DRAFT: DO NOT CIRCULATE

Energy Efficiency Financing Foundations

Training for Public Sector Facilities Managers and Finance Officers

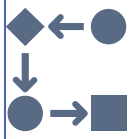
This work was funded by the U.S. Department of Energy Office of State and Community Energy Program, under Contract No. DE-AC02-05CH11231.

Specialized Financing Products
Module 4

Learning Objectives

"**Traditional**" financing product: widely used to support investments in many different contexts, including energy efficiency

"**Specialized**" financing product: designed specifically to promote energy efficiency by helping to overcome market barriers



Introduce and explain specialized public-sector financing products

Examine use of specialized financing products in public-sector project examples

Understand and compare strengths and weaknesses of specialized financing products

Compare traditional and specialized financing products

Types of Specialized Public-Sector Financing Products

On-Bill

Contract in which a utility or private lender supplies capital to a customer to fund energy efficiency, renewable energy, or other generation projects and is repaid through an existing utility bill.

"On-Bill Financing" refers to contracts in which the utility itself provides the capital.

"On-Bill Repayment" refers to contracts in which capital comes from a private lender, and loans are repaid through the utility bill as a conduit.

"On-Bill Tariff" refers to an on-bill structure in which repayment rules are written into same documents that govern other customer charges, called tariffs. Charges stay with the property if customer moves out.

ESPC

Energy Savings Performance Contract (ESPC) is a contract in which an energy service company (ESCO) installs efficiency measures and provides a guarantee of energy savings from those measures. The ESCO conducts measurement and savings verification (M&V) and may perform ongoing operations and maintenance (O&M).

ESPC arrangements are often grouped in among financing products, but they are not themselves a form of financing. Customers may pay for projects using cash, various forms of financing, or a mix of both. Accounting treatment depends on the underlying type of financing used.

EaaS

Efficiency-as-a-Service (EaaS) is a contract in which a provider pays upfront costs and oversees installation and ongoing maintenance of energy efficiency measures. Customer repayments are based on energy savings achieved, as measured by the provider.

In the public sector, an EaaS contractor requires that the agency work with an independent municipal advisor, since the contract covers both the project work and the financing, which must be kept separate under federal law and regulation unless an independent municipal advisor is engaged.

Some accountants have classified EaaS as off-balance sheet. GASB has not issued guidance on disclosure of these transactions.

On-Bill Financing/On-Bill Repayment

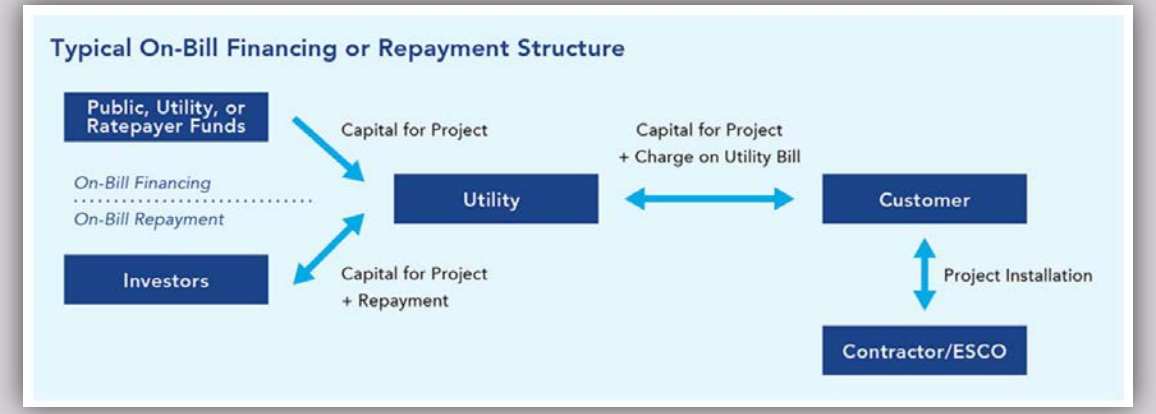
Capital can come from private lenders or utility.

Some programs only check bill payment history, not credit.

Repaid directly on utility bill.

May expedite internal sign-off as part of utility bill.

May require separate accounting.



Learn More

On-Bill Advantages

CONVENIENT STRUCTURE

On-bill agreements are typically very simple, and making repayments directly on the utility bill is convenient.

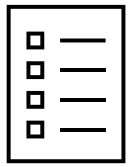
ALTERNATIVE UNDERWRITING IN SOME PROGRAMS

Some on-bill programs only check a customer's utility payment history, which can streamline the application and approval process as compared with underwriting a customer's creditworthiness.

MAY FACILITATE INTERNAL APPROVAL

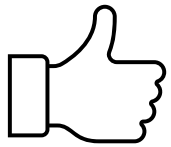
May facilitate speedier internal approval process, if seen as part of utility bill that can be paid out of operating budget. (Note: internal budgeting does not determine proper accounting treatment or disclosure requirements.)

Source (modified): U.S. Department of Energy, Better Buildings Solution Center



Simple Repayment Structure

Alternative Underwriting (some programs)



May Facilitate Internal Approval

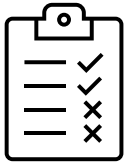
On-Bill Disadvantages

- **NOT SUITED FOR WIDER PROJECT SCOPES**
  Although some programs allow a portion of the project scope to include non-energy improvements, the majority of the project must typically be energy-related. Not ideal for wrapping energy improvements into wider project scopes.

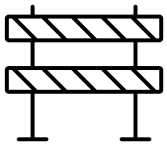
- **OTHER PROGRAMMATIC LIMITATIONS**
  Programs typically set limitations on project size, financing term length, eligible energy improvements, etc.

- **LIMITED AVAILABILITY**
  Available only where utility providers offers an on-bill program and must be open to public-sector customers.

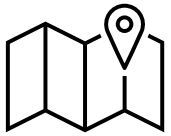
Source (modified): U.S. Department of Energy, Better Buildings Solution Center



Narrow Project Scopes



Programmatic Limitations



Limited Availability

Example: Energize Connecticut Small Business and Municipal Loan Program (Eversource and United Illuminating)

energize CONNECTICUT

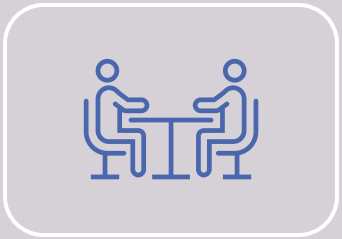
Small Business & Municipal Loan Program

What is the Small Business and Municipal Loan Program?	These loans are funded through the Connecticut Energy Efficiency Fund to help upgrade or replace existing electric and gas equipment with qualifying high-efficiency equipment.
Loan Terms →	•Commercial or industrial businesses participating in the Small Business Energy Advantage (SBEA) program can apply for loans ranging from $500-$100,000. •Municipalities participating in a retrofit program can apply for loans up to $1 million. •Repayment terms up to 48 months. •Convenient on-bill payment option.
Eligibility →	•Commercial and industrial businesses of Eversource or UI that are participating in the Small Business Energy Advantage (SBEA) program are eligible. •Municipalities served by Eversource or UI with projects qualifying for the Energy Opportunities program may also participate. •All participating customers must be in good credit standing, be a Utility customer for one year, and have less than four utility late payments. •The loan must be used to upgrade or replace existing electric and natural gas equipment with high-efficiency equipment.

Source: Energize Connecticut

Energy Savings Performance Contracts

Identify an energy service company (ESCO)



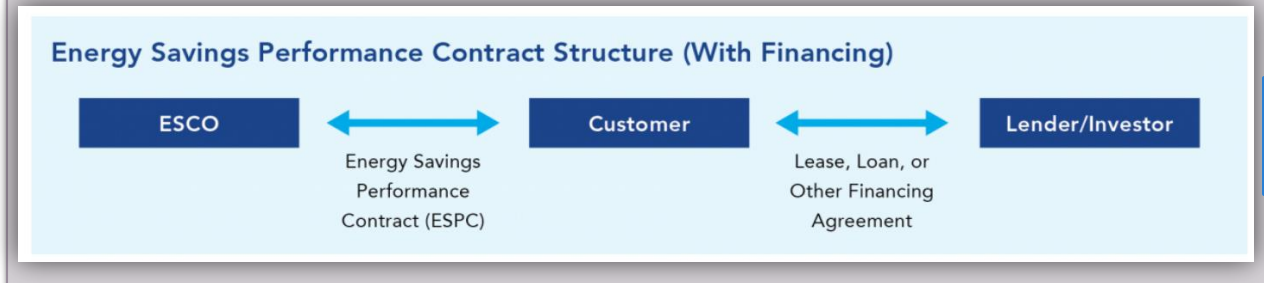
Negotiate guaranteed energy savings performance contract (ESPC)

Enter into financing agreement

ESCO identifies and implements energy-saving measures

ESCO typically handles operations and maintenance (O&M)

ESCO conducts savings measurement and verification (M&V)



For additional ESPC resources, see Slide 25

ESPC Advantages

ENERGY SAVINGS GUARANTEED
Most ESPCs include a performance guarantee, reducing project risk for the customer. This is particularly beneficial for large and complex retrofits.

OUTSOURCED PROJECT MANAGEMENT
The ESCO handles most aspects of project scoping, implementation, and management, reducing the burden on the customer's in-house staff. (Must be part of negotiated agreement.)

ENHANCED RELIABILITY OF OPERATIONS
Projects are maintained through rigorous monitoring and verification by the ESCO, which will typically conduct periodic maintenance and/or adjustments to ensure long-term reliability and performance of the equipment.

SCALABLE
EPCs can be used for portfolio-wide initiatives, and the large size and deep bench of most ESCOs gives the customer access to a range of vertically integrated services.

MAY FACILITATE INTERNAL APPROVAL
Performance guarantee may help sell project internally.

Source (modified): U.S. Department of Energy, Better Buildings Solution Center

Savings Guaranteed

Option for Outsourced Project Management

Reliability of Operations

Scalable

May Facilitate Internal Approval

ESPC Disadvantages

LONG CLOSE TIMES

Because ESPCs are complex and require the ESCO to take on performance risk, they can have high transaction costs and long negotiation periods (typically over a year).

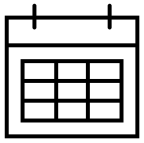
MAY NOT WORK FOR SMALLER PROJECTS

Because of the substantial transaction costs to set up an ESPC, ESCOs tend to look for larger project sizes.

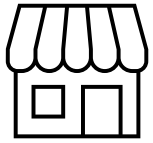
COMPLEXITY OF SAVINGS MEASUREMENT

Methods for measuring energy savings compared to pre-installation usage can be complex and are not always transparent to customers. May detract from attractiveness of savings guarantee.

Source (modified): U.S. Department of Energy, Better Buildings Solution Center



Long Close Times
(High Transaction Costs)



May Not Work for
Smaller Projects

Complexity of Savings
Measurement

ESPC Example:
Virginia Beach Public Schools

Virginia Beach City Public Schools, VA

- Largest school division in SE VA (90 buildings)
- Faced budget reductions & declining enrollment (1%/year)
- $5.9 million in energy improvements
  - Lighting
  - Portable heat pump controls
  - Ground source heat pumps
  - Air conditioning unit replacements
  - Computerized power control systems
  - Water conservation measures
- $730,000+ total annual savings

VIRGINIA BEACH CITY PUBLIC SCHOOLS
CHARTING THE COURSE

Energy Saved (MMBtu / year)	Total Energy Cost Savings ($)	Total Operation and Maintenance Cost Savings ($)	Total Savings ($)	Total Project Cost ($)	Simple Payback Including Financing Cost (years)
20,005	$6,626,322 (over 10 years)	$697,670 (over 10 years)	$7,323,992 (over 10 years)	$5,849,657	10

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Better Buildings

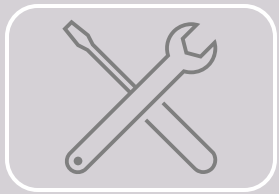
U.S. DEPARTMENT OF ENERGY

https://betterbuildingssolutioncenter.energy.gov/sites/default/files/slides/Expanding_ESPC-Slides.pdf

Efficiency as a Service

Sign contract with a provider

Provider pays contractor for building upgrades

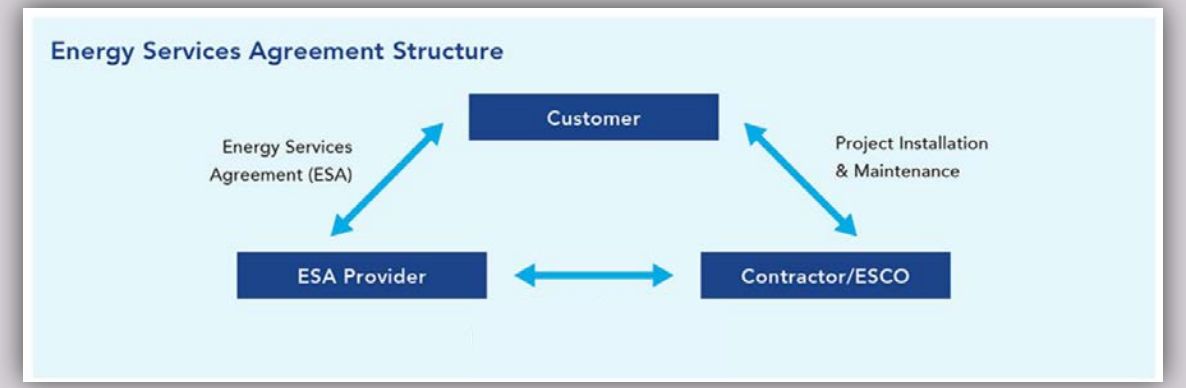


Provider conducts ongoing operations and maintenance

Provider measures savings on an ongoing basis

Customer makes payments; provider takes on performance risk

Upon termination, customer can purchase, extend, or (theoretically) return assets



Learn More

EaaS Advantages

ENERGY SAVINGS PAY FOR PROJECTS

Efficiency-as-a-service allows customers to redirect a portion of their current utility spending to pay for efficiency improvements; ESA payments are based on realized energy and operational savings and set below the current utility price.

ENHANCED RELIABILITY OF OPERATIONS

Efficiency-as-a-service providers pay for periodic maintenance services to ensure long-term reliability and performance of the project equipment. Under a MESA*, the customer has a single point of contact and a single payment for all utility expenses and the MESA provider actively manages energy consumption at the facility.

FLEXIBLE ENTERPRISE-SCALE FINANCING

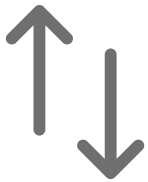
Many providers can bundle together multiple sites that have smaller project opportunities into a single package (e.g., bundle 10 sites with $500,000 projects into a single $5 million service contract).

MAY FACILITATE INTERNAL APPROVAL

No capital outlay and payment only when savings are realized.

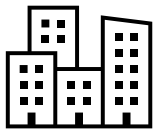
Source (modified): U.S. Department of Energy, Better Buildings Solution Center

*Managed Energy Service Agreement

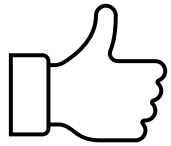


Energy Savings Pay for Projects

Reliability of Operations



Flexible Scaling



May Facilitate Internal Approval

EaaS Disadvantages

COVENANTS RESTRICTING OWNERSHIP TRANSFER

Pre-existing financing agreements may prohibit transfer of ownership of building fixtures to a third party.

LONGER CLOSE TIMES

Transaction costs can be high if each deal is heavily negotiated; for more complicated retrofits with no preliminary energy audits completed, deals can take 9-12 months or more to close.

COMPLEXITY OF SAVINGS MEASUREMENT

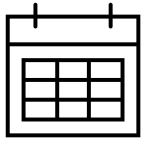
Methods for measuring energy savings compared to pre-installation usage can be complex and are not always transparent to customers. May detract from pay-for-performance model.

REQUIRES ENGAGING MUNICIPAL ADVISOR

In the public sector, an EaaS contractor requires that the agency work with an independent municipal advisor, since the contract covers both the project work and the financing, which must be kept separate under federal law and regulation unless an independent municipal advisor is engaged.

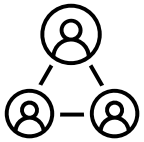
Source (modified): U.S. Department of Energy, Better Buildings Solution Center

Ownership Constraints



Longer Close Times

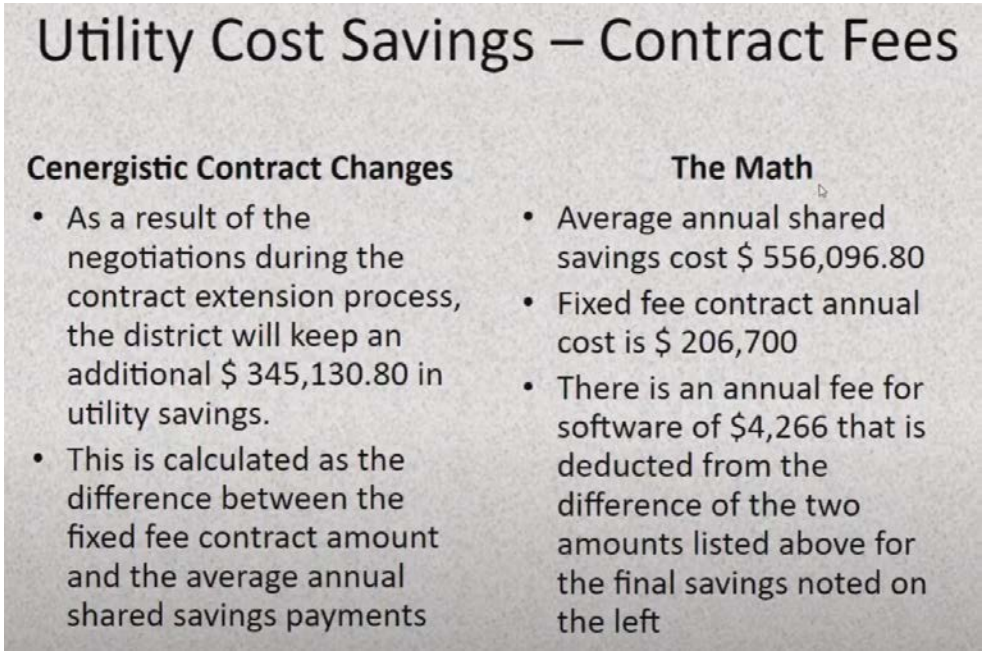
Complexity of Measurement



Requires Municipal Advisor

EaaS Example: Pitt County Schools, Greenville, NC

- Pitt County Schools entered a shared savings contract with provider Cenergistic in 2015
- Savings were split 50/50 between the school district and the provider
- Each received an annual average savings-based payment of $556,096
- After five years of demonstrated savings, Pitt County switched to a lower fixed-fee annual payment of $207,600
- Provider continues to guarantee savings will cover annual payment



Presentation from Pitt County Schools facilities staff to school board, June 15, 2020

Product Comparisons

Specialized Product Comparison By Product Features

	On-Bill	ESPC	EaaS
Low Upfront Transaction Costs	✓	X [1]	X
Low Cost of Capital	~	~	~
Longer Term Lengths	X	~	X
Financing Covers 100% of Project Costs	✓	~	✓
Scalable to Building Portfolios	~ [2]	✓	✓
Generally Available	~	✓	~ [3]
Savings Guaranteed	X	✓	✓
Actual Savings Measurement	X	✓	✓
O&M Included	X	~ [4]	✓

1. U.S. Department of Energy resources designed for ESPCs can also be used at the state and local level to standardize and streamline contracting process. For more, see the ESPC Toolkit.
2. May depend on utility territory of other buildings. Some programs also cap total outstanding loans per customer.
3. Growing rapidly, but participation of public sector is still limited.
4. Depends on contract arrangements.

✓ Feature is inherent to this product.
~ Feature may or may not be part of a particular offering of this product type.
X Feature is not a part of this product and may be a barrier to its use.

Specialized Product Comparison
Pros and Cons in Multiple "Debt" Contexts

Barrier	On-Bill	ESPC	EaaS	Notes (See Module 2 for further explanation of each debt-related barrier)
Competition for Financing Capital (Agency Decision-Making)	✓	✓	✓	On-Bill: Can help if paid for from utility (operating) budget. ESPC: Capital needed upfront, but guarantee reduces risk. EaaS: No upfront capital outlay from customer.
Voter Approval Requirements (Public Policy)	✓	~	✓	On-Bill: In practice, unlikely to require voter approval. Strictly speaking, may depend on public policy definition of debt. ESPC: Depends on underlying financing used. General Obligation bonds may require voter approval. EaaS: In practice, unlikely to require voter approval. Strictly speaking, may depend on public policy definition of debt.
Cumulative Debt Caps (Public Policy)	✓	~	✓	On-Bill: In practice, unlikely to count against debt caps. Strictly speaking, may depend on public policy definition of debt. ESPC: Depends on financing used. GO bonds generally count against limits; others (e.g., leases) may depend on policy definitions. EaaS: In practice, unlikely to count against debt caps. Strictly speaking, may depend on public policy definition of debt.
Debt Covenants (Pre-Existing Financing Agreements)	~	~	X	On-Bill: Depends on language of pre-existing financing agreements and analysis of pre-existing lenders. ESPC: Depends on underlying financing/payment. GO bonds and leases likely would be covered under any debt covenants. EaaS: Providers typically "own" improvements, which often contradicts pre-existing agreement provisions.
Investor Tolerance of Balance Sheet Debt Levels (GAAP/GASB)	X	~	~	On-Bill: Typically requires long-term debt commitment that should be book on balance sheet (even if paid for from operating budget). ESPC: Depends on underlying financing/cash payment. Any lease or bonds portion should be booked on balance sheet. EaaS: No GASB guidance to date on balance-sheet treatment.

✓ Product helps overcome the barrier. ~ Product may or may not help overcome the barrier. X Product does not overcome the barrier and may create one.

Traditional and Specialized Product Comparison By Product Features

Barrier	Traditional			Specialized		
	Loans	Leases	Bonds	On-Bill	ESPC	EaaS
Low Upfront Transaction Costs	✓	✓	X	✓	X	X
Low Cost of Capital	~	~	✓	~	~	~
Longer Term Lengths	X	X	✓	X	~	X
Financing Covers 100% of Project Costs	X	✓	~	✓	~	✓
Flexible Project Scopes	✓	✓	✓	X	X	X
Scalable to Building Portfolios	✓	✓	✓	~	✓	✓
Generally Available	✓	✓	✓	~	✓	~
Savings Guaranteed	X	X	X	X	✓	✓
Actual Savings Measurement	X	X	X	X	✓	✓
O&M Included	X	X	X	X	~	✓

Note: Check marks are used where an advantage is inherent to the product structure. Other specific products in some jurisdictions may also carry these advantages, particularly where efficiency programs have enhanced them.

Traditional and Specialized Product Comparison "Debt Restrictions"/"Non-Debt"

Barrier	Traditional			Specialized			Notes
	Loans	Leases	Bonds	On-Bill	ESPC	EaaS	
Competition for Capital Budget (Agency Decision-Making)	X	X	X	✓	✓	✓	Traditional: Loans, leases and bonds all compete for limited capital budgets. Specialized: On-bill and EaaS often treated as part of operating budget internally (regardless of reporting requirements). ESPC savings guarantee can help make the case for budget neutral or positive impact.
Voter Approval Requirements (Public Policy)	~	~	X	✓	~	✓	Traditional: GO Bonds often require voter approval. Loans and leases may depend on policy language, but usually not if no general obligation. Specialized: In practice, on-bill and EaaS may unlikely to require voter approval. ESPC depends on underlying financing (GO bonds vs. other).
Cumulative Debt Caps (Public Policy)	~	~	X	✓	~	✓	Traditional: GO bonds typically counted against debt caps; others depend on policy language (e.g., "bonds, notes, or other evidence of indebtedness" vs. "general obligation;" "paid from general fund" vs. "general obligation.") Specialized: In practice, on-bill and EaaS unlikely to count against debt caps. Strictly speaking, depends on policy language. ESPC depends on underlying financing/payment.
Debt Covenants (Pre-Existing Financing Agreements)	~	~	~	~	~	X	Traditional: All products likely count against debt ratios and restrictions on incurring additional debt, but agreements may leave some room to do so. Specialized: On-bill may depend on how pre-existing lenders perceive the obligation (as debt or part of the utility bill). ESPC depends on underlying financing/payment. EaaS typically gives ownership of any financed equipment, including building fixtures, to financing provider, which may create issues for pre-existing financing secured by the property.
Investor Tolerance of Balance Sheet Debt Levels (GAAP/GASB)	X	X	X	X	~	~	Traditional: All products should be booked on balance sheet. Specialized: On-bill should be booked on balance sheet. ESPC depends on underlying financing/cash payment (any lease or bond portion should be booked on balance sheet). GASB has not issued guidance to date on EaaS.

Additional Resources

- Current Practices in Efficiency Financing: An Overview for State and Local Governments
- Better Buildings Financing Navigator
- Leveraging Bond Financing to Support Energy Efficiency and Renewable Energy Goals: A Resource Summary for State and Local Governments (report)
- Bond Financing for Energy Efficiency and Renewable Energy: Overview for State and Local Leaders (presentation)
- U.S. Department of Energy, “Achieving Energy Savings in Small- and Medium-Sized Public Facilities”

ESPC-Specific Resources

- Performance Contracting National Resource Center (PCNRC): Training Certificate Series
- Energy Savings Performance Contracting Toolkit
- eProject eXpress
- NASEO: Energy Savings Performance Contracting (ESPC) and Related Models
- ESPC or Design-Bid-Build for Your Retrofit?
- Benefits of Using Owner's Representatives
- MUSH ESPC report (when released)

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