GSA’s Activities & FGC

- GSA Portfolio & Regulatory Drivers, etc.
- GSA’s Energy Use Analysis System (EUAS)
- Guiding Principles (GPs) & GSA’s Program
- Energy Savings Performance Contracts (ESPC)
- Waste Diversion & Materials Recycling Facilities (MRF)
GSA’s Portfolio – National

8,792 total assets (2016)

- 374 million sq. ft.

  1,621 owned assets
  - 183 million owned sq. ft.

  7,171 leased assets
  - 191 million leased sq. ft.
GSA Portfolio – Region 2

520 total assets - 87 owned & 433 leased

- 26.4 million sq. ft.
  - 16.8 million sq. ft. owned
  - 9.6 million sq. ft. leased
Impact of Buildings

- Electricity 72%
- Total Energy 39%
- Carbon Dioxide 38%
- Raw Materials 40%
- Waste Output 30%
- Water 14%
Why Do It?

• Executive Orders and Laws
• Each Agency has its own mandated Strategic Sustainability Performance Plan (SSPP - EO 13693)
• OMB Scorecards
• Triple Bottom Line, P3
  • People
  • Planet
  • Profit
Regulatory Drivers

- Executive Order 13693 2015
- Executive Order 13514 2009
- Executive Order 13423 2007
- Energy Independence Security Act (EISA) 2007
  - Codifies sections of E.O. 13423
Regulatory Drivers

- Guiding Principles (GPs) for Federal Leadership in 2006
  High Performance and Sustainable Buildings
  - Was part of EO 13514, was 15% by 2015
  - Now part of E.O. 13693, with GSA’s goal of 25% by 2025
  - GPs updated in 2016
Energy, Water, GHG & Net Zero Buildings

• Energy - 2.5% ↓ annually by 2025 based on 2015 baseline

• Water - 36% ↓ by 2025 based on 2007 baseline

• Green House Gases (GHG) - 40% ↓ by 2025 based on 2008 baseline (Scope 1 & 2)

• Renewable Energy – 30% ↑ by 2025

• Net Zero – New construction design starts in 2020 to achieve net zero by 2030 (net zero water/waste where feasible)
FY 2016 Scorecard on Sustainability/Energy

Scope 1 & 2 GHG Emission Reduction Target
For Scope 1 & 2 GHG Reduction Target of 73.0% by 2025: 62.9% reduction in 2016 and on track
Score: GREEN

Scope 3 GHG Emission Reduction Target
For Scope 3 GHG Reduction Target of 83.0% by 2025: 66.1% reduction in 2016 and on track
Score: GREEN

Reduction in Energy Intensity
Reduction in energy intensity in goal subject facilities compared with 2015: 5.0% and on track
Score: GREEN

Use of Renewable Electricity
Use of renewable electricity as a percent of facility electricity use: 47.9% from renewable sources and on track for 30% by 2025
Score: GREEN

Use of Clean Energy
Use of clean energy as a percent of facility energy use: 24.1% of federal building electric energy and thermal energy is clean energy and on track
Score: GREEN

Reduction in Potable Water Intensity
Reduction in potable water intensity compared with 2007: 26.3% and on track for 36% in 2025
Score: GREEN

Green Buildings
Sustainable green buildings: 35.0% GSF of inventory sustainable
Score: GREEN
GSA’s Energy Use Analysis System (EUAS)

- EUAS tracks energy and water consumption and cost for all GSA operated buildings (owned and leased) where GSA pays utilities.
- **Over 5100 Invoices processed monthly**
- EUAS used by GSA energy managers to track progress toward meeting GPs, energy & water goals (EO 13693):
  - Energy - 2.5% annually thru FY25, below 2015 baseline
  - Water - 2% annually thru FY25, 36% below 2007 baseline
- EUAS helps forecasting, monitoring energy budgets as well as for spotting anomalies.
- Not meant to be Building Mgr’s daily energy mgmt tool to see how his bldg is operating.
EUAS Reporting Features

• Choice of Reporting Units
  ✓ Actual energy units
  ✓ Btu’s or Mmbtu’s
  ✓ Btu’s/GSF
  ✓ Cost/Unit
  ✓ Actual Water Units

• Flexible Reporting Periods
  ✓ Full fiscal year
  ✓ Year-to-date
  ✓ Floating twelve months
  ✓ Range of dates

• Organizational Options
  ✓ Building
  ✓ Field Office (Service Center)
  ✓ District (Eastern or Western)
  ✓ Region (also State for some)
  ✓ Nation

• Building Categories
  ✓ Goal or non-goal government owned (A, B)
  ✓ Goal or non-goal leased (C, D)
  ✓ Goal Energy Intensive (I)
  ✓ Reimbursable (E)
  ✓ Optional Designations (EISA Cov Fac, Metered, LPOE, etc)
EUAS Shares Data with Energy Star & Other Applications

- Asset Business Plan
- Carbon Footprint and Green Procurement Tool
- RWA Entry and Tracking Application
- EUAS Shares Data with Energy Star & Other Applications Within GSA
- Other Federal
- gBuild (new RAHD)
- FEMP
- EISA Sec 432 Compliance Tracking System (CTS)
- EPA Energy Star Portfolio Manager
- Energy Usage Analysis System
- ENERGY.GOV
- U.S. Dept. of Energy Data Warehouse
- DATA.GOV
• Actual Data Energy / Actual Data Water – most used
• Sorted Bldg – Best format for exporting
• % Variance – Very Useful for Energy Mgmt

Legislative Mandates:
Energy Baseline: 2003, now 2015
Water Baseline: 2007
**Actual Data Report - Energy**

Region Summary for building categories : A

Optional Building Designation(s):

Energy Usage is shown in Actual units - Show Totals and Sub Totals

Region : 11

Conversion Detail = Site Use

Report for the period of Fiscal Year 2013

**Date:** 4/8/2014  
**Time:** 2:47:34 PM

<table>
<thead>
<tr>
<th>Building</th>
<th>Total Usage</th>
<th>RenElec (KWH)</th>
<th>Demand (KW)</th>
<th>Steam (Thou. lbs)</th>
<th>Gas (Cubic Ft)</th>
<th>RenGas (Cubic Ft)</th>
<th>Oil (Gallon)</th>
<th>Coal (Ton)</th>
<th>Chill. Wtr (Ton Hr)</th>
<th>Other (mmBTU)</th>
<th>Cost</th>
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*RenElec, RenGas are information items only; RenElec, RenGas usage and cost are also included in electricity and gas usage.

Click here for legend information
% Variance Report

Percentage Variance Report
Region Summary for building categories: A
Reporting Unit: BTU/GSF, Utility Types: All Energy
Goal Tracked For Water: All
Region: 11

The period of Floating 12 Months, January 2014 and Entire Fiscal Year 2013

Buildings in Region: 11

<table>
<thead>
<tr>
<th>Building</th>
<th>Building Name</th>
<th>2014 Information</th>
<th>Variance: + or - 0.05</th>
<th>2013 Information</th>
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<tr>
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<td>Category</td>
<td>GSF</td>
<td>BTU's/GSF</td>
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</table>

Sensitive But Unclassified, Intended for GSA Internal Use Only.
Export Feature

Energy Use by Utility Type

- Electric: 51.86%
- Gas: 17.4%
- Oil: 8.01%
- Chilled Water: 0.98%
- Other: 0.05%
- Steam: 0.05%

Total = 16,531,749.65 million btus

Energy Cost by Utility Type

- Electric: $37.55
- Gas: $56.42
- Oil: $3.72
- Chilled Water: $8.12
- Other: $0.13
- Steam: $269.3

Total = $375.24 (million $)
Energy Savings Performance Contracts (ESPC)

- Energy savings performance contracts (ESPCs) allow federal agencies to procure energy savings and facility improvements. An ESPC is a partnership between an agency and an energy service company (ESCO). ESPC allow agencies to do energy projects with minimal up-front capital costs and no special appropriations from Congress.
  - Access to private-sector expertise in energy efficiency, renewable energy, water conservation, and reduced emissions.
  - Built-in incentives for ESCOs to provide high-quality equipment, timely services, and thorough project commissioning.
Energy Savings Performance Contracts (ESPC)

• ESCO conducts a comprehensive energy audit Investment Grade Audit (IGA) for the Federal facility and identifies improvements to save energy. Energy Saving Measure (ECMs)
• ESCO designs and constructs the project, and arranges the necessary financing
• ESCO guarantees that the improvements will generate energy cost savings sufficient to pay for the project over the term of the contract
ESPC Cycle of Cost Saving & Payments

1. Agency energy and related budget (normal appropriations)
2. Agency pays ESCO from cost savings
3. Energy Service Company (ESCO) constructs project using financing
4. ESCO borrows money to construct project
5. ESCO repays lender from agency payments
6. Energy improvements create cost savings for agency

Cost savings

$
Who are The ESCOs?
2017 DOE IDIQ ESPC Energy Service Companies (ESCO)

- ABM Government Services, LLC
- AECOM Technical Services, Inc.
- Ameresco, Inc.
- The Brewer- Garrett Company
- CEG Solutions
- Consolidated Edison Solutions, Inc. CES)
- Constellation NewEnergy, Inc.
- EDF Renewable Energy
- Energy Systems Group, LLC
- Honeywell International, Inc.
- Leidos Engineering
- Lockheed Martin Corp.
- NORESCO, LLC
- OpTerra Energy Services
- Schneider Electric
- Siemens Government Technologies, Inc.
- SmartWatt Energy
- Southland Energy
- Trane U.S., Inc.
- WGL Energy Systems, Inc.
ESPC Key Characteristic & Benefits

• The legislated purpose is to achieve energy savings and ancillary benefits.
• Savings guarantees are mandatory.
• Measurement and verification is mandatory.
• Contract term cannot exceed 25 years.
• Infrastructure improvements that pay for themselves over time.
• Ability to purchase long-payback equipment by bundling with short-payback ECMs.
• Guaranteed cost savings and equipment performance.
ESPC Investment Grade Audit (IGA)

APRIL 15, 2016

GSA Region 2

Final Investment Grade Audit/
Final Proposal

Original Solicitation #GS-02P-12-PV-C-0002
Under Department of Energy Contract DE-AM36-09GO29044

Greater Manhattan Service Center
201 Varick Street
Federal Building VA
Ronald H. Brown
U.S. Mission to the
U.N. Building BN

Lower Manhattan Service Center
Alexander Hamilton
U.S. Custom House HA
Daniel P. Moynihan
U.S. Courthouse MO
Ted Weiss
Federal Building WE
Charles L. Brieant, Jr.
Federal Building &
U.S. Courthouse BR

Brooklyn Service Center
Emanuel Celler
U.S. Courthouse CE
Theodore Roosevelt
U.S. Courthouse &
Federal Building RO
Conrad B. Duberstein
U.S. Bankruptcy
Courthouse DU

Volume I Technical Proposal

Submitted to:
General Services Administration
Public Buildings Service, Region 2
26 Federal Plaza
New York, NY 10278

Submitted by:
Trane U.S., Inc.
Federal Contracting Solutions Group
4833 White Bear Parkway
St. Paul, MN 55110
(651) 407-3800
ESPC Measurement and Verification (M&V)

- Measurement and Verification (M&V) done by GSA’s 3rd party contractor and by ESCO
ESPC & GSA Region 2

- **Total of 18 Buildings for @ $137 M**
  - New York City ESPC – 10 Buildings @ $113 M
  - Caribbean ESPC – 3 Buildings @ $9 M
  - National Deep Retro Fit I, ESPC – 3 Buildings @ $8 M
  - National Deep Retro Fit II, ESPC – 2 Buildings @ $7 M

- **When completed regional energy reduction of @ 30%, water reduction @ 25%**
ESPC & GSA Region 2

Solar PV Panels
Condensing Boilers
Chiller Plant Improvements
New EMCS/BAS Controls
Pneumatic to Digital Data Controls (DDC)
Replace Compressors
New Interior & Exterior Lights
Upgrade/Replace Cooling Tower
Replace/Refurbish Air Handling Units (AHU)

Windows Caulking & Sealing
Double Pane Interior Windows
Repair/Replace Steam Traps
New Variable Frequency Drive (VFDs)
CO-GEN Plant Improvements
Transformer Upgrades
Water & Plumbing Fixtures
Demand Control Ventilation (DCV)
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<tr>
<th>ECM No</th>
<th>Energy Conservation Measure</th>
<th>Briaant</th>
<th>Brown</th>
<th>Dubesrinden</th>
<th>Hamilton</th>
<th>Javits</th>
<th>Moynihan</th>
<th>Roosevelt/Celler</th>
<th>Varick</th>
<th>Weiss</th>
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<td>Install Condensing Boilers</td>
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<td>Chiller Plant Improve. Elec &amp; Abs-2-Elec (RO/CE)</td>
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<td>Improve Variable Secondary Chilled Water Loop (Controls ECM only)</td>
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<td>3.2.4</td>
<td>EMCS Control Strategies 3 - Duct SP; GSA Link (BR,HA,MO,WE); Mtrg (except DU, JA, RO/CE)</td>
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<td>Replace Air Compressor</td>
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<td>Upgrade/Replace Cooling Tower</td>
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<td>Medium/High Pressure Steam PRV Digital Control Upgrade</td>
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Guiding Principles

Guiding Principles for Federal Leadership in High Performance and Sustainable Buildings

- Optimize Energy Performance
- Protect and Conserve Water
- Employ Integrated Design
- Reduce Environmental Impact of Materials
- Enhance Indoor Environmental Quality
Sustainable Guiding Principles

• Employ Integrated Design Principles
  • Integrated Design, incorporate into building operations and procedures
  • Commissioning within 4 years, Cx

• Optimize Energy Performance
  • Energy Star 75, 30% less than 2003 baseline, 20% reduction from 2015 baseline, 30% reduction better than ASHARE 90.1 & use Energy Efficient Products Site Renewable Energy
  • Site Renewable Energy
  • Install building level meters – electric, natural gas, steam, install advance meters as appropriate
  • Benchmarking – preferably using Energy Star Portfolio Manager
Sustainable Guiding Principles

• Protect and Conserve Water
  • Indoor Water, 20% potable water reduction compared to 2007 baseline
  • Outdoor Water, 50% (landscaping) potable water reduction compared to baseline, or no potable water for irrigation
  • Optimize Cooling Tower Water
  • Water efficient products (Water Sense products)
Sustainable Guiding Principles

• Enhance Indoor Environmental Quality
  • Ventilation and Thermal Comfort, ASHRAE 62.1, or 10 cfm per person
  • Moisture Control (humidity)
  • Day Lighting, 2% into 50% of spaces or 50% of occupants control lighting, task lighting
  • Low Emitting Materials (paint, carpet etc.)
  • Protect Indoor Air Quality During Construction
  • Integrated Pest Management (IPM)
  • Tobacco Smoke Control
Sustainable Guiding Principles

• Reduce Environmental Impacts of Materials
  • Environmentally Preferable Products (EPP)
  • Recycled Content
  • Bio-based Content (USDA)
  • Waste & Material Management
  • Ozone Depleting Materials, CFCs
Sustainable Guiding Principles

• Climate Change Risks
  Climate Resilience and Adaptation Assessment
  Mission Criticality
  Facility Adaptation

EO 13693 Action Plans
  Climate Change Preparedness
  and Resiliency Work Group
  (Mid Atlantic Federal Climate Partners)
CEQ 2016 Guiding Principles for Sustainable Existing Buildings

<table>
<thead>
<tr>
<th>Required -8</th>
<th>Optional – need 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>GP01</td>
<td>GP04</td>
</tr>
<tr>
<td>Integrated Assessment, Operation and Management</td>
<td>Renewable Energy</td>
</tr>
<tr>
<td>GP02</td>
<td>GP05</td>
</tr>
<tr>
<td>Commissioning</td>
<td>Metering</td>
</tr>
<tr>
<td>GP03</td>
<td>GP06</td>
</tr>
<tr>
<td>Energy Efficiency</td>
<td>Benchmarking</td>
</tr>
<tr>
<td>GP07</td>
<td>GP08</td>
</tr>
<tr>
<td>Indoor Water Use</td>
<td>Outdoor Water Use</td>
</tr>
<tr>
<td>GP11</td>
<td>GP09</td>
</tr>
<tr>
<td>Ventilation and Thermal Comfort</td>
<td>Alternative Water</td>
</tr>
<tr>
<td>GP15</td>
<td>GP10</td>
</tr>
<tr>
<td>Material Content and Performance</td>
<td>Stormwater Management</td>
</tr>
<tr>
<td>GP16</td>
<td>GP12</td>
</tr>
<tr>
<td>Waste Diversion</td>
<td>Daylighting and Lighting Controls</td>
</tr>
<tr>
<td>GP18</td>
<td>GP13</td>
</tr>
<tr>
<td>Climate Resilience</td>
<td>Indoor Air Quality</td>
</tr>
<tr>
<td></td>
<td>GP14</td>
</tr>
<tr>
<td></td>
<td>Occupant Health and Wellness</td>
</tr>
<tr>
<td></td>
<td>GP17</td>
</tr>
<tr>
<td></td>
<td>Materials Management</td>
</tr>
</tbody>
</table>
GSA’s Guiding Principles Program

- GSA’s GP target of 25% by 2025 in line with the OMB/CEQ minimum target (EO 13693) for agencies that met the initial 15% target from EO 13514
- GSA’s web based SustainableOperations & Maintenance (SOM) Tool
- SOM tool used to track & document compliance with the GPs and LEED EBOM volume certification program
- SOM tool used for GSA’s LEED volume certification program and to track WD.
- Revalidation of GP compliance every 4 years
- Agencies required to work towards 100% conformance with the GPs
- GSA currently at @29% of GP eligible bldgs
Recycling & Waste Diversion

• EO 13514 & EO 13693: Divert at least 50% of non-hazardous solid waste and strive for net zero waste
• Minimize waste and pollutants
Waste Diversion/Recycle

- Glass
- Cardboard
- Paper, Newspaper, Magazines
- Wood
- Plastics
- Aluminum Cans
- Fluorescent Bulbs
- Construction & Demolition Debris
- Electronics
Materials Recycling Facility (MRF)

- A materials recovery facility, materials reclamation facility, materials recycling facility or Multi re-use facility (MRF, pronounced "murf") is a specialized plant that receives, separates and prepares recyclable materials for marketing to end-user manufacturers.
MRF Equipment
Waste Diversion and Recycling

• Custodial Contract changed to require use of Material Recycling Facilities (MRF) with specified reporting

A materials recovery facility, materials reclamation facility, materials recycling facility or Multi re-use facility (MRF, pronounced “murf”) is a specialized plant that receives, separates and prepares recyclable materials for marketing to end-user manufacturers.
GSA Region 2 and MRFs

• Custodial Contracts changed to require use of Material Recycling Facility (MRF) with specified reporting

• Building’s recycling and waste division reporting much higher when using a MRF, up to 75% - 80%
GSA Region 2 & Federal Green Challenge

- EUAS used to track energy and water for buildings and report for GP compliance
- ESPC used to increase energy efficiency and reduce water consumption & implement ECMs along with Agency’s normal funding process for energy projects and building improvements
- Guiding Principles used to document and drive better building performance: Energy-Water-Waste-Cx (SOM tool)
- Waste Diversion tracked and reported in SOM tool used for GPs and E.O. requirements
Questions & Comments

Thomas Burke, P.E., LEED AP O+M
thomas.w.burke@gsa.gov