deal of waste is generated. The materials selected for use in a facility and the way they are disposed of impact the environment.

[Continue reading: Materials & Resources](#)

### Energy & Atmosphere

[Edit](#)

Buildings and facilities rely on the operation of mechanical systems and electrical systems to maintain a comfortable indoor environmental quality for occupants. Building operations consume approximately 39% of the energy and 74% of the electricity produced annually in the United States, according to the U.S. Department of Energy. Greenhouse gases are generated and released throughout the life cycle of producing and consuming fossil fuel energy. These greenhouse gases directly contribute to air pollution and climate change. Therefore, atmospheric problems can be reduced by increasing the efficiency with which energy is used, optimizing the use of natural energy resources, and understanding the effects of energy technologies on the atmosphere.

[Continue reading: Energy & Atmosphere](#)

### Water Efficiency

[Edit](#)

Buildings are significant users of the Earth's potable water supply. The goal of a responsible building operator should be to encourage a smarter use of water, both inside and outside the facility. Indoor water use reduction is typically achieved through efficient plumbing fixtures, fittings, appliances and process equipment used to heat and cool the building; outdoor water use reduction efforts should focus on water-wise landscaping.

[Continue reading: Water Efficiency](#)

## Did You Know?

Recycling a single plastic bottle can conserve enough energy to light a 60-watt bulb for up to 6 hours.

[Source: Bureau of International Recycling](#)

## Case Study

### Sense of Place



What makes a workplace special? What fosters a sense of attachment, engagement and identity? These are the kinds of questions that underlie the sense of place. The workplace is increasingly seen as a "brand" that conveys not only a place, but also the mission and values of the organization. The GSA workplace program combines branding and sense of place with sustainable approaches to create special places imbued with meaning and purpose.

[View Case Study](#)

## Share Your Story

Do you have a story to share? See and share examples of successes and struggles from our user community in [Share](#)

# Learn

## Executive Order 13653: Preparing the United States for the Impacts of Climate Change

### Instructions

Need help understanding Executive Order (EO) 13653? Want to know how to increase resiliency and prepare for a changing environment?

The Sustainable Facilities Tool can walk you through EO 13653. Click through the annotated text below for definitions, strategies, and links. You can find the full text of the EO [here](#).

Adapting to climate change is a complex, long term process that requires the federal community to work together, as well as with its external stakeholders. The examples provided below are offered as "food for thought" to help the federal community in beginning the process and do not include all of the many ways this work can be accomplished.

---

## Executive Order

By the authority vested in me as President by the Constitution and the laws of the United States of America, and in order to prepare the Nation for the **impacts** of **climate change** by undertaking **actions** to enhance climate **preparedness** and **resilience**, it is hereby ordered as follows:

### Section 1. *Policy*

The **impacts** of **climate change**—including an increase in **prolonged periods of excessively high temperatures**, **more heavy downpours**, an **increase in wildfires**, more severe **droughts**, **permafrost** thawing, **ocean acidification**, and sea-level rise—are already **affecting communities**, **natural resources**, **ecosystems**, economies, and **public health** across the Nation. These **impacts** are often most significant for **communities that already face economic or health-related challenges**, and for species and habitats that are already facing other pressures. Managing these risks requires deliberate preparation, close cooperation, and coordinated planning by the Federal Government, as well as by stakeholders, to facilitate Federal, State, local, tribal, private-sector, and nonprofit-sector efforts to improve climate **preparedness** and **resilience**; help safeguard our economy, infrastructure, environment, and **natural resources**; and provide for the **continuity** of executive department and agency (agency) operations, services, and programs.

A foundation for coordinated action on **climate change preparedness** and **resilience** across the Federal Government was established by **Executive Order 13514** of October 5, 2009 (Federal Leadership in Environmental, Energy, and Economic Performance), and the **Interagency Climate Change Adaptation Task Force** led by the Council on Environmental Quality (CEQ), the **Office of Science and Technology Policy (OSTP)**, and the **National Oceanic and Atmospheric Administration (NOAA)**. In addition, through the **U.S. Global Change Research Program (USGCRP)**, established by section 103 of the **Global Change Research Act of 1990** (15 U.S.C. 2933), and agency programs and activities, the Federal Government will continue to **support scientific research**, **observational capabilities**, and **assessments** necessary to improve our

## Hot Annotations

Hot annotations will appear here as you explore the document. Annotations contain valuable information about successfully putting policy into action.

[External Resource](#)

[Definition](#)

[Strategy/Best Practice](#)



### Life Cycle Approach

Life Cycle Approach

### Life Cycle Assessment (LCA) Overview

Conducting LCA

LCA Example: Light Emitting Diodes (LEDs)

LCA Standards, Tools and Resources

### Life Cycle Assessment (LCA) Overview

Life Cycle Assessment (LCA) is a "cradle-to-grave" approach for assessing industrial systems. "Cradle-to-grave" begins with the gathering of raw materials from the earth to create the product and ends at the point when all materials are returned to the earth.<sup>1</sup>

The goal of life cycle assessment (LCA) is to:

- ✔ Quantify or otherwise characterize all the inputs and outputs over a product's life span
- ✔ Specify the potential environmental impacts of these material flows
- ✔ Consider alternative approaches that change those impacts for the better.

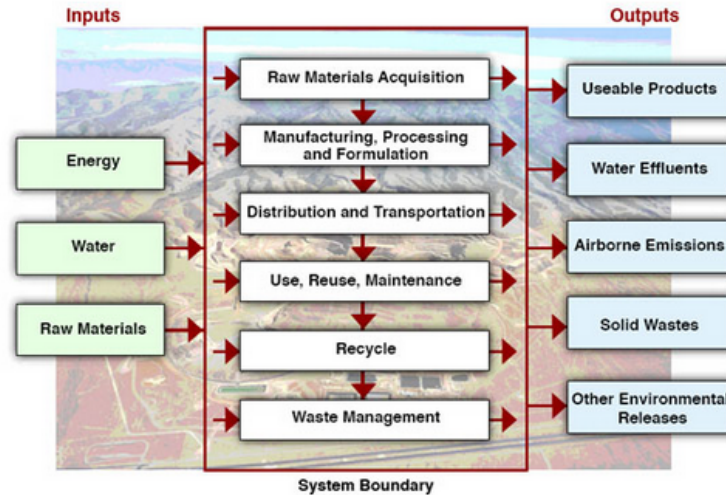


Figure 1: Inputs and outputs over a product's life cycle<sup>2</sup>

It is important to take into consideration the entire life cycle of materials, systems, and the whole building when making purchasing decisions. Only through LCA can the larger environmental image be quantified and compared over their life cycle to find alternatives that benefit humans and society alike.

For more information regarding LCA, continue reading one of the following topics:

- ✔ [Conducting LCA](#)
- ✔ [LCA Example: Light Emitting Diodes \(LEDs\)](#)
- ✔ [LCA Standards, Tools and Resources](#)

Share



📌 The Sustainable Facilities Tool allows you to compare materials with regard to environmental criteria and life cycle costs in [Explore Sustainable Workspaces](#).



# Plan

## Net Zero Energy

Net Zero Energy

### Transformation to Net Zero Energy

Net Zero Examples

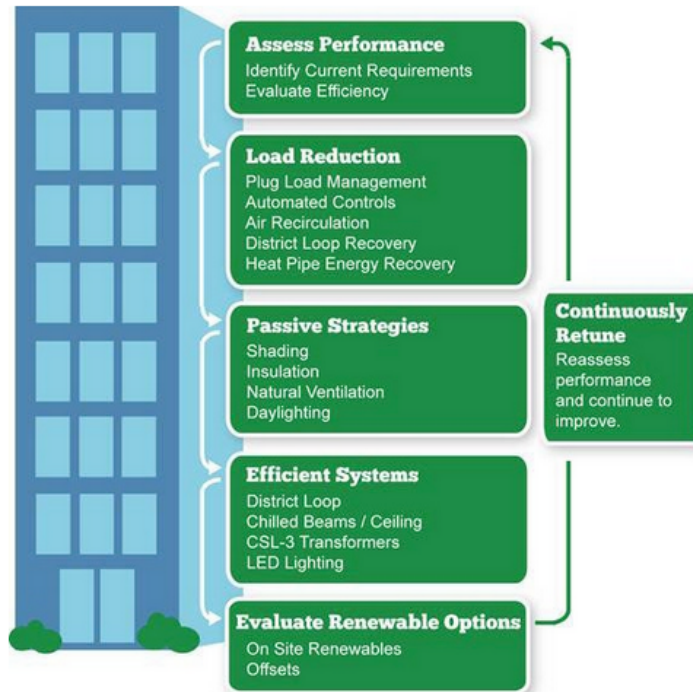
Additional Resources

## Transformation to Net Zero Energy

### Tasks for Today

- ✓ **Improve energy efficiency.**  
Drive your energy use down, then drive it down further!  
Reducing your energy needs is much less expensive than providing renewable energy.
- ✓ **Learn about renewable energy.**  
Identify options for emission-free energy sources (on-site, off-site, partnerships).
- ✓ **Invest wisely.**  
Consider how all procurement and investments impact the Net Zero Energy goal.
- ✓ **Prepare a basic action plan and start to implement it.**  
Net Zero is a target today, but will be a requirement tomorrow.
- ✓ **Consider implications for long range planning.**

Share



## Basic Action Plan

### 1. Assess your performance.

Understand how your building uses energy.

**Identify current requirements.** What are the needs for building operations? -for occupant activities? The more detail you can provide, the better. Describe energy needs by type, floor, activity, time of day, etc.

**Evaluate your efficiency.** How well (efficiently) do you meet the needs? Not every building has separate **meters** for different spaces or activities, but even without specific measurements, some efficiencies will be obvious. Are lights on in unoccupied spaces? Does equipment go to "sleep" when not in use? Does the **HVAC** work "harder" at some times than others?

**Develop an integrated team approach.** Energy demand is affected by a range of building features and occupant activities; identify key team representatives for each.

### 2. Update and improve.

Do the simplest, least expensive projects first. Evaluate more expensive projects, as well as planned purchases and renovations, in terms of Net Zero Energy. Will the new/renovation effort reduce energy use? Will it facilitate conversion to renewable energy?

## Climate Adaptation

Climate Change Risk Preparation and Adaptation Planning

Tips for Hosting a Climate Risks Workshop

### Climate Adaptation Planning Examples

Additional Resources

## Climate Adaptation Planning Examples



In late June 2006, a storm produced record rainfall in the Washington, D.C. area. The heavy rains overwhelmed storm water drainage systems and flooded the subbasement and basement of the Internal Revenue Service (IRS) National Headquarters building with over 20 feet of water. The water from the storm severely damaged the electrical, heating, and air conditioning systems located in the subbasement and destroyed offices, vehicles, furniture, and computer equipment located in the building's the basement and garage. Approximately 2,200 employees who worked in the building were assigned temporary space in other IRS facilities or began telecommuting because of the repair and rebuilding efforts.<sup>1</sup>

Recognizing that climate change projections for Washington, DC, show the increased potential for more extreme precipitation events like the 2006 flood, as well as risks related to sea level rise and extreme heat, IRS and GSA partnered together in 2013 for a workshop to better understand how a changing climate might impact the IRS facility. Following NASA's seven step climate risks workshop process and using NOAA and USGCRP's climate change projections, GSA and the IRS were able to develop a set of strategies to mitigate these impacts.

The Washington, DC session was selected by the White House Council on Environmental Quality as a GreenGov Spotlight Community. A Spotlight Community demonstrates the benefit of a federal entity working with its neighbors, including local governments, area businesses, and non-profit organizations. More information is available at <http://epa.gov/fgc/spotlight/capital.html>.



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# Green Procurement Compilation

Find the environmental requirements of your next purchase...

Search

Products

Services

Viewing GPC Wide



Requirements



## Appliances

Commercial and residential appliances, such as clothes washers, ovens, and refrigerators. Products in this category may also apply to the acquisition of janitorial, laundry, construction, and cafeteria & food services.

19 PRODUCTS



## Biomedical Equipment and Supplies

Equipment and supplies that assist with activities and applications of clinical medicine.

17 PRODUCTS



## Building Finishes

Building interior products that provide finishing touches, such as carpeting, wallboards, paint and stains, and signage. Products in this category may also apply to the acquisition of construction and cafeteria & food services.

47 PRODUCTS



## Building Furnishings

Products used inside buildings, such as furniture, ice and vending machines, and water coolers. Products in this category may also apply to the acquisition of construction services.

18 PRODUCTS



## Cafeteria Products

Products used in the operation and maintenance of cafeterias, including tableware, appliances, and grease traps. Products in this category may also apply to the acquisition of janitorial, cafeteria & food, construction, facilities operations & maintenance, and meeting & conference services.

28 PRODUCTS



## Cleaning Products

Institutional, industrial, and miscellaneous other cleaning products. Products in this category may also apply to the acquisition of janitorial, cafeteria & food, construction, facilities operations & maintenance, and laundry services.

49 PRODUCTS

**Products Arranged  
Into Categories,  
The Way You Do  
Purchasing**

**Click to View  
Products**



**Find out about  
Environmental Programs**



Learn More

**Download GPC Data**

Excel

CSV

Text

# Glass Cleaners

Last Updated: 2/3/2014 3:16:05 PM

## Procurement Info



49% biobased content



BioPreferred \*



Design For the Environment

## Where to Buy

Schedule 75 SIN 75 200

Schedule 51 V SIN 105 001

Schedule 51 V SIN 105 002

[Buy on GSA Advantage!](#)

[AbilityOne](#)

[GSA Global Supply](#)

Legal Requirements

Guiding Principles

Additional Guidance

## Legal Requirements

[FAR Subpart 23.4 Use of Recovered Materials and Biobased Products](#)

[FAR Subpart 23.1 Sustainable Acquisition Policy](#)

\* Federal agencies are required to purchase products as designated or specified under this program.



Shop by Category **Search**

Products glass cleaners

**Go** Advanced



Home > Search Results

**Categories**

- Facilities & Supplies**
- General purpose cleaners
- Glass or window cleaners
- Floor cleaners
- Dishwashing products

**Manufacturers/Brands**

- SWEPE-TITE LLC
- NIB
- GOJO INDUSTRIES, INC.
- STATE CHEMICAL SOLUTIONS
- MISCO
- See all

**Photos**

See only items with photos

**Contractors**

See All

**Business/Socio-economic Types**

- Small Business
- Other than SB
- SBA cert disadvantaged SB
- Woman owned SB
- Svc disabled vet owned SB
- See more

**Green/Special Programs**

- BioPreferred items
- Disaster Recovery items
- Low volatile organic compounds
- AbilityOne/NIB/NISH mandatory ...
- EPA Primary Metals Free items
- See more

**Sources**

- AbilityOne items (10)
- GSA Global Supply items (8)

**Shipping**

-- show all -- **GO**

**Search Results - Products**

See Services Results »  
Go to Consolidated View » ?

Criteria: " glass cleaners " and BioPreferred items

Sort by

Limit by price

Search within results

Most relevant

-----

Find any of these words

**GO**

1 | 2 Next Page >



**Glass Cleaner**

7930-01-326-8110

**\$27.34** DZ

2-7 days

16 oz. bottle, Comes in a spray-pump container. Ready to use biobased, non-flammable, environmentally preferred liquid glass cleaner. May be used for cleaning and polishing of glas...

**Mfr:** NIB

**Contractor:** GSA Global Supply



**Glass Cleaner**

7930-01-555-3384

**\$59.83** BX

17 days

1 gal., BioRenewable concentrated glass cleaner contains 81 percent biobased material. Use to clean and polish any hard surface not harmed by water such as window glass, panes and ...

**Mfr:** NIB

**Contractor:** GSA Global Supply



**Glass Cleaner**

7930-01-555-2898



[Back to Procure Home](#)

Products

Services

### Cafeteria & Food Services

Electronic Equipment Leasing

Fleet Maintenance

Janitorial Services

Landscaping Services

Laundry Services

Meeting & Conference Services

Pest Management

Transportation Services

## Cafeteria & Food Services

Federal cafeteria and other food services impact millions of federal employees and set a precedent for the rest of the country. These services include the preparation and offering of food and beverage items, waste management, and the ongoing management of the cafeteria space. It is not only important to provide healthy food and beverage offerings, but to do so in an environmentally sustainable way. Federal buyers can help green contracts for cafeteria and food services by requiring sustainable food and beverage offerings, waste management programs, green cleaning and pest management practices, and the use of reusable and green products.

### Downloadable Resources

◀ Previous Solicitations

📄 Sample Solicitation/Contract Language

📄 Clauses and Provisions

📄 Related Products

## Required Green Products

+

### Optional Green Practices

-

+

There are many other commercial practices that will result in a more sustainable and environmentally preferable service. Below are a few suggestions you may consider when defining performance requirements and developing evaluation criteria. For additional details on sustainable practices and nutrition guidelines, users are encouraged to review the [Health and Sustainability Guidelines for Federal Concessions and Vending Operations](#). The U.S. Department of Health and Human Services (HHS) and GSA worked collaboratively to create this document, which proposes specific food, nutrition, and sustainability guidelines to complement the 2010 Dietary Guidelines for Americans.

- [Food & Beverage Offerings](#)
- [General Operations](#)
- [Use and Maintenance of Appliances](#)
- [Green Cleaning & Pest Management](#)

- Implement waste management, recycling, and composting programs. Educate customers on how to properly dispose of waste.
- Promote and incentivize the use of reusable beverage containers and other reusable items.
- Use reusable linens, flatware, glassware, etc. When this is not feasible, offer compostable flatware, plates, bowls, etc. made with recycled and/or biobased content.
- Partner and engage with a food bank donation program.
- Utilize bulk purchasing programs in lieu of individually packaged products to include, but not limited to, beverages and condiments.
- Offer education and marketing programs to increase employee and customer awareness of green practices. Signage, table tents, menu notes, newsletters, and emails can help communicate this message.
- Incorporate practices that will be used to reduce energy and water use.
- Recycle residual fats, oils, and greases.

+

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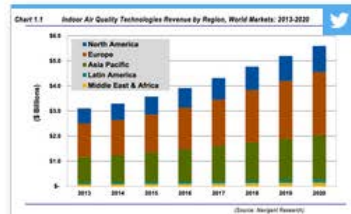


# Share

## Social Pulse

Social Content tied to green building best practices. Discover relevant sustainability news through the topics below.

Contribute to the discussion  
**Ask @SFTool!**



**ELDAILY**  
Apr 28 2014

@ELDAILY  
Indoor Air Quality Market Revenue to Surge 80% by 2020 - #environment #sustainability #green

View on [environmentalleader.com/2014/04/28/in...](http://environmentalleader.com/2014/04/28/in...)

environment sustainability green

IEQ

**usgsa**  
Apr 25 2014

@usgsa  
Planning a #GreenBuilding project? Use @SFTool before you start. #EarthWeek

View on [go.usa.gov/kVbz](http://go.usa.gov/kVbz)

EarthWeek green building

**SFTool**  
Apr 22 2014

@SFTool  
Happy #EarthDay from the SFTool! Ten Earth Day Activities in Digital Government

View on [ow.ly/w33iY](http://ow.ly/w33iY)

EarthDay

**ASID\_CEO**  
Apr 18 2014

@ASID\_CEO  
5 Reasons to Champion Green Building on Earth Day

View on <http://www.ecobuildingpulse.com/>

Earth Day green building champion

**Act On Climate**

Reduce food waste

## Community Case Studies

Sustainability in practice, by the community, for the community. Learn from the real world experience of others by reading on.



### Greener Real Estate with Existing Buildings: The Bennett Federal Building

As part of a national effort to demonstrate compliance with the EO13514 and the Guiding Principles for Federal Leadership in High Performance Sustainable Buildings, GSA adopted the USGBC's Volume Certification Program, utilizing standards set forth in the LEED Existing Buildings: Operations & Maintenance rating system for their documentation. The Wallace F. Bennett Federal Building is located in the Central Business District within Salt Lake City and is the largest GSA owned property in Salt Lake City.

- Carbon Footprint
- Flow fixtures
- Flush fixtures
- Green Building
- Low-Flow Fixture
- Monitoring
- Occupant Sensor/Automatic Lighting Control
- Waste Diversion

## Have a story to share?

Have you successfully integrated sustainable design into your space? Did something not go the way you planned? Upload your pictures and a brief write-up to share your success/struggles with your green renovation. Get comments from the community and helpful suggestions to your issues.

- Share Your Story
- View All Stories

# SFTool: Overview

- [www.SFTool.gov](http://www.SFTool.gov) (Launched 2/2011)
- [SF Mobile App](#) (Launched 6/2011)
- [Green Products Compilation](#) (Launched 2/2012)
- [Whole Building Systems](#) (Launched 6/2012)
- [Life Cycle Approach](#) (Launched 6/2012)
- [User Guides](#) (Launched 6/2012)
- [Improved Search](#) (Launched 6/2012)



# SFTool: New in FY2013

- Solid Waste Module
- Cafeteria Module
- Green Services
- Facebook, Twitter & Pinterest
- Hot Annotated EO 13514
- NetZero Energy

# New in FY2014

- [Lab Module](#) (FY14)
- [Customized Agency Content w/in GPC](#) (FY14)
- [Responsive Design](#) (FY14)
- [Water Efficient Fixtures](#) (FY14)
- [Plug Load Module](#) (FY14)
- [Hot Annotated EO 13653](#) (Climate Adaptation) (FY14)
- [API and Developer Page](#) (FY14)
- [New Share Format w/curated social media feeds](#) (FY14)
- [Climate Adaptation Module](#) (FY14)

# Coming Soon

- Guiding Principles Integration
- Green Roof Module
- Green Cleaning Module
- Green Team Toolkit: Engagement, Human Behavior & Design
- Green Renovation Simulation

# User Statistics (April 30, 2014)

- 107,615 visits to the site (GSA-17%; DOD- 8%; NASA- 3%; EPA- 1%)
- 438,408 page views: current rate = over 1250 per week
- The average new user spends 3.32 minutes on the site, visiting an average of 4.02 pages each visit. (rising consistently over time)
- The average returning user spends 5:32 minutes on the site per visit, visiting an average of 5.13 pages each visit (47% more than new users). Traffic from Facebook stays for over 9 minutes! Traffic from Pinterest , more than 14 minutes!
- 37.7% of traffic on the site is from Returning Visitors
- Of site visitors, 564 have created a log-in enabling them to create and track material projects of their own; 180 have created such a project, including representatives from over 30 Federal agencies.
- While over 47% of the traffic comes to the site directly, 15% now comes from search engines and 38% from referring sites and 128 countries and territories.
- 4.9% of traffic comes through mobile devices (33.8% iPad/29.12% iPhone)

# Office of High-Performance Green Buildings Links

- [Office of Federal High-Performance Green Buildings](#)
  - [Research into Practice Program](#)
  - [Strategies and Approaches for Transformational Change](#)  
(National Academy of Sciences Report)
  - [Facility Management Institute](#)
  - [Climate Adaptation Policy and Planning](#)
  - [Green Roofs](#)
  - [Green Building Certification System Review](#)
  - [Sound Matters](#)

# Additional Sustainability Links

- [GSA Green Proving Ground](#)
- [Whole Building Design Guide](#)
  - [Guiding Principles for Existing Buildings](#)
- [FEMP](#)
  - Federal Energy Management Program
  - [Lightingfacts.com](#)
- [FedCenter](#)
  - Environmental Stewardship & compliance assistance information

# Learning Objectives Review

You should now know...

- Key SFTool Features, Benefits, and where to find them
- How to navigate through SFTool's five main sections (Learn, Plan, Explore, Procure and Share)
- To use navigation tips, short-cuts, viewing options, and search strategies
- How to use the compare materials feature in Explore
- How to search for green product and service requirements in the Green Procurement Compilation
- Where to go for additional SFTool Support

# Questions?



**Sustainable Facilities Tool**

<http://www.SFTool.gov>

Twitter: @SFTool

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[SFTool Feedback Survey](#)



**Office of Governmentwide Policy**

**Office of Federal High-Performance Green Buildings**