

An aerial photograph of the US Department of Agriculture campus in Washington, D.C. The image shows a large complex of multi-story buildings, mostly in shades of beige and brown, with some greenery interspersed. The text is overlaid on the top half of the image.

US Department of Agriculture
Green Buildings
Office of Operations
Agricultural Research Service
The Forest Service
Animal Plant Health Inspection Service
Farm and Foreign Agriculture Services

ISWG Meeting
September 19, 2013

Today's Talk ...

- USDA, a composite of –
 - multiple agencies
 - seven mission areas, functionally diverse,
 - geographically remote facilities
- Sustainable building measurement and progress
- USDA Facilities and Sustainable Buildings work groups

Today's Talk ...

- USDA agencies put ideas into action at Office of Operations, Agricultural Research Service, Forest Service, and Animal Plant Health Inspection Service
- Approaches, opportunities, challenges, results, rewards, & recognition in achieving sustainability
- Specific new construction and O & M strategies
- Sustainable 3rd party certified buildings under the LEED and Green Globes systems

USDA Green Buildings



USDA real property



- USDA has 103,000 employees and steward of 58 million GSF in 21,328 public/private buildings in 31,836 domestic locations;
- USDA manages 30.8 million square feet within 2,292 buildings over 5,000 GSF.

USDA land-holding agency practices



Photo credit: USDA APHIS

Measuring Sustainability

The *five Guiding Principles*



the USFS Bessey Ranger District Office, Nebraska National Forest, Rocky Mountain Region, California R-2; and Eastern Sierra Interagency Visitor Center, R-5

Certified under GBI's Green Globes and USGBC's Leadership in Energy and Environmental Design (LEED®) systems



USDA agency policy

- Departmental Regulation 5600-001
- Office of Operations Sustainability policies
- Forest Service Handbook 7309.11 and “An Engineers Guide to Climate Change;”
- ARS “Research, Education and Economics Energy, Water and Sustainability Policy and Procedures 134.2;”
- APHIS policy: the *Guiding Principles*, owned and leased facilities
- FFAS policy: Green leasing principles and practices.

Assessing USDA buildings

- USDA criteria for existing buildings meeting the *Guiding Principles*
 - points system similar to LEED
 - 92 possible points
 - if score is 45 percent, the building is sustainable
 - point-earning is flexible – no mandatory points --
 - all points earned in all categories -- no emphasis --

Assessing APHIS buildings

- APHIS Engineering and Construction office evaluates buildings on 4-year cycle to –
 - assess current condition, funding requirements , and target potential green improvement points
- Asset Detail Report, with “Green Requirements Report” to identify greening cost estimate by category
- *Guiding Principles* points scorecard with dashboard summary, and spending proposal to achieve points

USDA Headquarters Implements the Guiding Principles

Ed Murtagh

Sustainable Operations Manager, Office of Operations



Peoples Garden Initiative



USDA South Building Modernization



Photo credits: USDA Office of Operations

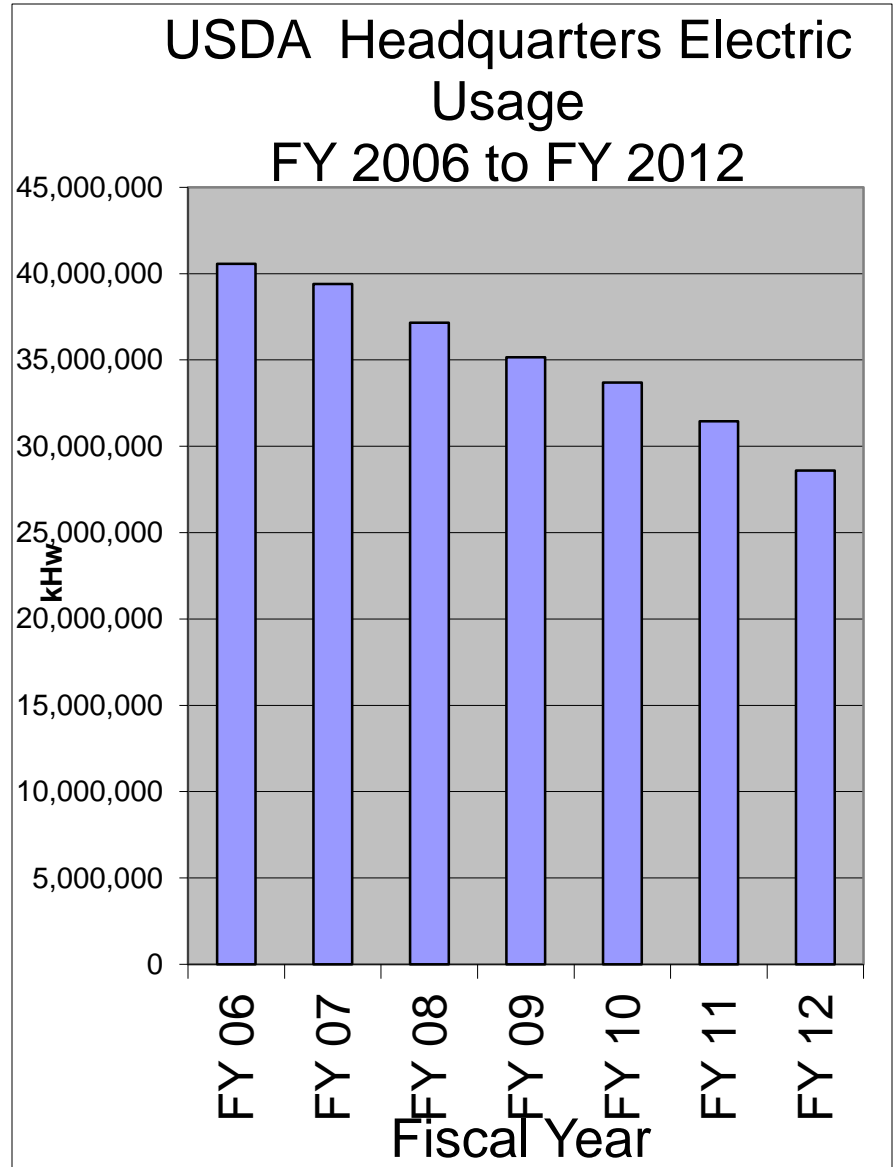
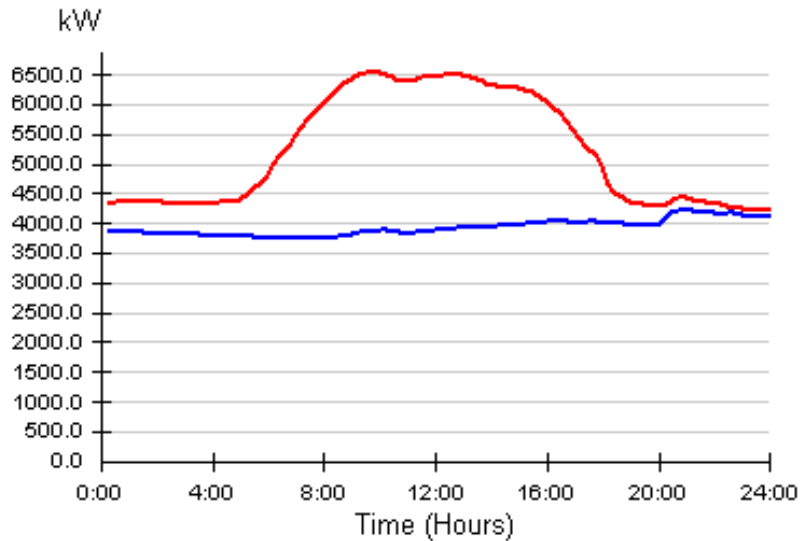
USDA South Building Modernization and the HQ Cafeterias



Senior Management Support



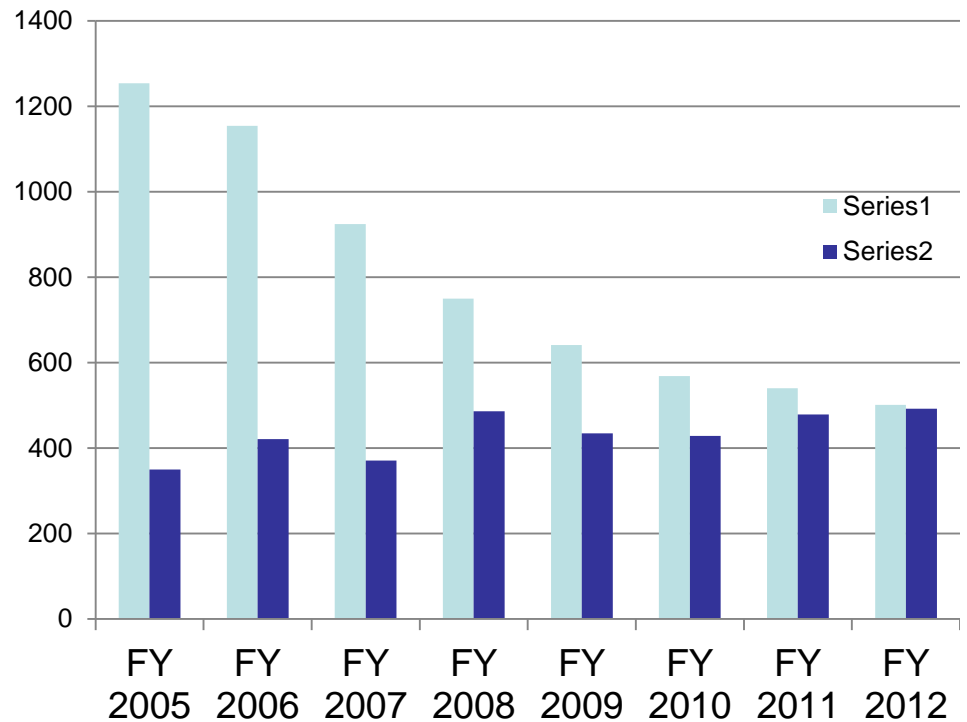
Measuring & Metering



Green Teams



Trash & Recycle Trends FY 2005 to FY 2012



Achieving Sustainability at Agricultural Research Service

Sandy Morgan - Facilities Division

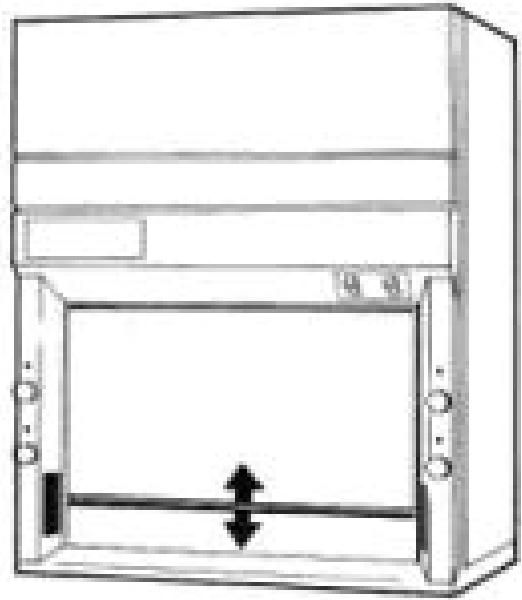


The Challenge at ARS

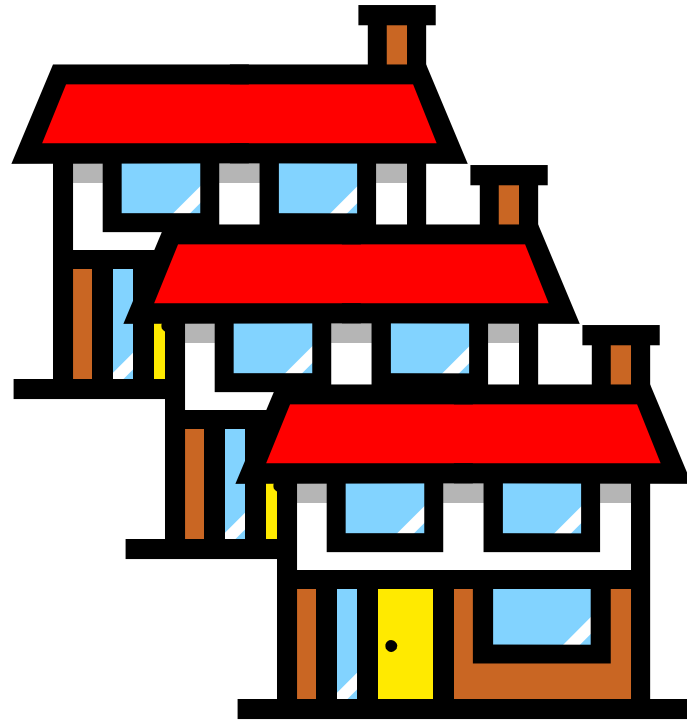
- ARS spends \$45 Million on utilities annually
- ARS has 3,200 buildings
- ARS has Energy Intensive Buildings
 - Lab/Office Buildings
 - Greenhouses
 - Animal Facilities
- Single pass air
 - 8 to 15 air changes per hour
- Modernization increases energy costs in the interest of employee health and safety



Labs are Energy Hogs



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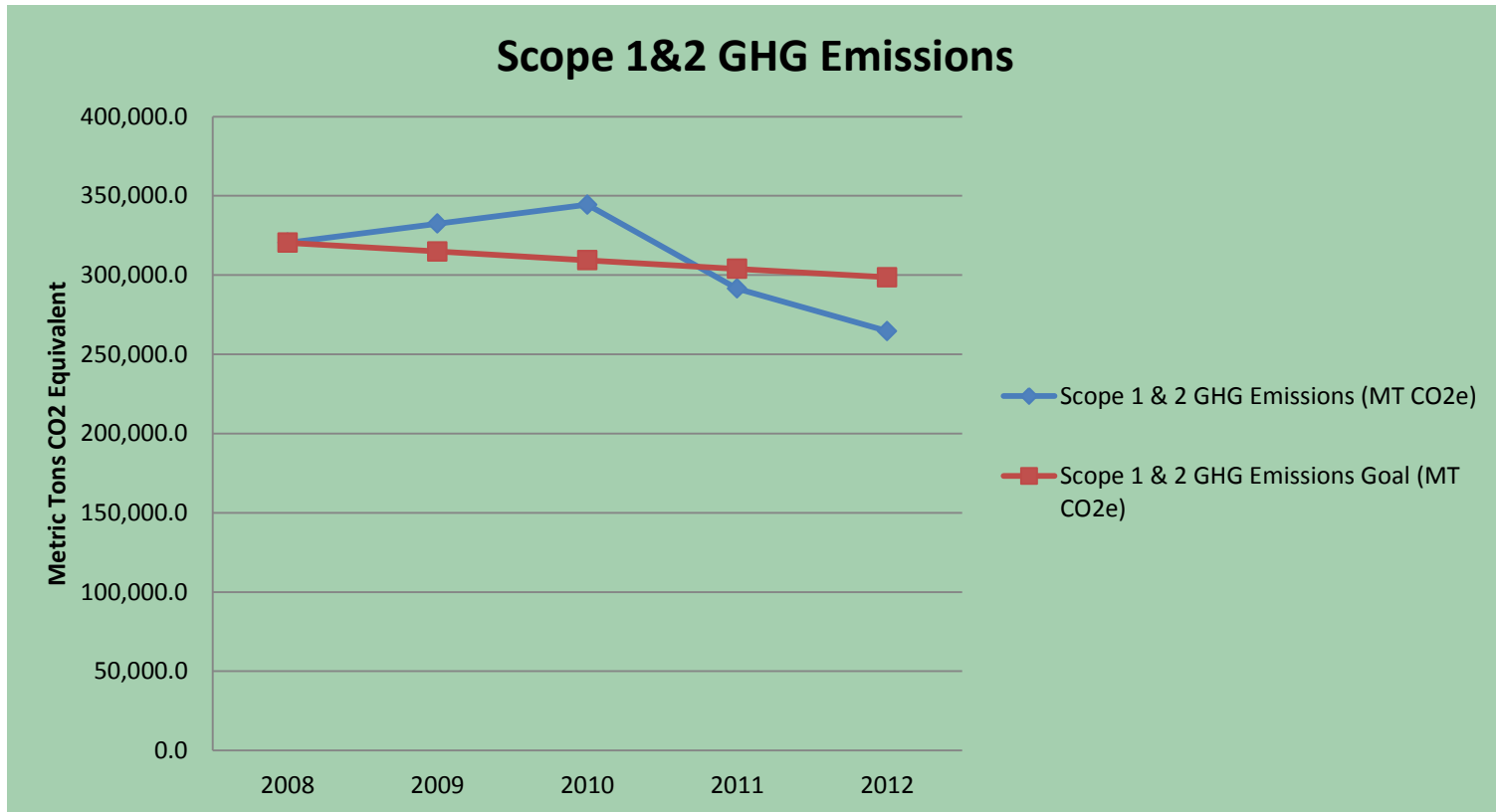
ONE HOOD CONSUMES AS MUCH ENERGY AS THREE HOUSES

Our Approach

- Facilities Design Standards Manual
- Energy, Water and Sustainability Policy
- Commissioning
- Re-/Retro-commissioning
- Sustainability Survey
- Outreach
- Positive Motivation
- ESPCs, UESCs



Our Results



And...ARS reduced utility costs \$7 Million since FY 2008

Sustainability Goals

- New construction follows LEED but is not submitted to USGBC
- Meet minimum score in the survey
- Replace T-12 lamps and incandescents
- Re-/Retro-commission
- Meter utilities
- Renewables
- Biobased



Agency-wide Actions

Use green cleaning products exclusively


Except where they do not meet mission requirements.

Entrance mats to remove dirt from shoes at each entry

Keep outside walkways clean

Cleaning equipment with a low environmental impact should also be used.

Store chemicals in isolated closets



APD ALERT
TRANSITION TO GREEN CLEANING PRODUCTS

PURPOSE

The purpose of this Alert is to notify acquisition personnel that all future procurement of cleaning products and services require green cleaning products. EO 13423 and EO 13514 require the Federal Government to use biobased products and to make its facilities sustainable. An important part of being sustainable is using green cleaning products. Sustainability and green cleaning products are required by P&P 134.2, Energy, Water, and Sustainability Policy. It states, "Locations will use green cleaning products exclusively, except where they do not meet mission requirements." There is also a procurement preference for biobased products if they are comparable in price, performance, and availability.

PROCEDURES


Please begin transitioning right away to the use of green cleaning products so that, except where they do not meet mission requirements, by the end of FY 2010 all cleaning products in use, including in custodial contracts, in Research, Education, and Economics (REE) facilities are green. This includes ARS, NASS, ERS and NIFA. Early adoption is encouraged, as soon as current stocks are consumed.

Green cleaning products are products that perform the same functions as conventional cleaning products but are lower emitting, less toxic, biodegradable, and environmentally safer. They include all purpose cleaners, sanitizers, deodorizers, glass cleaners, carpet cleaners, hand soap, laundry detergent, bathroom cleaners, and many other commonly used janitorial products. The use of green cleaning products will improve indoor air quality and working conditions by removing a major source of potential exposure to toxic and irritating chemicals, while providing effective and cost competitive cleaning solutions. There are many manufacturers of green cleaning products, and they are widely available.

Case Studies & Recognition

USDA AGRICULTURAL RESEARCH SERVICE

Biobased Success Story



USDA
ARS

Biobased Laboratory Countertops



Buck Silveira of the US Agricultural Research Station, Crop Improvement and Protection Research Unit in Salinas, CA installed Denix 12 biobased laboratory countertops during a laboratory renovation. He said they were easy to install and even easier to make penetrations for services and shelving units unlike the conventional epoxy resin tops. They seem to be durable and easy to maintain. Buck said, "This is a good alternative to the epoxy resin tops we are used to using."

Denix 12 is a chemical resistant rigid surface encapsulating a rapidly renewable sustainably harvested wood core. They may also qualify for Materials and Resources LEED Credit 6. Contact Laboratory Enterprises, Kansas City, MO, (913)621-7337. http://www.labenterprises.net/pdf/DenixLE_DenixFlyer.pdf.

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Spotlight on Energy Patriots



High Cotton

Fermin Alvarado, Electronics Technician at the Southwestern Cotton Ginning Research Laboratory in Mesilla Park, New Mexico, replaced old T-12/VHO fluorescent light fixtures containing magnetic ballasts with new high bay T-5 fluorescent light fixtures that will save energy and utility costs plus improve the lighting in the 3 story tall industrial space. The 12 new 6-lamp 54 watt fixtures cost \$152 each and replaced 18 old 2-lamp 460 watt fixtures. ARS employees installed the fixtures. The new light fixtures will save over \$2,000 annually and pay for themselves in a little less than 1 year.

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Reduce Light Pollution

Cool Roof

Divert Construction and Demolition Debris from Landfills

Reduce Plug Loads

Reduce Green House Gas Emissions

Beneficial Landscaping

Meter All Utilities

Indoor Air Quality



Reduce Hazardous Chemicals



Reduce Outdoor Water Use

What Makes a Sustainable Building

Incorporate the 5 Guiding Principles

15% of Existing Buildings Must Be Sustainable by 2015



Good Building O&M



Reduce Indoor Water Use



Alternative Transportation

BioPreferred™



Biobased Products



Moisture Control



Reduce Heat Island Effect



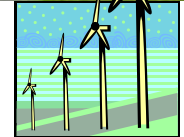
Recycling



Daylighting and Lighting Controls

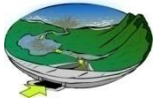


Energy Audits, Water Surveys and Re-commissioning Every 4 yrs



Use Renewable Energy

Where Storm Water Goes After the Curb Inlet



On-site Storm Water Management Restore Pre-development Hydrology



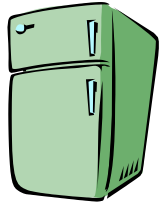
Site Selection and Building Orientation



Abate Asbestos and PCBs



Ventilation and Thermal Comfort



Reduce Ozone Depleting Substances



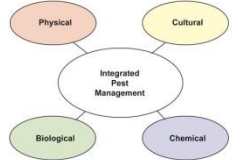
Purchase Recycled Products



Low Emitting Materials



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Integrated Pest Management



Energy Efficiency and reduced use of fossil fuels



Environmental Tobacco Smoke Control



Green Cleaning

Community

Strengthen viability and livability of communities in which federal facilities are located



Use a Green Building Rating System



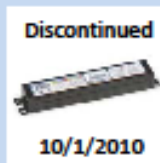
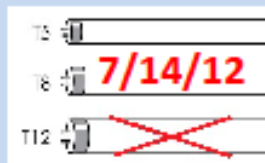
Are You Prepared for These Common Light Bulbs to Disappear?



40-200 Watt
Incandescent & Halogen Lamps
BR > 2.25"
40-205 Watt
Old Halogen PAR



Compact Fluorescent
LED
Halogen IR (Infrared Reflective)



T-12 Fluorescent Lamps and Magnetic Ballasts
Gone

T-8 or T-5 High Efficiency Fluorescent Lamps and Electronic Ballasts

Also ~~Going~~ Away:

Mercury HID & Probe Start Metal Halide USE Pulse Start Metal Halide or HE T-8 or T-5



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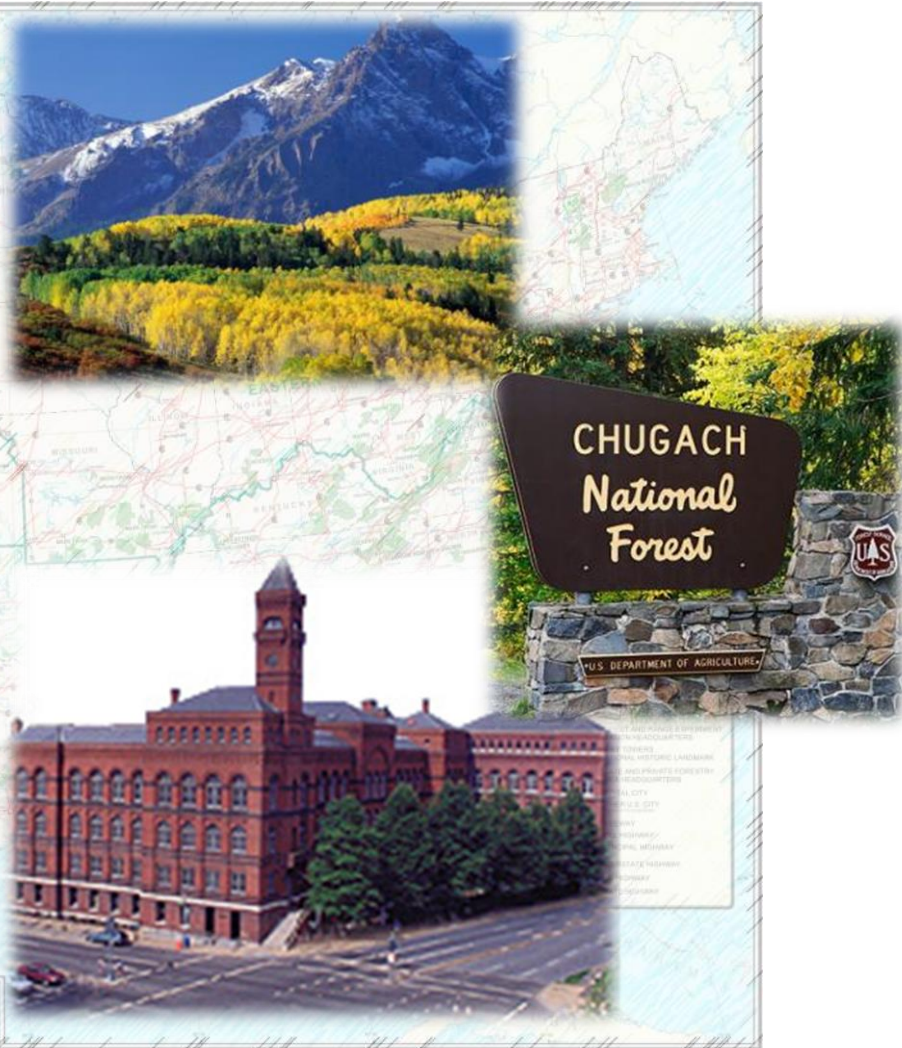
Current Wattage	Rated Lumen Ranges	New Max Rated Wattage	Effective Date Phased Out
100	1490-2600	72	10/1/2012
75	1050-1489	53	1/1/2013
60	750-1049	43	1/1/2014
40	310-749	29	1/1/2014

Thank you!
sandy.morgan@ars.usda.gov



USFS Agency Structure

- USDA Forest Service
 - 5 Deputy Areas
 - 4 Levels within NFS
 - National Level
 - 9 Regions
 - 175 National Forests and Grasslands
 - 600 Ranger Districts
 - ~35,000 employees
 - ~45,000 buildings
 - 193,000,000 acres of land



Early Sustainability Topics

Anna Jones Crabtree & Steve Oravetz
publications:

- Sustainable Buildings: “Recycling Construction Materials” in 1998:
<http://www.fs.fed.us/t-d/pubs/htmlpubs/htm98712305/>
- Sustainable Building: “What Are Green Products...?” in 1999:
<http://www.fs.fed.us/t-d/pubs/pdfpubs/pdf99712307/pdf99712307Pdpi300.pdf>



Challenges to our Agency

- More buildings than employees: 45,000
- We have remote compounds, with -
 - no meters, or
 - only one meter on site
- Energy hogs and energy efficient buildings on same compound



Challenges to our Agency

- Management issues with -
 - Mixed energy uses in same building
 - Heated storage and cold storage
 - Used only part of year
 - Oversized buildings for current needs
 - Millions of \$ of deferred maintenance...compete for energy projects...
 - Old water systems with leaks and using wells.



Example of USFS Working Compound

Scheduled to Convey property:

- Over ~ \$1 million in deferred maintenance
- ~13 buildings
- 80,000 SF
- 14.2 acres

Cold Storage

Forest Service Shop

Heated Warehouse

Warehouse

Heated Fire Warehouse

Office Building

© 2013 Google

Google earth



USDA Forest Service Typical 8,100 SF warehouse

Photo credit: USDA Forest Service



USDA Forest Service Typical 22,000 SF warehouse

08/22/20

Recently updated with ESPC contract power lights, controls

Photo credit: USDA Forest

Forest Service typical bunkhouse

- Bunkhouse not used in wintertime saves energy, but when subject to elements hard on building maintenance
- ESPC projects update appliances in many locations like these, too small to count in the over 5,000 sf

07/09/2008

Photo credit: USDA Forest Service

A photograph of the Forest Service Sandpoint Office building in winter. The building features a green metal roof and extensive use of small-diameter round wood in its structural elements, including the roof trusses and support posts. The ground is covered in snow, and several orange traffic cones are visible in the foreground. Tall evergreen trees are in the background.

Forest Service
Sandpoint
Office

This LEED-Gold certified office
uses small diameter round
wood themes inside and out

2010/1/4

Photo credit: USDA Forest Service

Forest Service Sandpoint Office -



- ground source heat pump system
- use of small diameter round logs, inside and out
- clerestory windows



Photo credit: USDA Forest Service

Forest Service Enoree Ranger District Office

- Renovation and addition planned for 2013
- Expected to be first FS Green Globes building



Changing Forests... Enduring Values

Forest Service Wood Construction



Changing Forests... Enduring values

Agency Emphasis areas: Utility Bill Cleanup

- Baseline energy use
- Reliable energy use information
 - Bills to Buildings
 - Correct rates, taxes, etc.



CITY OF ROCKVILLE
111 Maryland Ave - Rockville, MD 20850-2164
Ph: 240-314-8420 Fax: 240-314-8419
Email: utilitybilling@rockvillemd.gov

Account Number: 0304-000003.01
Service Address: 3243 BURCH ST

KATHY POWERS
3243 BURCH ST
ROCKVILLE MD 20850

CITY OF ROCKVILLE
111 Maryland Ave - Rockville, MD 20850-2164
Ph: 240-314-8420 Fax: 240-314-8419
Email: utilitybilling@rockvillemd.gov

Acct. Number: 0304-000003.01
Bill Date: 09/01/07
Current Charges: 139.60
Total Amount Due: 139.60
Amount Due After 09/15/07 153.56
*Includes 10% late fee

UTILITY BILL

Service Address: 3243 BURCH ST

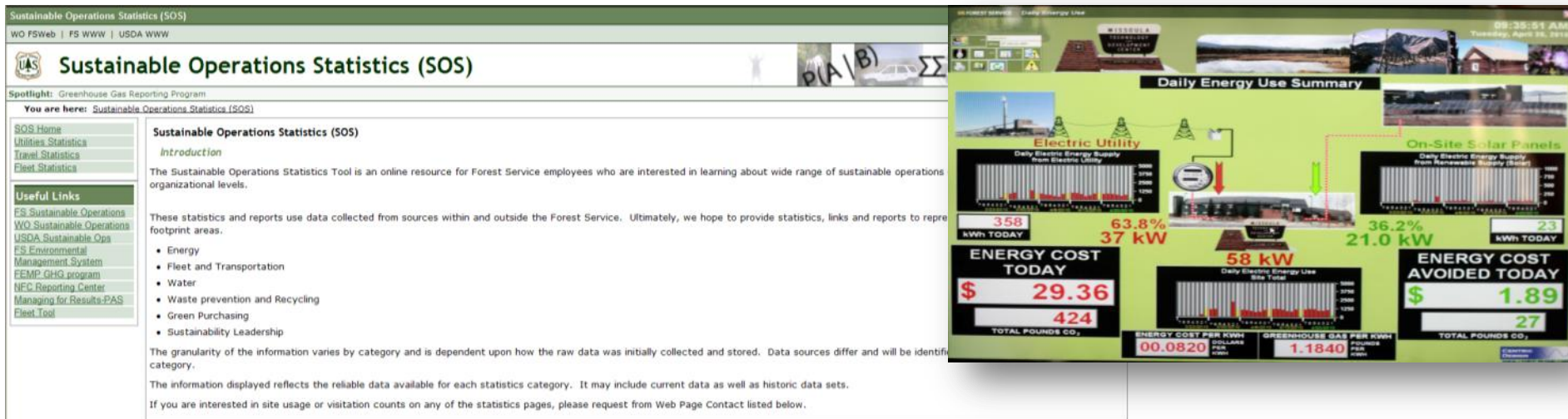
Type of Service	Service Period	No. of Days	Previous Reading	Current Reading	Usage	Rate	Charge
WB	07/24 - 08/31	39				2.50	7.50
	07/24 - 08/31	39				2.00	6.00
	07/24 - 08/31	39				32.70	98.10
	06/17 - 08/31	76	1120	1125	5	@ 3.82	19.10
	06/17 - 08/31	76	1120	1125	5		8.90

Water Tier Rate for Current		Account Activity	
5	5 @ 1.78 = 8.90	Current Charges	139.60
2		Total Amount Due	139.60



Energy Reduction Plan

- Provide access to accurate, accessible consumption data,
- Increase energy cost and consumption awareness,
- Provide organizational capacity, and
- Implement reduction measures.



Intranet Site

- Learn about Sustainable Operations
- Locate resources and tools to help you on *your Unit*



- Connect with other Green Teams
- Share success stories and/ or identify the "experts"

Reasons for Success

- Tapped into imbedded energy and enthusiasm
- Focused on those with passion and interest (didn't drag anyone along)
- Supportive governance structure that trusted us to innovate
- Produced visible results



- Transparency and reporting

for more information, contact:

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US Department of Agriculture