KILOWATTS TO CASH

Converting Your Energy Waste to Guaranteed Revenue Through Energy Performance Contracting
PART 1
What is Energy Savings Performance Contracting (ESPC)?
Alice Dasek
Policy Advisor, DOE

PART 2
How to execute an ESPC Project?
Rob Guthrie
Director of Business Development,
Entegrity Energy Partners, LLC
Energy Savings
Performance Contracting
for K-12 Schools

Alice G. Dasek
Office of Weatherization & Intergovernmental Programs
U.S. Department of Energy
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Introduction

- Released 2016
- Explores how ESPC can help schools achieve priorities for the K-12 market
- First in a series of guides for markets underserved by ESPC
Overview

- What is Energy Savings Performance Contracting (ESPC)?
- Why ESPC?
- A Look at the ESPC Market
- DOE Resources for K-12 Schools
What is ESPC?
ESPC is

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.
How Does it Work in Practice?

- **OPERATING COSTS**
  - Maintenance and Utility Costs
  - Annual Budget Before Improvements

- **OPERATING COSTS**
  - Maintenance and Utility Costs
  - Savings Used to Pay for Improvements
  - Annual Budget During Term of Financing

- **OPERATING COSTS**
  - Maintenance and Utility Costs
  - Savings
  - 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

Financier, Bonds, or Muni Lease
School
ESCO
Utility
Financing Options

Agency/Owner

Performance Contract

ESCO guarantee:
Projected savings => Payment

Financier

Funding Arrangement
The Performance Guarantee

- Unique feature of ESPC

The ESCO:
- Assumes financial, operating, and performance risk
- Guarantees project savings
- Measures and verifies savings
- Provides reimbursement if guaranteed savings not met and/or fixes the problem at no additional cost
Why ESPC?
General ESPC Benefits

- No upfront costs needed
- ESCO accountable for project design, construction, and post-installation monitoring
- ESCO serves as single point of contact for project
- ESCO 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 K-12 Schools

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

Issue
- Schools oldest category of public facilities
- Deferred maintenance backlog of up to $254B

Opportunity
- ESPC project can accommodate critical maintenance and operational needs, whether energy-related or not
- 40% of K-12 schools pursuing ESPC during 2005-2008 installed non-energy measures such as roof replacement, asbestos abatement, parking lot repairs, safety/security systems

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Cover Increasing Energy Costs

Issue

- 2000-2010 energy costs rose by ~80%³ and are estimated to continue rising through 2040⁴
- Schools spend about $8B each year on energy alone⁵

Opportunity

- ESPC project can reduce utility bills
- Other improvements can reduce other operating costs of buildings amid tightening budgets

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Improve the Learning Environment

Issue

- Inadequate air quality, temperature, and lighting
- Classroom conditions compromise student learning

Opportunity

- ESPC project can upgrade ventilation, HVAC, and lighting systems
- Schools can fulfill their mission to provide a healthy and comfortable learning environment

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A Look at the ESPC Market
A Perfect Storm for ESPC

- Tight budgets for energy efficiency retrofits
- Good energy savings track record
  - ESPC projects active in 2012 saved 34 million TWh and 224 million MMBtu or approximately 1% of total US commercial building energy consumption\(^6\)
  - A typical ESPC project in the MUSH market saves approximately 13% to 31% annually compared to its baseline consumption\(^7\)
- High market growth potential for ESPC
  - Anticipated 2017 revenues of $7.6 billion, representing an average annual growth of 13% over the period 2015-2017\(^8\)
  - Estimated ESPC project investment opportunity in MUSH market: ~$51.8-$86.8 billion\(^9\)

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\(^7\) LBNL/NAESCO database of ESCO projects
The Potential for ESPC in K-12 Schools

- Nearly 76% of K-12 school facility area remains untouched by energy efficiency upgrades[^10]
- School buildings represent 41.5-59.3 trillion kBtu in potential energy savings, or $15.8-$29.4 billion in cost savings[^11]

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Note Regarding ESPC Legislation

- Most states have legislation enabling ESPC
- Individual states might have language addressing ESPC specifically for school districts
- Legislation may set requirements for procurement, allowable energy conservation measures, financing terms, structure of the guarantee, M&V, and budget streams
- Good practice to consult your General Counsel, the State Energy Office, and/or project facilitator

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Frequent barriers to broad use of ESPC expressed by MUSH market:

- Complicated and time-consuming procurement process
- Hard-to-access data on existing projects
- Inadequate data to make business case for ESPC
- Insufficient knowledge about mechanism details
- Inexperience in using ESPC in certain market sectors

DOE Resources for K-12 Schools
ESPC Presents Opportunity

- DOE’s goal: Enable access to the upfront financing needed for the public sector to deploy energy efficiency projects

- DOE offers technical assistance:
  - Work has included information resources, individual technical assistance and training
  - 2014-2016 DOE offered the ESPC Accelerator, working with 18 states, 6 cities, and 1 school district
  - New resource: ESPC Accelerator Toolkit
New: ESPC Accelerator Toolkit

- The ESPC project process
  - Model contract documents, ESPC project database, financing decision tree, online guide to implementing ESPC, best practices for selecting energy service company

- The ESPC institutional infrastructure
  - Resources for developing ESPC project champions and for building support network for ESPC across jurisdiction, fact sheet on economic impact analysis tools, ESPC vs. Design-Bid-Build, guide for establishing ESPC technical assistance program

- Application of ESPC to new markets
  - K-12 Primer, case study to assess feasibility and approach to new markets, guide to ESPC in the wastewater sector
Questions?
PART 2

How to execute an ESPC Project?

Rob Guthrie
Director of Business Development,
Entegrity Energy Partners, LLC
Part 2: The ESPC Project & Process

Discussion Topics:
• Successful ESPC Projects in K12
• Types of Retrofits
• Types of Savings Allowed
• Procurement
• Project Development
• Measurement & Verification of Savings
Review: Mechanics of an ESPC Project

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

*Entegrity* energy integrity
Case Study 1: Virginia Beach City Schools

✓ $7.32 million in guaranteed savings over 10 years
✓ $5.85 million in cost
✓ Systems improved:
  • HVAC Equipment
  • Lighting
  • Water Systems
  • Power Controls (PC)
  • HVAC Controls
Case Study 2: Hillsborough County (FL)

- Over $2.5 million in savings
- $2.05 million cost
- Systems improved:
  - HVAC Equipment
  - Lighting
  - Water Systems
Case Study 3: Searcy County Schools (AR)

- $1.4 million in savings
- $960,000 total cost
- Systems improved:
  - HVAC Equipment
  - HVAC Controls
  - Lighting
  - Water Systems
  - PC Power Management
Types of ESPC Savings

1. Energy & Water

2. Operations & Maintenance

3. Capital Cost Avoidance

4. Renewable
Examples: Energy & Water Savings

1. Energy & Water

- LED Lighting
- Low-Flow Faucets/Toilets
- HVAC Controls
- HVAC Equipment
- Plug Load Management
- Kitchen Equipment
2. **Operations & Maintenance**

- Lamps and Ballasts
- HVAC Repair/Replacement
- Plumbing Repair
- Flooring Maintenance
- Waste Management Costs
- Phone System Upgrades
- Other Operational Costs
Examples: Capital Cost Avoidance

3. Capital Cost Avoidance

- Large HVAC Equipment
- Roof Replacements
- Window Systems
- Other
The ESPC Process

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- Preliminary Energy Model
- Preliminary ECMs Identified
- Financial Scoping Tool Created
- Budget Estimate Prepared
- Detailed Survey
- Design Development
- Construction Budget Established
- Construction Drawings & Specs
- Detailed Energy Model
- Project Management
- Planning & Scheduling
- Coordination
- Detailed Design
- Construction Contract Initiated
- Installation
- Verify ECM Performance
- Complete Punch Lists
- Training
- As-built Drawings
- Energy Policy
- M&V Process
- Fine Tuning of Control System
- Preventive Maintenance
- Initiate / Recommend More ECMs

Measurement and Verification
7 to 15 Years
Step 1: Preliminary Analysis

Your district is a good candidate for ESPC if:

- You have a stable future
- You have fluorescent lighting
- You have deferred maintenance/capital improvement needs
- Your energy costs are rising
- You need to save money
Step 2: Procurement

✓ Request for Qualifications (RFQ) Advertisement
✓ Pre-Interview Site Assessment
✓ Interviews with Interested ESCOs
✓ Award
✓ Project Development Agreement
✓ Factors to Consider:
  • Purchasing Cooperatives
  • State Energy Office Collaboration
Step 3: Investment Grade Energy Audit (IGA)

✓ Gives ESCO time to develop good cost and savings numbers
✓ Scope includes:
  • Bill collection
  • System inventory
  • Metering/data logging
  • Report
✓ Cost is typically deferred
✓ Duration = 90 days typically
Step 4: Financing & Incentives

- 3rd-Party tax-exempt financing facilitated by ESCO partner
- Savings are guaranteed to exceed amortized costs
- Types of tax-exempt financing:
  - Bonds
  - Municipal Leases
  - Installment Loans
- Utility Incentives
  - Vary from market to market
Step 5: Installation of Upgrades

- ESPC projects are still construction projects
- Work typically done after hours or in summer
- ESCO is prime contractor
- Customer is billed based on progress
Step 6: Measurement & Verification

- ESCO required to measure & verify guaranteed savings
- IPMVP Protocol
- Duration = 1-20 years
- ESCO required to refund shortfall to school district
- Reports typically issued annually
Why ESPC? No Time Like the Present

- Low interest rates
- Aggressive utility incentives
- Falling cost of technology
  - Solar
  - LED Lighting
- Rising energy costs
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alice.dasek@ee.doe.gov

Rob Guthrie, CEM
rob.guthrie@entegritypartners.com
www.entegritypartners.com

Michael Parker
michael.parker@Nabholz.com
www.nabholz.com