
How Energy Savings Performance Contracting Can Support State Energy Planning

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This short presentation is intended to give states and their stakeholders a vision for what it would look like to include energy savings performance contracting in their energy plans.

Energy Savings Performance Contracting as an Emissions Reduction Approach



Activities	EM&V
<p>Energy Savings Approaches</p> <ul style="list-style-type: none"> • State energy or general services office, building owners, energy service companies (ESCOs), utilities generate energy savings from: <ul style="list-style-type: none"> - Direct energy management - Capital improvements - Technical assistance - Training - Metering - Utility incentives 	<ul style="list-style-type: none"> • Recent resources provide guidance, including: <ul style="list-style-type: none"> - <u>Federal Energy Management Program M&V Guidelines Version 4.0</u>
<p>State Policy Options</p> <ul style="list-style-type: none"> • Could include: <ul style="list-style-type: none"> - Energy efficiency resource standard (EERS) - Executive order or legislation to create ESPC program w/target savings or investments - State financing for ESPC projects - State administrative rules to support ESPCs 	

Why Energy Savings Performance Contracting?

How Energy Savings Performance Contracting (ESPC) Works

- ESPC is a mechanism that provides upfront capital for energy efficiency projects that is repaid by the energy savings generated by the project.
- ESPC mobilizes energy efficiency projects that might not otherwise move forward in the face of limited budgets for upfront project costs.
- ESPC enables more comprehensive retrofits that can include major energy-consuming equipment upgrades as well as water conservation and infrastructure improvement.

Benefits of ESPC

- Guaranteed project performance: The contracted energy services company (ESCO) is responsible for any shortfall in guaranteed project savings.
- A typical ESPC project in the municipal/university/schools/hospitals (MUSH) market saves approximately 13-31% annually, compared to baseline consumption ([LBNL](#)).
- ESPCs active in 2012 saved 34 million TWh and 224 million MMBtu or approximately 1% of total US commercial building energy consumption ([LBNL](#)).

Current Status of ESPC

- Nearly all states have ESPC-enabling legislation.
 - More ESPC activity occurs in states with energy savings goals.
- The MUSH (municipalities, universities, schools, hospitals) market represents more than 70% of ESPC industry investment ([LBNL](#), 2016)
 - MUSH market project sizes have ranged from <\$50,000 to almost \$40 million.
 - In 2016, the largest single-state ESPC project in the U.S. to date totaled \$245M.
- ESPC investments are growing.
 - From January 2013 to December 2016, 25 state and local partners in DOE's ESPC Accelerator developed public-sector energy efficiency retrofit projects resulting in more than \$2 billion invested.
 - As of 2017, at least two states have exceeded \$500 million in total ESPC project investments.
 - Anticipated 2017 revenues in the ESPC market of \$7.6 billion represent an annual growth of 13% over the period 2015-2017 ([LBNL](#), 2016).

Additional Opportunity: Large Potential Savings Across U.S.

- Growth in ESPC still leaves large amounts of floor area untouched (LBNL, 2015):
 - More than 3/4 of state and local building floor area has yet to be addressed by ESPC
 - More than 2/3 of floor area in MUSH markets generally has yet to be addressed by ESPC
- Significant investment potential remains ([LBNL](#), 2017):
 - Approximately \$66 to \$208 billion available for ESPC project investments in the MUSH market
- Large potential savings are available across the U.S. ([LBNL](#), 2013):
 - 200 to 262 trillion Btu in energy savings potential if these ESPC investments were made

More details available:

LBNL, [Updated Estimates of the Remaining Market Potential of the U.S. ESCO Industry \(2017\)](#)

LBNL, [Current Size and Remaining Market Potential of the U.S. Energy Service Company Industry \(2013\)](#)

State and Local Role in ESPC

ESPC pathway requires state and local action

- Legislation enabling ESPC is adopted at the state level; almost all states have legislation allowing ESPC.
- Decision or approval to use ESPC is made at the individual state or local agency, department, council, or facility level.
- State and local debt and financing policy impacts ESPC project structures

Policy Actions

- The most effective ESPC state policy includes establishing a state-level program to provide technical assistance to entities pursuing ESPC projects.
- A state legislature, governor, administrative agency, or local government can support ESPC by:
 - Establishing or leveraging a statewide savings goal
 - Establishing or leveraging an energy savings goal or EE standard specific to state or local building stock (often set by the governor or local elected official)
 - Establishing training or certification programs/requirements for building operators
 - Establishing or accessing an internal financing mechanism that can provide a regular, low-cost funding stream for ESPC projects
 - Establishing a state chapter of the Energy Services Coalition; chapter meetings bring together public and private ESPC stakeholders.

Best Practices in ESPC Implementation

Implementation Actions

- Sound project development and implementation are critical to realizing actual energy savings from ESPC projects.
- Some states use in-house expertise to develop ESPC contracts; others look to external owner's agents for such support.
- Best practices in project implementation include:
 - Engage an owner's agent to oversee project development and management
 - Partner with Energy Services Companies (ESCOs) pre-qualified to perform the project
 - Use standardized contracts and documents to streamline the project development process and cut transaction costs
 - Plan and apply formal measurement & verification (M&V) to ensure project is yielding the expected savings and include third-party verification
 - Benchmark, track, and report project data to effectively gauge project results

ESPC Savings Examples from Select States

- From the late 1980s through 2013, **Washington's** Dept. of Commerce contracted with ESCOs to complete energy-savings investments in more than 400 public facilities, with average annual savings of over \$30 million. The program has saved an average of 1 trillion BTUs and 58.8 tons of CO2 per year. ([WSDDES](#))
- From the mid-1990s through June 2016, **Colorado's** ESPC portfolio included >190 active and completed construction projects, which will result in \$32.1 million in annual utility cost savings. ([ACEEE](#))
- Between 2005 and 2015, **Illinois'** Department of Commerce and Economic Opportunity helped arrange ESPCs for local governments and other public facilities. The program, which built on a pilot, has achieved utility savings of over \$17.2 million per year. ([IDCEO](#))
- Between 2012 and 2016, **Massachusetts** invested \$470 million in energy projects across 58 million square feet of state buildings, resulting in a 25% energy reduction and a decrease in greenhouse gas emissions of 135,000 metric tons. ([ACEEE](#))
- Between 2009 and 2016, **New Jersey** arranged 65 ESPC projects for \$300 million in contracts, resulting in \$40 million in annual savings. ([ACEEE](#))

ESPC Is Cost-Effective

- ESCOs provide an energy savings guarantee for the project. With a properly set-up project and contract, the ESCO bears the costs of covering a shortfall if the project savings do not materialize.
- ESPC projects register 15-31% energy savings per project ([LBNL](#)).
- The median ESPC project in the state and local market pays back its investment in approximately 8-10 years ([LBNL](#)).

EM&V Methods for ESPC

- ESPC projects quantify energy savings on a project-by-project basis (M&V).
- ESCOs use standardized M&V approaches, primarily the [International Performance Measurement and Verification Protocol \(IPMVP\)](#).
 - IPMVP provides four M&V options and addresses issues related to the use of M&V in third-party-financed and utility projects. Best practice is to add third-party verification to ESCO measurement.
- Other options include:
 - [FEMP \(Federal Energy Management Program\) M&V Guidelines](#) – Many state & local governments use these Guidelines, which contain specific procedures for applying concepts originating in the IPMVP.
 - [ASHRAE \(American Society of Heating, Refrigerating and Air-Conditioning Engineers\) Guideline 14 – Measurement of Energy and Demand Savings](#) – The ASHRAE guideline specifies three engineering approaches similar to the options provided in IPMVP.
 - [Uniform Methods Project](#) – The measure protocols are based on a particular IPMVP option and provide a more detailed approach to implementation.

DOE Support for ESPC

ESPC Toolkit – collection of dozens of resources, best practices, and innovative approaches that states, cities, and K-12 schools have used to successfully establish and implement performance contracting.

Highlights include:

- ***Considering ESPC?*** – [ESPC or Design-Bid-Build for Your Retrofit?](#)
- ***Implementing ESPC Projects*** – [Financing Decision Tree](#)
- ***Establishing an ESPC Program*** – [Guidelines for Establishing ESPC Support Program](#)
- ***Expanding ESPC to New Markets*** – [ESPC Guide Series for Underserved Markets](#) (K-12 schools, fleets and fueling infrastructure, water resource recovery facilities)
- ***Evaluating ESPC Results*** – [Overview of Economic Impact Analysis Tools](#)

Note: Resources are grouped so that users can easily find the information they need at each stage of their ESPC decision-making process.

Additional Resources for State & Local Governments

- Individual states support ESPC programs. Start with the [State Energy Office](#).
- Additional educational and informational resources are available through the [Energy Services Coalition](#), a public-private partnership promoting the benefits of, providing education on, and serving as an advocate for the widespread use of energy performance contracting in public and private facilities.
 - [ESC State Chapters](#)
 - [ESC Project Case Studies](#)
- Additional Key Documents
 - LBNL, [Updated Estimates of the Remaining Market Potential of the U.S. ESCO Industry \(2017\)](#)
 - LBNL, [Current Size and Remaining Market Potential of the U.S. Energy Service Company Industry \(2013\)](#)
 - NAESCO, [ESPC Project Case Studies](#)

Get More Information on This Pathway and Others

Visit: energy.gov/eere/slsc/EEopportunities

[How Energy Efficiency Programs Can Support State Energy Planning](#)

Overview and individual presentations on features and benefits associated with including energy efficiency in state energy plans, covering:

- National and state-level energy savings potential estimates for 2030
- Current activity at the national and state levels, best practices, energy savings examples, cost-effectiveness, measurement approaches, and DOE support for:
 - Building energy codes
 - City-led efficiency efforts
 - Combined heat and power
 - Energy savings performance contracting
 - Industrial efficiency, including superior energy performance
 - Ratepayer-funded programs
 - Residential energy efficiency
 - Low income energy efficiency
- Technical assistance available

[Guide for States: Energy Efficiency as a Least-Cost Strategy to Reduce Greenhouse Gases and Air Pollution, and Meet Energy Needs in the Power Sector](#)

State and Local Energy Efficiency Action Network (SEE Action) resource presents pathways thru:

- Case studies of successful regional, state, and local approaches
- Resources to understand the range of expected savings from energy efficiency
- Common protocols for documenting savings
- Sources for more information