LBE 101: Benchmarking

Introduction:
• Dan Lauf, Program Director, Center for Best Practices - Energy, Infrastructure & Environment

Speakers:
• Julien Gaudion, Deputy Secretary, Property and Asset Management, Pennsylvania Department of General Services
At DGS, our mission is to help government operate more efficiently, effectively, and safely, delivering exceptional value for all Pennsylvanians.
Leading by example with Goals for State Agencies

Reduce overall energy consumption by 3% per year

Collective Agency Goal – 21% reduction by 2025

Measuring performance through commonwealth wide agency energy consumption platform

GreenGov Council leadership
• Standard platform capturing all agencies
• Electricity and natural gas tracking and reporting
• Broad automated visibility
• Benchmark year - fiscal year 2017/2018
EnergyCAP Project Goals:

• Define the current baseline for electricity and natural gas cost and consumption across all Commonwealth buildings. (Total energy usage (mmBtu) and cost)

• Improve local facilities managers’ visibility of utility bills to investigate any discrepancies identified in the bill.

• Ensure all electricity and natural gas accounts are being centrally procured and included in DGS statewide pricing.

• Help agencies implement facilities improvements to reduce energy consumption.

• Consistently measure year-over-year changes in electricity and natural gas use and cost, implementing efforts to reduce consumption each year.
DGS management of commonwealth facilities

- 7.6 million square feet of conditioned space
- Capitol Complex and Offices
- Track energy and water consumption and costs
- Btu by square foot energy intensity tracking
- Fleet Benchmarking, Validating Efficiency Improvements, Measuring Performance
• U.S. Energy Information Association (EIA) Survey
  
  - Energy Use Intensity (EUI) Survey Baselines
  - Northeast Region – Green States
  - CBECS for Offices Category
  - Northeast Region 93,900 BTU/sq.ft.
  - National Average 77,800 BTU/sq.ft.
  - PA DGS Average 77,829 BTU/sq.ft.
DGS procurement of energy supply

- Annual total energy spend of $125M with electricity accounting for $85M
- Managing over 10,000 individual CWOPA electricity accounts across PA
- Act as a large scale consumer reducing bid prices and administrative burden
- Solicitations via ERMA platform including PASSHE schools and CoStars local government partners
DGS procurement of energy supply

- Aligning customer agency goals while taking advantage of market conditions

- Steadily reduce weighted average rate from 5.8 cents in 2015 to 4.8 cents through 2022

- 4.8 cent rate is fixed including capacity and transmission

- Actual electricity contract savings of over $25M from 2015 – 2022

- Rates fixed through Dec 2022
GESA Program Project Overview

- Path for agencies to procure energy efficient equipment financed through project savings.
- Projects do not require legislative approval and GESA has its own section in the Procurement Code (Title 62, subchapter E).
- First step in developing a project is for agency personnel to connect with DGS ERMO team.
- In-house scoping team will determine Core ECMs.

**GUARANTEED ENERGY SAVINGS PROJECTS**

- 10 GESA Projects
- Total Project Investment: $89.9M
- Minimum Annual Savings: $4.6M

**PROJECT INVESTMENT**

Minimum Annual Energy Savings Equivalent To:
- More than 3,100 Cars off the road
- More than 37,000 Trees planted
- More than 1,500 Homes’ energy use
Increasing Efficiency Through Successful Projects

- Converted more than 3.2 million square feet to LED lighting
  - Keystone Building
  - Judicial Center Building
  - Main Capitol Pumpkin Ball Lights and Chandeliers Capital Project
  - In-House conversions to LED
    - Capitol Media Center
    - East Wing Atrium
  - East Wing Parking Garage
  - Health & Welfare Building
  - Labor & Industry Building
  - North Office Building & Tunnels

- Over 35,000 lights replaced to date
Old Chiller Removed
- 1957 York Turbomaster
- R12 refrigerant
- Single speed machine
- Standard oil bath bearings

New Chiller Delivery
- Smardt Variable Speed
- R-134a refrigerant
- Computer processor staging variable equipment speeds
- Magnetic bearings eliminating friction and need for oil
Successful GESA Project – Year Two M&V

**SCI Dallas Year 2 Energy Savings**

<table>
<thead>
<tr>
<th>Commodity</th>
<th>Guaranteed</th>
<th>Actual:</th>
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<tbody>
<tr>
<td>Water</td>
<td>29%</td>
<td>43%</td>
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<tr>
<td>Electricity</td>
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<tr>
<td>Fuel</td>
<td>66%</td>
<td>68%</td>
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<tr>
<td>Sludge</td>
<td>37%</td>
<td>79%</td>
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**SCI DALLAS 2019**

- Actual savings exceeded by 22%
- Guaranteed annual savings $2.2M
- Actual Year 2 savings $2.7M

**TOTAL YEAR 2 SAVINGS:**

- Water: 170,321 mGal @ $4.37/1,000
- Electricity: 1,926,767 kWh @ $0.23/1,000
- Fuel: 54,174 MMBtu @ $1.8/1,000
- Sludge: 723,600 mGal @ $197/1,000
Guaranteed Energy Savings Act (GESA) Project Phase 1

- DCNR, DGS and Energy Systems Group
- 22 state parks with infrastructure in the Western Region plus Forbes, Gallitzin, Clear Creek & Conplanter state forests
- Energy efficient improvements include lighting upgrades, building weatherization and insulation, domestic water improvements, HVAC control improvements, plus Forestry & Parks “want list” items.
- $5.6 million project estimate
- Guaranteed utility cost savings of $7.5 million over 20 years