“Using Innovative Technology & Energy Savings to Inspire Great Learning & Ignite Your Campus Community”

(A Budget-Neutral Approach to Addressing Infrastructure Needs)

CACUBO 2016
Presentation Agenda

- Deferred Maintenance: Cause & Affects
  - Large & Growing Issue
  - Affects Everyone on Campus

- Energy Saving Programs: A Practical Option
  - Innovative & Proven Solution Opportunity
  - Can Inspire & Ignite Learning Environment & Campus

- Panel Discussion: Case Studies PSU & Truman
  - This Approach Benefits Public & Private Institutions
  - Review Best Practices and Lessons Learned

- Closing Comments & Summary
What is Deferred Maintenance (DM)?

- It is maintenance, system upgrades, or repairs that are deferred to a future budget cycle or postponed until funding becomes available
  - The old chillers & boilers that need constant repair
  - Air-distribution systems that don’t quite keep-up
  - Leaky building envelope (windows, roofs, etc.) items

- Detracts from Learning / Working Environment

- Forces Counterproductive Activity (At All Levels)
What is the Amount of Deferred Maintenance in U.S. Colleges and Universities (in dollars)?

A. $100 - $200 million
B. $500 - $750 million
C. $1 - $10 billion
D. $26 - $50 billion

Source: American School & University, 2013.
Why is DM an Issue for Higher Ed?

- Lack of funding (budget cuts)
- Prioritization of funding: most is designated for new construction
- “Kicking Can Down Street” Perpetuates Problems
  - Longer Items Get Deferred Worse Things Become
Can Energy Saving Projects Help DM?

- Utilities are a Material Budget Item
- Utility Budget is ALWAYS Funded, Right?
  - Can Be “Pot-O-Gold” w/ Efficiency Upgrades
- Reduce Utility Costs Without “Losing” Dollars
  - Holistic Energy Project “Reinvests” Savings in DM
Reinvest Budgeted Dollars in Campus

Existing Conditions

Current Utility Costs

Savings (20%-30%)

New Utility Costs

Renovated Facility(s)

Energy-Efficient Improvements
Where to Apply Innovative Solutions?
=> Energy Efficiency Triad™

INNOVATIVE TECHNOLOGIES
- Lighting, Water, Controls,
- HVAC, Labs, Bldg Envelope, etc.
- Wind, Solar, GSHP, Rates
- Conservation Training

EVERYWHERE!!!
## Panel Discussion: Practical Case Studies

### PSU: Founded 1903, 7000 Students, 800 FTE, 85 bldgs, Budget~$115M, Ann.DM~$2.5M

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<thead>
<tr>
<th>PSU (2 Projects, $9M)</th>
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<tbody>
<tr>
<td>o Project 1: 2002, $4.5M, CE</td>
<td>o Project 2: 2011, $4.5M, ESP</td>
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<tr>
<td>o Scope of Work</td>
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<td>o Results: Guarantee = $300K, Actual Yr 1 = $325K, Actual Yr 2 = $330K, Actual Yr 3 = $324K</td>
<td>o Results: Yr 1: G = $421K, A = $417K, Yr 2: G = $432K, A = $474K, Yr 3: G = $443K, A = $516K</td>
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<td>o Financing: 20yr, 4.7% {Refinance 2015}</td>
<td>o Financing: 13yr, 3.5% {KBR Bond Issue}</td>
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<td>o Lessons Learned:</td>
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<td>– boilers wear out, subcontractors make/break project, watch financial terms, work with a reputable ESCO</td>
<td>– Bundled with refinance, forget housing occupancy controls, subs can be pain, shorter finance tied to energy savings &amp; less DM</td>
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Panel Discussion: Practical Case Studies

Truman State University: Founded 1867, 6200 Students, 760 FTE faculty/staff, 42 bldgs, Budget~$122M, Ann.DM~$2M

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<th>TSU ($10.5M)</th>
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<td>o Savings Items</td>
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<tr>
<td>– Lighting, Water Conservation, Building Envelope, Retro-Commissioning,</td>
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<tr>
<td>– HVAC Efficiency, Building Automation, Steam System Upgrades</td>
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<tr>
<td>o Deferred Maintenance Items</td>
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<tr>
<td>– HVAC/Boiler/Chiller Replacements</td>
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<tr>
<td>o Results: Guarantee = $1.0M, Actual = $</td>
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<td>o Financing:</td>
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<td>o Lessons Learned:</td>
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<td>– Financing was more complicated than anticipated</td>
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<td>– Selecting an ESCO via competitive process was positive because the partnership is key</td>
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<td>– Able to complete 5 Years worth of Summer DM projects in one calendar year</td>
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### CSC ($3.9M)
- **Savings Items**
  - Lighting, Water, EMS, Bldg Envlp, Retro-Cx, HVAC Eff
- **Deferred Maint.**
  - HVAC Repl. (3-Bldgs)

### Bethany ($1.9M)
- **Savings Items**
  - Lighting, Water, EMS, Bldg Envlp, Retro-Cx, HVAC Eff.
- **Deferred Maint.**
  - HVAC/Boiler/Chiller Repl.

### KU ($26M)
- **Savings Items**
- **Deferred Maint.**
  - Lab-Hoods, HVAC Repl.
  - Air-Distr. Upgrades

### NCCC (2Phase, $2.6M)
- **Savings Items**
  - Lighting, Water, Controls, Kitchen, Insulation
- **Deferred Maint.**
  - Roofs, Gym AC and “The Cave” (Library Study-Area)

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Energy Projects often address “non-sexy” but critical DM needs, leaving donor dollars/capital for higher profile improvements...
Could This Work for Your Institution?

- Vast Majority of Time – Savings ARE Available!
- Magnitude Will Vary but Typically 20%-35% of Utility Costs Can be Saved (Add’tl O&M Savings)
- Conduct a Thorough Feasibility Study
  - Confirm Viability & Quantify Potential Opportunity
- Do Your Homework
  - Make sure company is qualified & has successful experience
Summary / Q&A

• Deferred Maintenance Is Growing Issue

• Energy Saving Projects Can Help
  – A Tool for Securing Energy & Facility Upgrades
  – Reinvest Current Operating Dollars Into Facilities / Student Experience
  – Guaranteed Cost & Savings: Low Risk Project

• Benefits Are Real for CACUBO Members
  – INSPIRES: Positive Impact on Environment (Learning & Globally)
  – IGNITES: Align with Sustainability Initiatives & Energizes Campus

• Energy Solutions Professionals
  – Vast (SUCCESSFUL) Higher Education Experience: Private & Public
  – Independent & Streamlined: Unbiased, Holistic & Unparalleled Value