Considering Energy Savings
Performance Contracting
For MUSH Projects

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Better Buildings ESPC Webinar Series
Session 1 – Considering ESPC
April 12, 2018
Overview

- What is Energy Savings Performance Contracting (ESPC)?
- Why ESPC?
- A Look at the ESPC Market
- Overview of the ESPC Toolkit
- Spotlight: Tool of Your Choice
POLL:

Which sector do you represent?
POLL:

Where are you in the ESPC decision-making process?
A contracting and financing method that provides upfront financing for energy efficiency projects and repaid by the savings on utility bills resulting from the upgrades.
The Cost of Doing Nothing

(Ziesler, Shah, & Kelley, 2010)

Funding available today

Delayed funding

Financing

No action taken

High

Low

Med

Life Cycle Cost

(Ziesler, Shah, & Kelley, 2010)

http://www1.eere.energy.gov/femp/pdfs/afo_ppt.pdf

How Does ESPC Work in Practice?

- **Operating Costs**
  - Maintenance and Utility Costs
    - Annual Budget Before Improvements
  - Savings
    - Savings Used to Pay for Improvements
  - Annual Budget During Term of Financing
  - Maintenance and Utility Costs
  - Annual Budget after Term of Financing
ESPC Relationships

1. Financing for Construction
2. Utility Incentives
3. Energy Services Agreement
4. Payments for Guarantee
5. Reduced Utility Payment
6. Payments from Savings

School

ESCO

Financier, Bonds, or Muni Lease

Better Buildings
U.S. Department of Energy
ESCO Agency/Owner

Performance Contract

ESCO guarantee:
Projected savings => Payment

Funding Arrangement

Financier

ESPC Financing Options
The Performance Guarantee

- Unique feature of ESPC

The ESCO:
- Assumes financial, operating, and performance risk
- Guarantees project savings
- Measures and verifies savings (option of third-party verification)
- Provides reimbursement if guaranteed savings not met and/or fixes the problem at no additional cost
General ESPC Benefits

- No upfront costs needed
- ESPCO accountable for project design, construction, and post-installation monitoring
- ESPCO serves as single point of contact for project
- ESPCO takes on project risks
- Guaranteed cost and energy savings
- Savings measured and verified as “real”
“Every dollar that pays an unnecessarily high energy bill could be spent for a much better purpose: teaching children.”

- Loudoun County Public Schools Energy & Environment Team Motto (2013)
Opportunities for the MUSH Sector

- Accomplishing deferred maintenance
- Covering increasing operating costs despite tighter budgets
- Improving the indoor environment
- Including non-energy needs
Accomplish Deferred Maintenance

Issue
- Public facilities are some of the oldest in the country
- Public infrastructure regularly gets a grade of D+¹

Opportunity
- ESPC projects can accommodate critical maintenance and operational needs, whether energy-related or not
- A full 40% of K-12 schools pursuing ESPC during 2005-2008 included maintenance needs in their projects, such as roof replacement, asbestos abatement, parking lot repairs, safety/security systems²

Cover Increasing Energy Costs

Issue

- 2000-2010 energy costs rose by ~80%³ and are estimated to continue rising through 2040⁴
- State and local governments spend close to $315B each year on energy alone⁵

Opportunity

- ESPC projects can reduce utility bills & other operating costs
- All ESPC projects active in 2012 reduced total US commercial building energy consumption by about 1 percent or 224 MMBtu⁶

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⁵ US Department of Energy. State and Local Energy Data (SLED) and ACEEE State Government Lead by Example: http://aceee.org/sector/state-policy/toolkit/lbe
Improve the Indoor Environment

Issue
- Inadequate air quality, temperature, and lighting
- Indoor conditions compromise performance & health

Opportunity
- Research has shown gains of 6-26% in “occupant performance” for students, employees, and consumers\(^7\)
- Retrofits have reduced instances of respiratory conditions by 9-25% and of other health and discomfort by 20-50%\(^8\)

\(^7\) International Society of Sustainability Professionals (2010)
\(^8\) US Green Building Council (2012)
A Look at the ESPC Market

Elizabeth Stuart
Lawrence Berkeley National Laboratory

April 21, 2018
The Case for ESPC

- Tight budgets for EE & other cost-saving improvements
- Strong energy savings track record
  - In 2012 ESCO projects saved 224 million MMBTu or approx. 1% of total U.S. commercial building energy consumption\(^1\)
  - A typical MUSH ESPC project saves ~13% to 33% annually over baseline energy consumption\(^2\)
- High market growth potential
  - 2014 investment in ESCO projects and services was $5.3B; expected to grow 13% annually, to $7.6B in 2017\(^3\)
- Significant potential remains
  - Estimated remaining ESPC project investment opportunity in the MUSH market: $51-86.8 billion\(^4\)

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\(^1\) LBNL, 2015, Estimating Customer Electricity and Fuel Savings from Projects Installed by the U.S. ESCO Industry;  
\(^2\) LBNL/NAESCO database of ESCO projects;  
\(^3\) LBNL, 2016, U.S. Energy Service Company Industry: Recent Market Trends;  
\(^4\) ibid
• ESCOs primarily serve the public/institutional sectors
• ~70% ($3.6B) of 2014 industry revenue came from MUSH sectors

ESCO Industry Revenue Share by Market

ESPC Market Overview

- ESCO customers primarily choose ESPC
- ~75% of 2014 industry revenue was ESPC projects

MUSH Market – Measures Installed

Source: LBNL/NAESCO ESCO project database, April 10, 2018
MUSH Market ESPC Potential

• MUSH remaining potential\(^4\)
  - Estimated unaddressed MUSH floor area: 8.4 billion square feet
  - Represents about 200 to 260 trillion Btu in energy savings

• LBNL methodology for estimating ESPC potential
  - Developed MUSH market floor area baselines for *buildings typically addressed by ESCOs* using CBECs and other data sources
  - Interviewed numerous ESCO executives and industry experts to get estimated % of floor area addressed by ESPC by market sector
  - Applied median estimates to determine remaining unaddressed area
  - Generated investment ($) and savings per sq. ft. for each MUSH market from LBNL/NAESCO database of 6,500 projects; applied to remaining floor area to calculate remaining potential investment and $ savings

\(^4\) LBNL, 2013, Current Size and Remaining Market Potential of the U.S. ESCO Industry
State/Local Sector Potential

- About 70% (~2B ft²) of state/local buildings’ floor area has not been addressed by ESPC.
- The remaining state/local potential represents 39-55 trillion Btu in potential energy savings.
- A typical state/local ESPC project saves 20% to 40% annually over baseline energy consumption.\(^5\)

Source: LBNL/NAESCO database, produced by eProject Builder benchmarking tool.
K-12 Sector Potential

- About 60% of K-12 school facilities floor area has not been addressed by ESPC
- The remaining K-12 potential represents 41-59 trillion kBtu in potential energy savings
- A typical K-12 ESPC project saves 13% to 34% annually over baseline energy consumption

Source: LBNL/NAESCO database, produced by eProject Builder benchmarking tool
University/College Sector Potential

• About 75% of floor area for the university/college sector has not been addressed by ESPC

• The remaining potential in the university/college sector represents 19-29 trillion kBtu in potential energy savings

• A typical university/college ESPC project saves 13% to 32% annually over baseline energy consumption7

Source: LBNL/NAESCO database, produced by eProject Builder benchmarking tool

7 Source: ibid
Thank you!

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Lawrence Berkeley National Laboratory
Accelerator Profile

**Timeframe**
2014-2016

**Partners**
25 partners (18 states, six cities, one school district)

**Purpose**
Expand access to Energy Savings Performance Contracting (ESPC) as a promising option for financing energy efficiency retrofits in the public sector

**Outcome**
More than $2 billion invested in MUSH ESPC contracts
Accelerator Activity Areas

Area 1: Streamlining the ESPC Process
• Partners reviewed existing model ESPC documents

Area 2: Empowering the Market
• Partners participated in ePB feedback & training

Area 3: Resolving Individual ESPC Barriers
• Support successful, permanent, innovative, and replicable resolution of individual partner barriers
The ESPC Toolkit

https://betterbuildingssolutioncenter.energy.gov/energy-savings-performance-contracting-espc-toolkit

- Considering ESPC
- Implementing ESPC
- Establishing ESPC
- Expanding ESPC
- Assessing ESPC Results
Considering ESPC

- Design-Bid-Build or ESPC?
- Diagnostic Questions
- LBNL Market Study (2013)
- Legislative Library
POLL:

Which resource would you like to hear about in more detail?
Tool: ESPC or Design-Bid-Build?

Barrier

“Which approach is better suited for our planned retrofit?”
Tool: Diagnostic Questions

**Question**

“Is ESPC suited for my project?”

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**Figure 6: Preliminary Self-Diagnosis to Prioritize Projects**

<table>
<thead>
<tr>
<th>Preliminary Self-Diagnosis</th>
</tr>
</thead>
<tbody>
<tr>
<td>Does your facility have more than 50,000 square feet of floor area?</td>
</tr>
<tr>
<td>Do you spend more than $60,000 each year on energy bills?</td>
</tr>
<tr>
<td>If so, an energy performance contract may work for you. It is likely to benefit you even more if you have:</td>
</tr>
</tbody>
</table>

- Aging buildings or equipment
- Recurring maintenance problems or high maintenance costs
- Comfort complaints
- Scarce budget resources
- Too little energy management expertise
- Too many demands on your maintenance personnel
- No recent upgrades of your lighting or controls systems
- Energy-using equipment that is ready for replacement
Tool: LBNL Market Study

- Published 2013
- Researched and authored by Lawrence Berkeley National Laboratory (LBNL)
- In-depth market analysis and statistics
- Multiple follow-up articles
Tool: ESPC Legislation Library

• Updated July 2017

• Includes all 50 states, five territories, and DC

• Full text of key ESPC statutes in each jurisdiction

ESPC Legislation Database

July 2017
This is a 2017 update of the 2014 ESPC Legislation Database developed for U.S. Department of Energy.

The database contains legislation that supports energy savings performance contracting (ESPC) across 50 states and 5 territories. It includes full text of key statutes, arranged by market sector, with full citations to find subsequent updated statutes. This makes for easy state-to-state comparison of statute requirements. It also identifies key organizations that set guidelines for ESPC in the state such as state energy offices, along with resources they provide. Information for each state or territory is located on a separate tab (in alphabetical order by abbreviation).


Prepared by: Linda Smith, 9Kft Strategies in Energy, LLC. It is an update of the posted 2014 document prepared for U.S. DOE and was completed in support of work conducted for NAESCO, U.S. DOE and the Colorado Energy Office.
Questions?

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