GSA Green Initiatives

NEBB Annual Conference
October 22, 2011
Washington, DC

Kinga Porst
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<td>• What GSA is doing</td>
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Background on GSA

• GSA consists of:
  • Public Buildings Service (PBS)
  • Federal Acquisition Service (FAS)
  • Office of Governmentwide Policy (OGP)
  • other staff offices

• 9,624 buildings in 11 regions
  1,530 owned and 8,094 leased (2010)
  370.2 million rentable square feet, or
  34.4 million square meters

• Landlord for 400 federal agencies, bureaus
  and commissions with space for over
  1,000,000 tenants
Background on GSA

RENTABLE SQUARE FOOTAGE BY REGION
in millions (see Regional Fact Sheets)

- Northwest/Pacific (18.6)
- Rocky Mountain (18.0)
- Great Lakes (81.8)
- Northeast/Caribbean (22.9)
- New England (11.2)
- Midwest (36.5)
- National Capital (97.2)
- South/Southwest (31.4)

Nationwide (370.2)

STATE OF THE PORTFOLIO 2016
The Federal Footprint

- Single largest domestic buyer and user of energy
- Manages or owns nearly 1 in every 5 acres in the U.S.
- 1 out of every 6 dollars spent by the federal government goes to contractors.
FAR Part 23...

- Prescribes acquisition policies and procedures related to:
  - Energy and water efficiency
  - Recovered materials and bio-based products
  - Environmentally preferable supplies and services
  - Realize life-cycle cost-savings
  - Ozone-depleting substances
- Requires acquisition strategies that maximize utilization of environmentally preferable products and services
- Note: This section will be updated in the future in order to reflect the changes set forth in EO 13514
Schedule 03FAC Facilities, Maintenance & Management

- Energy Program Support, Planning and Strategy Services
- Property Maintenance Services
- Billing Management and Oversight
- Assistance with Preparing Statements of Work
- Energy Choice Analysis
- Training on Energy Management
- Metering and Energy Audit Services
- Building Commissioning and Recommissioning
- Water Management and Conservation & Resource Efficiency Management
- Innovations in Renewable and/or Clean Energy
- Carbon Management and Sustainability Solutions
- Smart Building Integration
Background on GSA

66 LEED certified projects

- 2 LEED Platinum
- 25 LEED Gold
- 23 LEED Silver
- 16 LEED Certified

35 in owned space
31 in leased space

EPA Region 7 Headquarters
Established under EISA 2007 Section 436 to:

- Coordinate and disseminate high-performance green building research
- Establish green practices to be used throughout the life of a Federal facility
- Coordinate with other agencies to identify opportunities to demonstrate innovative and emerging green building technologies and concepts
## Sustainability & Regulations

### Laws
- National Environmental Policy Act, 1969
- Clean Air Act, 1970; amended 1990
- Energy Policy and Conservation Act, 1975

### Executive Orders
- 13101 Greening the Government through Waste Prevention, Recycling & Federal Acquisition
- 13123 Greening the Government through Efficient Energy Management
- 13134 Developing & Promoting Biobased Products and BioEnergy
- 13148 Greening the Government through Leadership in Environmental Management
- 13327 Federal Real Property Asset Management
- 13423 Strengthening Federal Environmental, Energy, and Transportation Management
- 13514 Federal Leadership in Environmental, Energy, and Economic Performance
**Energy Mandates**

**Executive Order 13423 (2007)**

Energy consumption reduced 3 percent annually through FY2015 or 30 percent total relative to FY2003 baseline

Half of renewable energy consumed come from new renewable sources
## Energy Independence and Security Act of 2007

Codified Executive Order 13423’s 3% annual reduced energy consumption requirement

New / renovated Federal buildings reduce fossil fuel use by:

- 55% by 2010
- 80% by 2020
- Carbon-neutral by 2030
Energy Mandates

Energy Policy Act of 2005

Federal government’s renewable energy consumption:

- 3% from FY 2007-2009
- 5% in FY2010-2012
- 7.5% in FY2013 and after
Emission Sources (Scopes)

- NF$_3$
- PURCHASED STEAM
- FUGITIVE EMISSIONS

SCOPE 1: DIRECT
- PURCHASED ELECTRICITY FOR OWN USE
- COMPANY OWNED VEHICLES
- FUEL COMBUSTION
- PRODUCTION OF PURCHASED MATERIALS
- OUTSOURCED ACTIVITIES

SCOPE 2: INDIRECT
- OUTSOURCED ACTIVITIES
- CONSUMER BUSINESS TRAVEL
- CONTRACTOR OWNED VEHICLES

SCOPE 3: INDIRECT
- OUTSOURCED ACTIVITIES
- CONSUMER BUSINESS TRAVEL
- CONTRACTOR OWNED VEHICLES
American Recovery and Reinvestment Act (ARRA)

TRANSFORMING FEDERAL BUILDINGS INTO HIGH-PERFORMANCE GREEN BUILDINGS

- Border Stations/Land Ports of Entry: $300 M
- Federal Buildings/U.S. Courthouses: $733.7 M
- Building Operations: $127 M
- Space Rental: $108 M
- Office of High Performance Green Buildings: $4.0 M
- Apprenticeship Program: $3.0 M
- High Performance Green Building: $4,274 M
- Full & Partial Building Modernizations: $3,168 M
- Limited Scope (Including Energy Projects): $806.9 M
- Small Projects: $298.5 M

Total Distribution: $5.55 B
| Green Building Modernizations |
|-------------------------------|----------------|
| • Focused On High-Performance Green Building Projects | $4.3 B |
|   • Full and partial building modernizations | $3.2 B |
|   • Limited scope projects (including energy projects) | $800M |
|   • Small projects | $300M |

One overarching criteria used by GSA to select the best projects for accomplishing the goals of ARRA:

• Transforming Federal buildings into high-performance green buildings
$800 M focused on limited scope projects

   Building Tune-Up (Re-Commissioning + Controls)
   Lighting Replacement
   Mechanical Systems

Included such improvements as:

   Renewable energy—photovoltaics and wind
   Roofing, including green roofs
   Windows
   Lighting replacement
   High-performance building systems
   Advanced metering

[Image of Thomas Eagleton Courthouse, St. Louis]
American Recovery and Reinvestment Act (ARRA)

- Increased GSA’s capability to construct and transform federal buildings into high-performance green buildings
- Jump-started GSA’s effort to meet mandated energy and water conservation targets in the years to come.
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<tr>
<th>What is GSA doing?</th>
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<td>• Green Proving Ground</td>
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<tr>
<td>• Sustainable Facilities Tool</td>
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<tr>
<td>• Smart Buildings</td>
<td></td>
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<td>• Submetering</td>
<td></td>
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<td>• Energy Service Performance Contracts</td>
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Green Proving Ground

Investigates forward leaning and emerging technologies and practices through enhanced measurement and verification.

Results will inform decision for broader deployment across agency’s portfolio, the federal sector, and the commercial real estate industry.
## Green Proving Ground

<table>
<thead>
<tr>
<th>Category</th>
<th>Technology</th>
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<tbody>
<tr>
<td>Building Envelope</td>
<td>High R Value Windows</td>
</tr>
<tr>
<td>HVAC</td>
<td>Wireless Mesh Sensor Network</td>
</tr>
<tr>
<td>HVAC</td>
<td>Magnetic Bearing Compressor</td>
</tr>
<tr>
<td>HVAC</td>
<td>Variable Refrigerant Flow</td>
</tr>
<tr>
<td>HVAC</td>
<td>Variable Speed Chiller Plant Control</td>
</tr>
<tr>
<td>HVAC</td>
<td>Condensing Boilers</td>
</tr>
<tr>
<td>Lighting</td>
<td>Low ambient / Task lighting</td>
</tr>
<tr>
<td>Lighting</td>
<td>Integrated Daylighting Systems</td>
</tr>
<tr>
<td>Metering</td>
<td>Plug Load Reduction</td>
</tr>
<tr>
<td>Policy</td>
<td>Net Metering</td>
</tr>
<tr>
<td>Power Generation</td>
<td>Photovoltaics</td>
</tr>
<tr>
<td>Water Heating</td>
<td>PV with Solar Water Heating</td>
</tr>
<tr>
<td>HVAC</td>
<td>Commercial Ground-Source Heat Pump</td>
</tr>
<tr>
<td>HVAC</td>
<td>Chilled Beams</td>
</tr>
<tr>
<td>Building Envelope</td>
<td>Smart Windows</td>
</tr>
<tr>
<td>Water</td>
<td>Non-Chemical Water Treatment</td>
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Green Building Performance

- Green Building Performance: A Post Occupancy Evaluation of 22 GSA Buildings


U.S. General Services Administration
<table>
<thead>
<tr>
<th></th>
<th>Phase 2</th>
<th>Phase 1</th>
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<tbody>
<tr>
<td>Domestic water use</td>
<td>- 11%</td>
<td></td>
</tr>
<tr>
<td>Energy use</td>
<td>- 25%</td>
<td>- 26%</td>
</tr>
<tr>
<td>Operating costs</td>
<td>- 22%</td>
<td>- 13%</td>
</tr>
<tr>
<td>General building satisfaction</td>
<td>+ 21%</td>
<td>+ 27%</td>
</tr>
<tr>
<td>CO₂ equivalent emissions</td>
<td>- 34%</td>
<td>- 33%</td>
</tr>
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Results: Green Buildings Perform Better & Cost Less
A one-stop portal to empower any government or private sector user to identify and prioritize cost-effective green building strategies that will lead to improved environmental performance in small building projects.

Targeted User Community:

- Facility Managers
- Realty Specialists
- Project Managers from Governmental Agencies
- Private Sector Developers
Sustainable Facilities Tool

Key Features:

- Valuable resources for sustainable building principles and concepts
- 3-D interactive walkthrough of office interiors & material comparisons
- Sustainable metrics, essential regulations & guidelines, and case studies
- Take-away checklist for tracking sustainable design
- Intuitive and easy-to-navigate user interface
Sustainable Facilities Tool

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 leases** & architect/design team deliverables
- Supports green practices throughout the life of a facility
Provides decision-making resources optimized for your handheld device

Increases public accessibility to SF Tool resources

Free to all users
Devices found in buildings are becoming ever richer sources of data.
## Smart Buildings

- Real time **visibility** into integrated performance
- Granular **control** over energy consuming systems
- Foster Administrator’s priorities: **innovation**; **operational excellence**; **customer intimacy**
- Evolved **policy** to increase performance including
  - Energy efficiency
  - Operational effectiveness
  - Occupant experience
  - Real time visibility into integrated performance
Smart Buildings

Buildings

Instructions for FM and O&M

Operations and Optimization

Existing Fast Start

New Projects

People

Optimization and Trend Info

Technology

Analyzed Data (Performance Optimization, etc.)

Real Estate Data Center

Raw Performance Data (HVAC, Lighting, Energy, etc.)
EPA Regional Headquarters in Denver - conducting field tests of sub-metering at the plug load level

Results from this project, supplemented by academic and private sector research on plug loads and behavior change, will support the development of best practices for plug load energy reduction.
GSA announced the Net Zero Renovation Challenge as a tool to further accelerate the use of ESPC’s by the GSA regions in addressing energy reduction goals.
<table>
<thead>
<tr>
<th>GSA</th>
<th>GSA Challenge Goals</th>
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<tbody>
<tr>
<td></td>
<td>• Demonstrate best practices for maximizing overall ESPC project energy savings;</td>
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<td>• Advance progress toward EISA goals</td>
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<td>• Accelerate deployment of underutilized and renewable technologies.</td>
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<td></td>
<td>• Further expose GSA regions to new DOE ESPC IDIQ contract process and resulting improvements in ESCO selection</td>
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<tr>
<td></td>
<td>• Identify and understand processes necessary to get to net zero energy</td>
</tr>
<tr>
<td></td>
<td>• Identify structural, contractual and technical impediments</td>
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<tr>
<td>GSA Challenge Framework</td>
<td></td>
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<td>-------------------------</td>
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<tr>
<td><strong>Site Selection:</strong> GSA selected 30-35 buildings for competition across multiple regions</td>
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<tr>
<td><strong>Award Process:</strong> Buildings to be awarded with DOE’s streamlined competition process</td>
<td></td>
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<td><strong>Recognition:</strong> Projects to be evaluated by a panel of independent experts to identify and recognize exceptional performance in a number of technical categories</td>
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</table>
  1. absolute energy savings of pre-retrofit energy use |
  2. progress towards Federal Government goals for energy, water, fossil fuel, renewable energy, and sustainability |
  3. financial and technical creativity |
  4. ability to extend best practices to other Federal buildings. |
<table>
<thead>
<tr>
<th>GSA</th>
<th>And More What’s Next?</th>
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<tr>
<td></td>
<td>• Change in Procurement Practice</td>
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<td></td>
<td>• Change in Budget Practice</td>
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<td></td>
<td>• Change in Measurement</td>
</tr>
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<td></td>
<td>• Criteria for Selecting Vendors</td>
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<td>• Performance Contracting by Team Negotiation</td>
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<tr>
<td></td>
<td>• Change in Fee Structures</td>
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<td></td>
<td>• Integration with Buildings Operations, Not Just at the Hand-Off, but for Years</td>
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“...the GSA must have all of the tools necessary to not only upgrade its infrastructure, but also to ensure that these buildings are properly maintained and operated at their highest performance levels.”

From the Senate Committee on Environment and Public Works Report

http://pubs.usgs.gov/fs/2005/3052/
Why the law was enacted?

“...ensuring that the Federal buildings operations workforce is trained and maintains certain competencies. This will ensure that Federal buildings and components are maximally productive and properly maintained to achieve the highest possible return on investment over the infrastructure’s projected operating life.

*From the House Committee on Transportation and Infrastructure Report*
<table>
<thead>
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<th>FBPTA</th>
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<tr>
<td><strong>Federal Buildings Personnel Training Act of 2010</strong></td>
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**Jobs:** O&M, Energy Management, Safety and Design; **Skill Sets** including Sustainability, Water efficiency, Safety, Performance Measurement.

- Core Competencies
- Key Jobs
- Certification
- Training Curriculum
### Timeline

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<td><strong>GSA</strong></td>
<td><strong>Timeline</strong></td>
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<td></td>
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<tr>
<td>• June 2012</td>
<td></td>
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<tr>
<td>✓ Core Competencies</td>
<td>✓ Methods to demonstrate (Fed &amp; Ctr)</td>
</tr>
<tr>
<td>✓ Curriculum</td>
<td>✓ Continuing Education Program</td>
</tr>
<tr>
<td>• June 2013</td>
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<tr>
<td>✓ Fed and Ctr Personnel Trained</td>
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<tr>
<td>Annually thereafter….</td>
<td>✓ Core Competencies, Curriculum and Continuing Education Program to maintain “best practices” and push envelope</td>
</tr>
</tbody>
</table>
Contact & Sources

- Kinga Porst
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  kinga.porst@gsa.gov
- www.gsa.gov
- http://www.gsa.gov/gpg
- www.fstool.gov
- www.wbdg.org
- For doing business with the government:
  IndustryRelations@gsa.gov