



**ESPC 2.0:
How New Twists on
Energy Savings
Performance Contracting
are Improving Energy
Efficiency in U.S.
Buildings**

February 3, 2015
3:00-4:00 PM EST

Overview and Agenda

- Welcome and Overview
- NAESCO
- Metrus Energy
- Commonwealth of Massachusetts
- Department of Energy
- Additional Resources
- Question & Answer Session

Today's Presenters

Name		Organization
Donald Gilligan		National Association of Energy Service Companies (NAESCO)
Aaron Panzer		Metrus Energy
Jenna Ide		Commonwealth of Massachusetts
Alice Dasek		U.S. Department of Energy

Donald Gilligan

**National Association of Energy Service
Companies (NAESCO)**

ESCO Industry Trends

Better Buildings
ESPC Webinar
February 3, 2015

Overview of Presentation

- Introduction to ESPC
- ESCO Industry Growth
- Cumulative Results
- Market Drivers
- Revenue Shares and Trends
- Remaining Market Potential
- Barriers to ESPC Growth

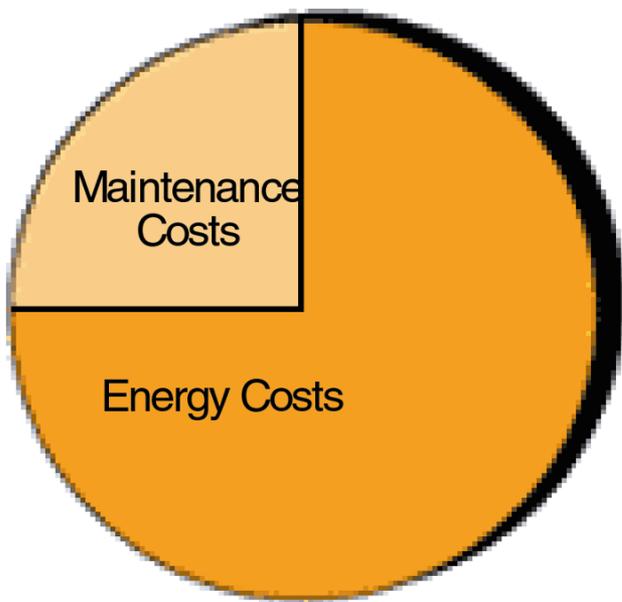
How Does ESPC Work?

- Re-purpose money spent on wasted energy and maintenance into payment stream for capital improvements
- ESCO identifies energy conservation measures
- ESCO designs, engineers and constructs measures
- ESCO guarantees savings
- ESCO pays any savings shortfalls

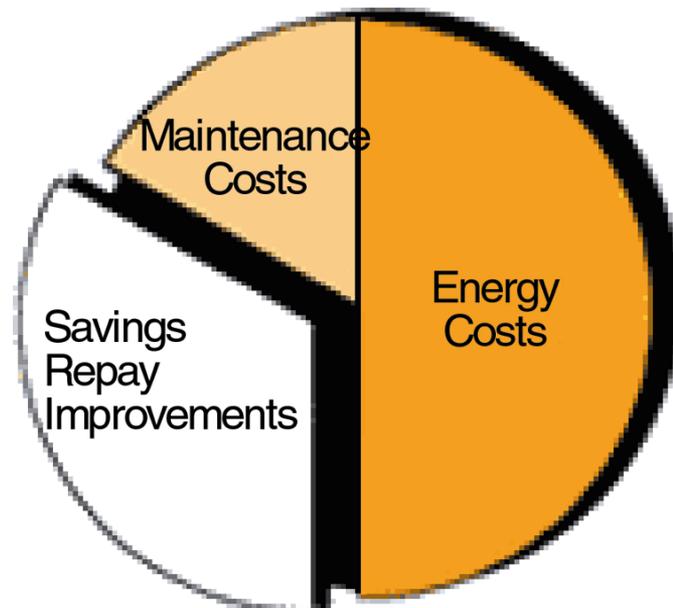


How Does ESPC Work?

Before Improvements



After Improvements

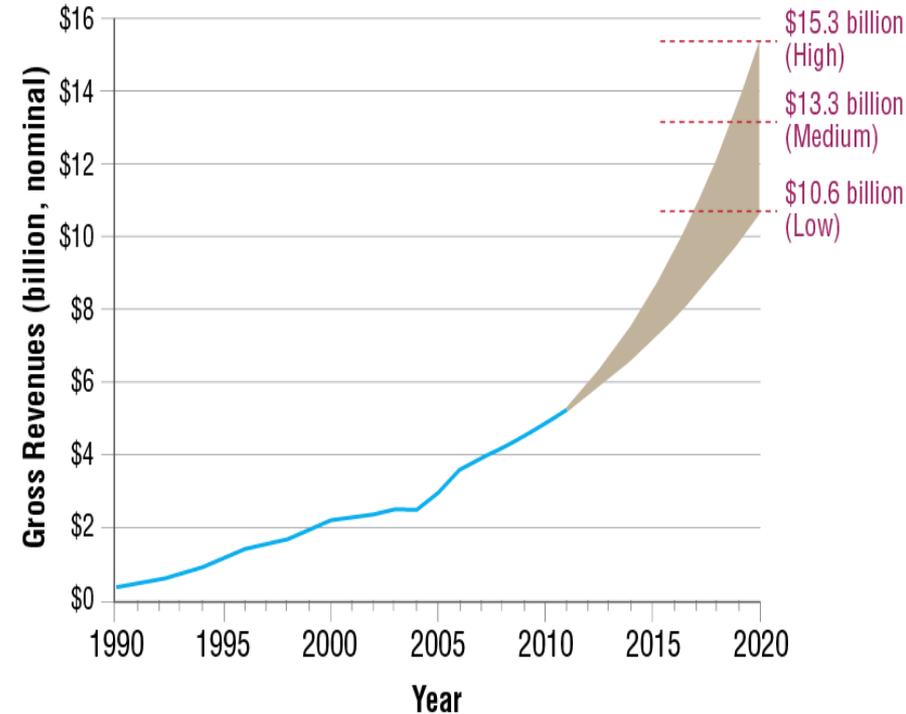


Typical ESPC Measures

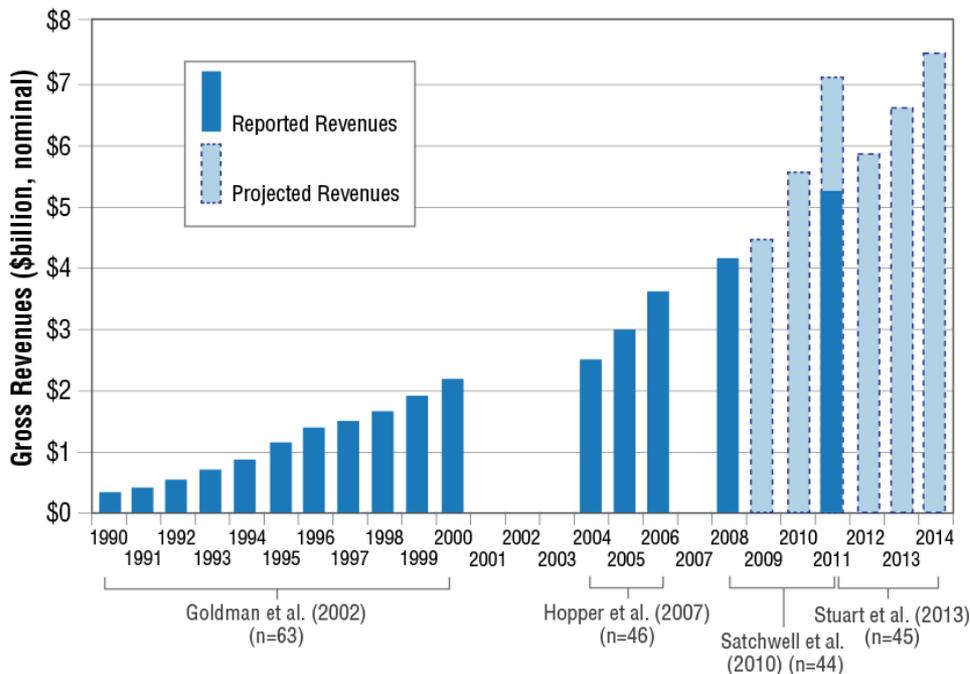
- Lighting – Indoor, outdoor, street lights
- Heating Ventilation & Air Conditioning (HVAC)
- Energy Management Systems
- Motors and Variable Speed Drives
- Building Envelope Measures
- Water Conservation Measures
- DG and CHP – renewable or fossil fuel
- Other Systems (kitchen, security, etc.)

INDUSTRY SIZE: CURRENT AND PROJECTED

- The ESCO industry continued to grow at a steady pace--despite the onset of a major recession--reporting revenues of approximately \$5.3 billion in 2011.



- We project that the ESCO industry will more than double in size from ~\$6 billion (2013) to \$11-\$15 billion (2020).



ESCO Projects – Cumulative Results

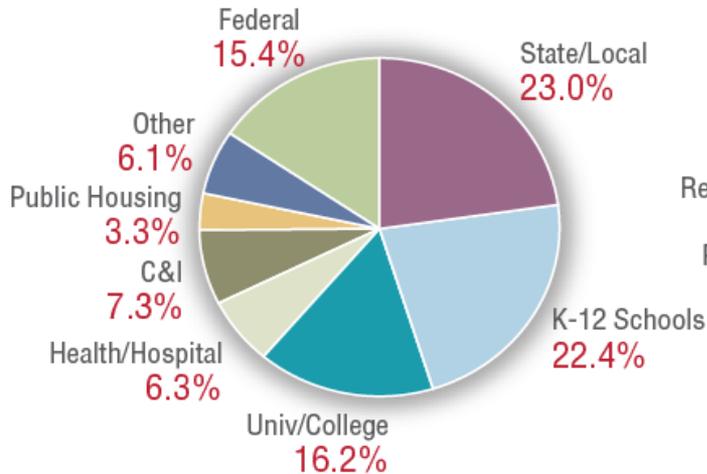
- \$50 billion in projects paid from savings
- \$55 billion in savings – guaranteed and verified
- 450,000 person-years of direct employment
- \$33 billion of improvements in public facilities
- 450 million tons of CO2 savings at no additional cost

ESPC Market Drivers

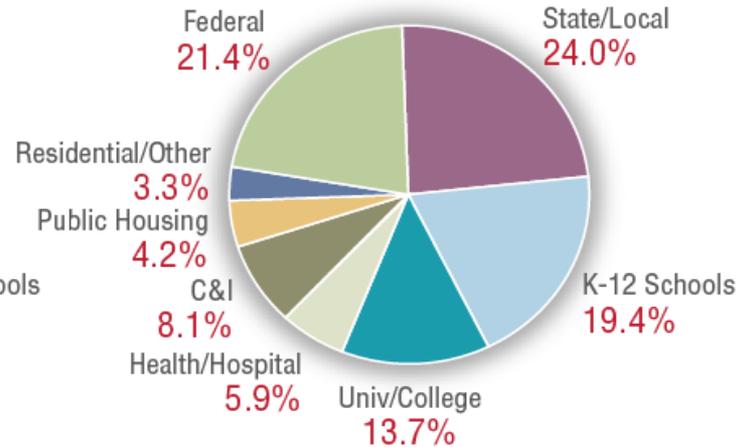
- Federal government
 - EE mandates
 - President's Performance Contracting Challenge
 - Need for capital improvements (GSA budgets)
- MUSH Market
 - EE mandates
 - Need for capital improvements
 - Convert wasted \$\$ to payment stream

2008 & 2011 REVENUE SHARES

2008 Revenues (n=29)

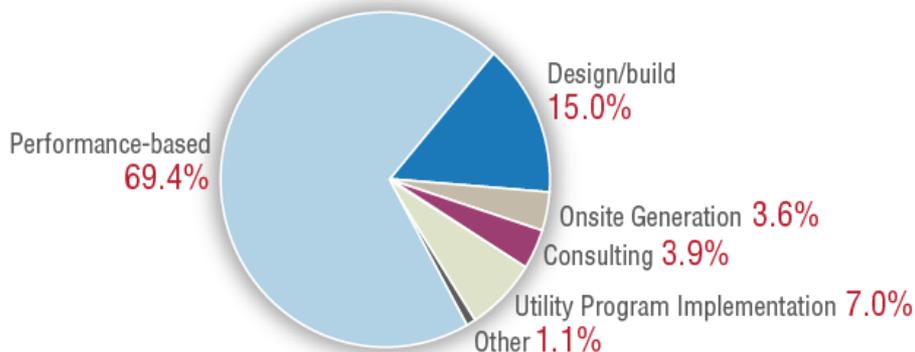


2011 Revenues (n=35)



• ~85% revenue from “MUSH”+ Federal market

2011 Revenues (n=34)

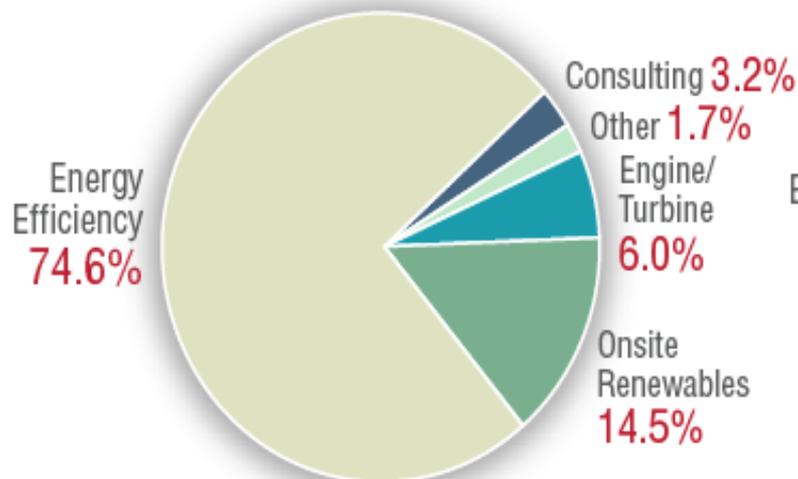


• ~70% of 2011 revenue from performance-based contracts; 15% from design/build.

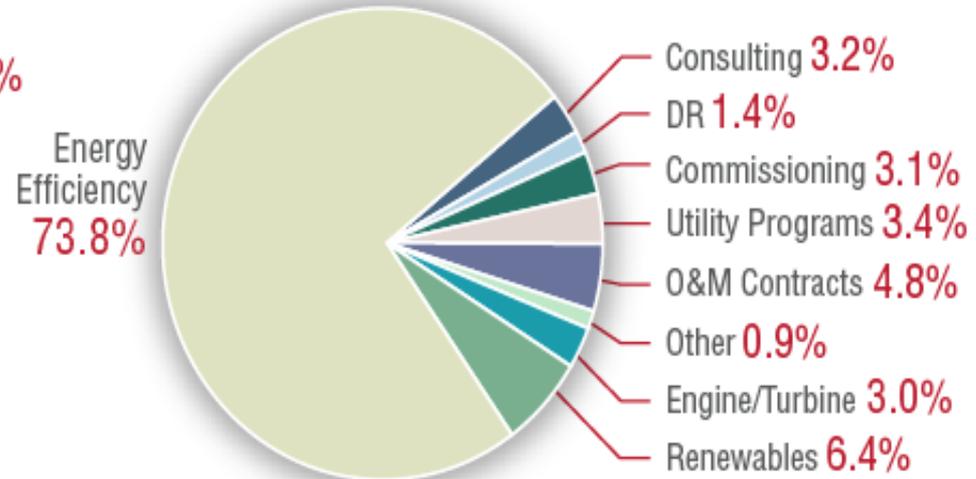
2008 & 2011 REVENUE SHARES (CONT.)

- Onsite generation and renewable energy share decreased from 2008-2011
- EE-related activity accounted for ~75% of revenue

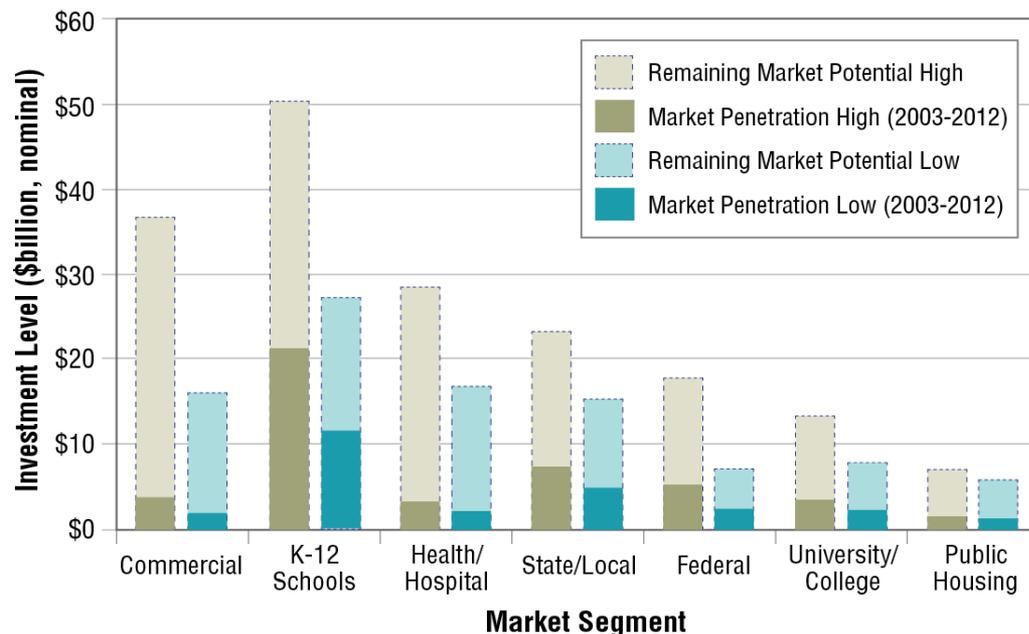
2008 Revenues (n=29)



2011 Revenues (n=34)



REMAINING MARKET POTENTIAL



- Remaining investment potential in facilities typically addressed by this industry ranges from ~\$71 to \$133 billion.

Market Segment	Low Estimate	High Estimate
K-12 Schools	\$15.8	\$29.4
Health/Hospital	\$15.0	\$25.6
Private Commercial	\$14.4	\$33.5
State/Local	\$10.6	\$16.3
Public Housing	\$4.7	\$5.7
Universities/Colleges	\$5.7	\$9.8
Federal	\$4.9	\$12.7
Total	\$71.2	\$133.0

- Questions remain about the economic potential of these markets and the accuracy of this estimate...

Barrier: ESPC = Work + Risk

- Performance contracting means more work and more risk for facilities and finance managers
 - Project Development
 - Project Pricing
 - Lack of Expert Staff
- Are the savings real?

Barrier: Private Sector Mismatch

- ESPC delivers comprehensive projects
 - Multiple measures, 10-20 year paybacks
 - Guaranteed savings
 - Debt financing
- Private sector wants short-term NOI increase
 - Lighting and controls, 2-3 year paybacks
 - Don't need guarantees
 - Don't want debt

Questions?

Donald Gilligan

NAESCO

978-498-4456

dgilligan@naesco.org

Aaron Panzer

Metrus Energy



***METRUS
ENERGY***

Delivering an Integrated Energy Efficiency Solution

Better Buildings Challenge Webinar – February 3rd



Introduction to Metrus Energy

- **OUR COMPANY:**

- Headquartered in San Francisco, California
- Developer, long-term owner, and financier of energy efficiency (EE) retrofit projects
- Energy efficiency “independent power producer” that sells efficiency as a service

- **OUR SOLUTION:**

- Efficiency Services Agreement (ESA) funds 100% of upfront costs
- Payments made based on output of project
- Dollars per savings are locked in at a set rate
- Flexible funding structure that allows for critical upgrades

- **TRACK RECORD:**

- Numerous operational projects with Fortune 500 firms and other major institutional customers
- Approximately \$25 million of ESA projects in the Northeast, Midwest and Western U.S.
- Financial ally for the White House and U.S. Department of Energy’s Better Buildings Challenge ([BBC](#))





Metrus' Efficiency Services Agreement

- Similar to a PPA, ESA removes all first-cost barriers to projects and charges customers only for realized energy savings
 - Metrus pays for all project development and construction costs
 - Provides a pay-for-performance, off-balance sheet, financing solution

**DEVELOP
PROJECT**

**FUND &
IMPLEMENT**

**ONGOING
SERVICES**

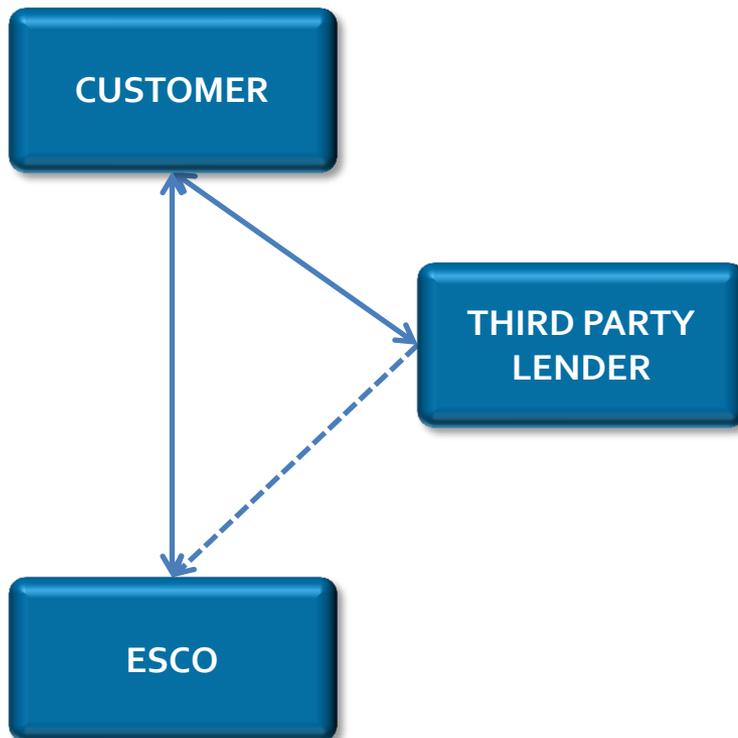
- | | | |
|---|--|--|
| <ul style="list-style-type: none">• Partner with leading ESCOs and contractors• Identify savings opportunities• Develop service program | <ul style="list-style-type: none">• Fund 100% of project cost (Metrus equity plus debt)• Take title to EE assets for the full ESA term• Monitor construction | <ul style="list-style-type: none">• Monitor performance• Maintain equipment• Identify new EE opportunities |
|---|--|--|



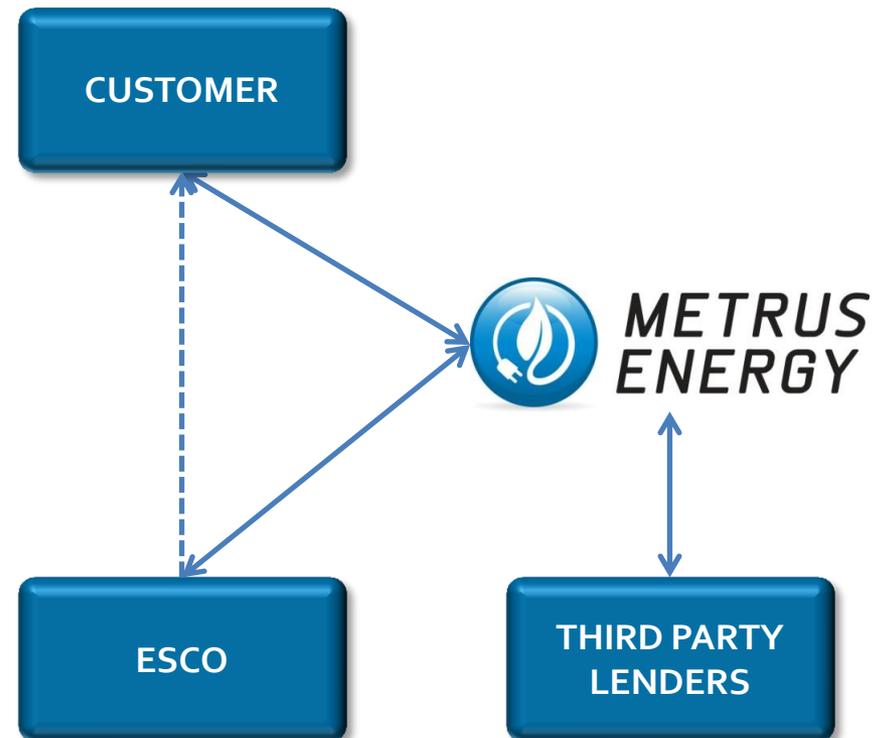
Delivering an Integrated EE Solution

Traditional PC Structure

Scenario 2



ESA Financing

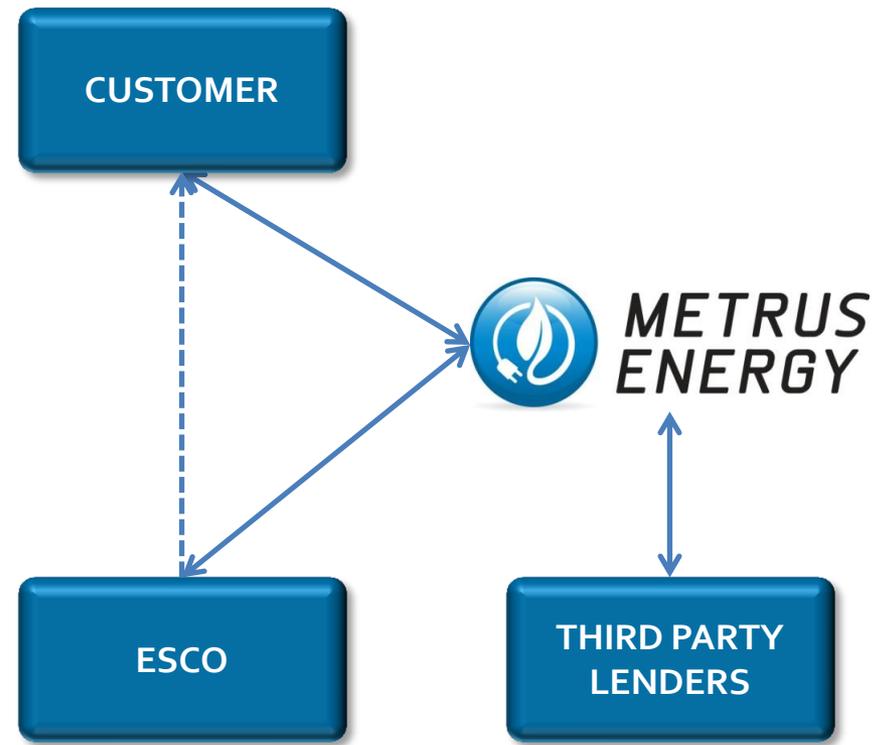




How ESA Financing Works

1. Metrus invests its own capital alongside a third-party lender
2. Customer pays for realized savings (e.g., \$/kWh saved ESA rate)
3. Metrus services project debt
4. ESCO/contractor is paid for ongoing maintenance & monitoring services
5. Metrus is the last entity to be paid

ESA Financing





Delivering Enhanced Value

Benefit	Description
Avoid Capital Outlay	Metrus pays for all design and implementation costs, enabling customers to conserve capital for core business investments
Reduce Operating Expenses	ESA service payments are set below the current utility price, which immediately improves the bottom line
Services Agreement Structure	The ESA is designed to be an off-balance sheet financing solution with regular payments similar to a standard utility bill
Enhance Reliability of Operations	Under the terms of the ESA, Metrus pays for periodic maintenance services to ensure long-term reliability and performance of the project equipment

Additional benefits include:

- Pay for project through utility cost savings
- Account for ESA payments as operating expenses
- Reduce exposure to uncertain utility rate changes
- Expand feasible project scope



The ESA: Typical Project Profile



Typical Project Scope

- Building automation & controls
- Lighting retrofits & controls
- Compressed air (leak detection & repair)
- Heating, ventilation, & air conditioning
- Central plant systems
- Boiler replacement & system improvements
- Pumps, fans, motors, drives
- Cogeneration (onsite generation)
- Water efficiency measures

Typical Project Profile

- Clients are typically commercial, industrial, healthcare and higher education
- Multiple energy efficiency measures are blended into single project scope of work
- Total project size is generally \$3-10 million
- Projects can include measures with a simple payback of up to 7 years.
- ESA term is typically 7 to 10 years



Results:

BAE SYSTEMS

- Metrus financed EE improvements at five BAE Systems locations
- Additional sites are being added to this ongoing multi-facility ESA initiative

Key Program Characteristics and ESA Terms



- Total Program Cost: ~\$10 million
- Project Scopes: Lighting retrofits, building automation, demand control ventilation, boilers & chiller replacements, VFDs, etc.
- ESA Terms: Vary between 10 and 11 years
- ESA Rate: Varies by site (below utility rates)
- Savings: \$1.1 million annual savings:
 - Electricity: 3.8 million kWh
 - Natural Gas: 195,000 therms
 - CO₂: ~3,750 tons
- Ongoing Services: Metrus covers key maintenance & monitoring services



Get Started

Metrus Energy

Aaron Panzer

aaron.panzer@metrusenergy.com

Customers: <http://metrusenergy.com/your-retrofit/get-started-customers/>

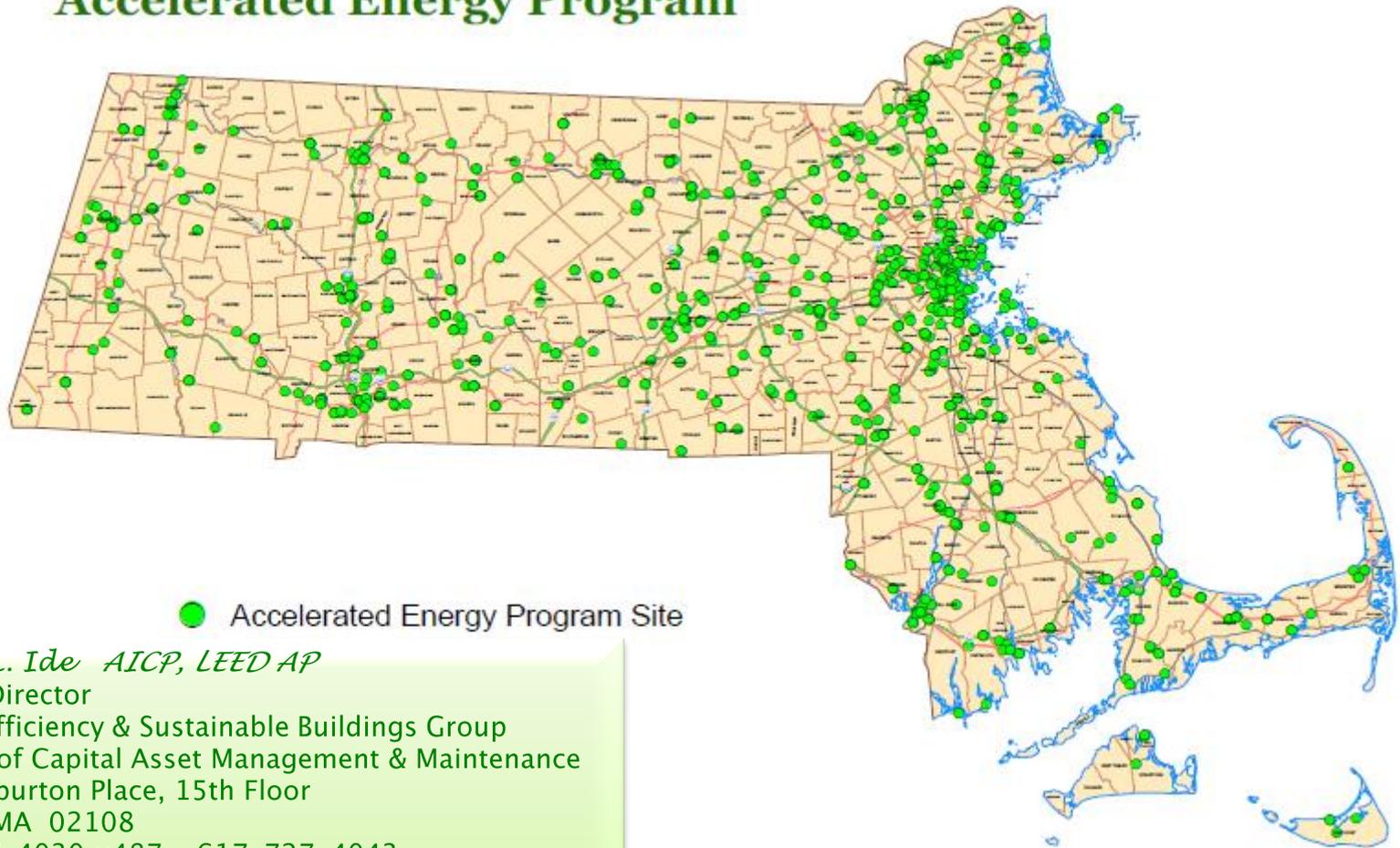
Partners: <http://metrusenergy.com/partners/get-started-partners/>

Jenna Ide

Commonwealth of Massachusetts

Financing Large Projects & Programs

Accelerated Energy Program

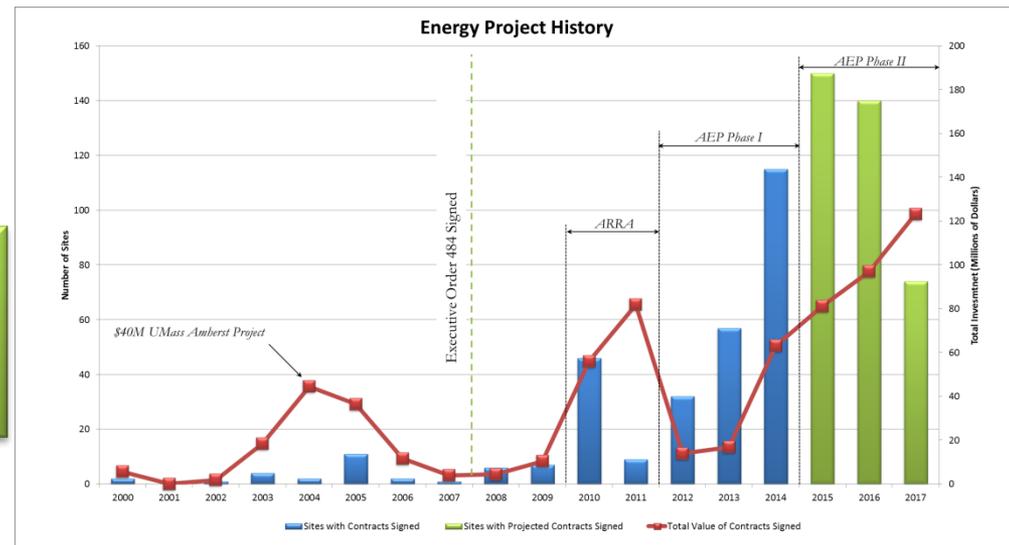


● Accelerated Energy Program Site

Jenna L. Ide AICP, LEED AP
Deputy Director
Energy Efficiency & Sustainable Buildings Group
Division of Capital Asset Management & Maintenance
One Ashburton Place, 15th Floor
Boston, MA 02108
617-727-4030 x487 617-727-4043
jenna.ide@state.ma.us
www.mass.gov/dcam/energy

ARRA & Accelerated Energy Program – Challenges

- Existing TELP Contract Expired 2006/7 – no re-bidders
- Program scope: Both ARRA and the AEP required significant investments and ramping up of resources
 - internal (funding, staffing, data management)
 - external (consultants, contractors, grants)
- Economic crash dried up private investment
- Massachusetts increased rapidly municipal and state ESPC
- “High” interest cost cut needed deferred maintenance investments



Commonwealth Energy Project History: with ARRA, AEP, & projections
The AEP is comprised of 700 sites and over 4,000 buildings across the Commonwealth, spanning eight dozens of agencies

Solution: Commonwealth Energy Investment Program (CEIP)

In 2010, the Commonwealth created, as part of its Leading by Example initiative, a permanent, low-cost funding program for financing sustainable energy efficiency projects – the Clean Energy Investment Program.

- Clean Energy Investment Program (CEIP) is a low-cost financing mechanism that uses project savings to repay capital costs.
- Innovative program is “off cap” – allows access to funds without hitting debt ceiling limits.
- Client agency pays CEIP debt service through energy savings.
- Client agency signs agreements with DCAMM and A&F to commit to paying debt service.

Commonwealth Energy Investment Program (CEIP)

Eligible Participants	Any state agency that incurs energy and water costs in its normal operation.
Eligible Projects	Wide variety of state-owned projects, including light, heat, ventilation, air conditioning, equipment controls, cogeneration and power generation. Projects must contribute to achieving goals of Administration and must generate verifiable utility savings sufficient to pay for themselves within the term of the project.
Term	As determined by ANF, the financing term for each project will be less than or equal to the useful life of major equipment or installations, but in no event greater than 30 years. Larger equipment useful life is used.
Savings	Projected annual savings must be equal to or greater than 1.1 times annual debt service as determined by ANF. Actual savings will be independently verified. Savings will be used to pay the debt service annually.
Operating Budget	Operating budgets will reflect the allocation of certain utility funds for debt service payments.
Source	Bonds come from Treasurer, using appropriations authorized by Legislature

FORM D - CASH FLOW MODEL - ENERGY DESIGN BUILD CONTRACT

Project	Base Case					
Details	Higher Interest Rate, Little Buydown, No Extras					
Term (years)	20					
Interest Rate	5.50%					
Total Contract Value	\$3,700,000	Additional ECMS	DM-Chiller	PVs		
Grants, Incentives, Bonds	\$100,000	Cost	\$ 1,000,000	\$ 400,000		
Total Financed Value	\$3,600,000	Grants				
Projected Annual Savings	\$320,000	Total Financed	\$ 1,000,000	\$ 400,000		
Projected Annual Maint, M & V	\$10,000	Savings	\$ 25,000	\$ 50,000		
DEBT SERVICE COVERAGE						
	1	2	3	4	5	
Fiscal Year	Annual Debt Service	Annual Operating Budget Savings Resulting From Phase I	Annual Maintenance & M&V	Net Operating Budget Savings Resulting From Project	Coverage (Must be equal to at least 1.1 each year)	Net Savings after Annual Debt Payment
1	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
2	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
3	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
4	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
5	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
6	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
7	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
8	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
9	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
10	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
11	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
12	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
13	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
14	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
15	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
16	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
17	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
18	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
19	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
20	\$301,246	\$320,000	\$10,000	\$310,000	1.03	\$8,754
Total	\$6,024,912	\$6,400,000	\$200,000	\$6,200,000		\$175,088

FORM D - CASH FLOW MODEL - ENERGY DESIGN BUILD CONTRACT

Project	Better Case				
Details	Lower Interest Rate, More net savings, one Extras				
Term (years)	20				
Interest Rate	4.00%				
Total Contract Value	\$4,100,000	Additional ECMs	DM-Chiller	PVs	
Grants, Incentives, Bonds	\$100,000	Cost	\$ 1,000,000	\$	400,000
Total Financed Value	\$4,000,000	Grants & Buydown	\$ -	\$	-
Projected Annual Savings	\$370,000	Total Financed	\$ 1,000,000	\$	400,000
Projected Annual Maint, M & V	\$20,000	Savings	\$ 25,000	\$	50,000
				\$	10,000

DEBT SERVICE COVERAGE

	1	2	3	4	5	
Fiscal Year	Annual Debt Service	Annual Operating Budget Savings Resulting From Phase I	Annual Maintenance & M&V	Net Operating Budget Savings Resulting From Project	Coverage (Must be equal to at least 1.1 each year)	Net Savings after Annual Debt Payment
1	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
2	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
3	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
4	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
5	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
6	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
7	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
8	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
9	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
10	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
11	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
12	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
13	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
14	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
15	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
16	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
17	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
18	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
19	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
20	\$294,327	\$370,000	\$20,000	\$350,000	1.19	\$55,673
Total	\$5,886,540	\$7,400,000	\$400,000	\$7,000,000		\$1,113,460

FORM D - CASH FLOW MODEL - ENERGY DESIGN BUILD CONTRACT

Project	Even Better Case				
Details	Lower Interest Rate, Lots of Buydown, Extras				
Term (years)	20				
Interest Rate	3.50%				
Total Contract Value	\$5,100,000	Additional ECMs	DM-Chiller	PVs	
Grants, Incentives, Bonds	\$450,000	Cost	\$ 1,000,000	\$ 400,000	
Total Financed Value	\$4,650,000	Grants and Other Buydown	\$ 300,000	\$ 50,000	
Projected Annual Savings	\$395,000	Total Financed	\$ 700,000	\$ 350,000	
Projected Annual Maint, M & V	\$20,000	Savings	\$ 25,000	\$ 50,000	
				\$ 10,000	

DEBT SERVICE COVERAGE

	1	2	3	4	5	
Fiscal Year	Annual Debt Service	Annual Operating Budget Savings Resulting From Phase I	Annual Maintenance & M&V	Net Operating Budget Savings Resulting From Project	Coverage (Must be equal to at least 1.1 each year)	Net Savings after Annual Debt Payment
1	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
2	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
3	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
4	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
5	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
6	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
7	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
8	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
9	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
10	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
11	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
12	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
13	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
14	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
15	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
16	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
17	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
18	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
19	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
20	\$327,179	\$395,000	\$20,000	\$375,000	1.15	\$47,821
Total	\$6,543,580	\$7,900,000	\$400,000	\$7,500,000		\$956,420

Sheriff's Department Berkshire

Berkshire County Jail and House of Corrections Pittsfield, MA

Status: **In Construction**

Project Overview:

- 160,000 square foot facility dedicated in 2001
- Comprehensive energy and water retrofit may include:
 - Lighting improvements & occupancy sensors
 - Metered timer controls for showers – will save an estimated 45,625 gallons/year
 - Condensing boilers
 - Solar photovoltaic array for on-site power generation
 - Solar thermal heating system for domestic hot water
- Total investment of \$4.3 M has a an estimated savings of over \$367,000.



Berkshire County Jail and House of Corrections

Energy saved: 63%

GHG reductions: 61%

Costs savings: 55%

CEIP Example Project

Hogan Regional Center-Danvers Better Building Challenge Showcase



- Plant built late 1800's- site of former Danvers State Hospital
- Nearly 1 mile from plant to facility (Dept. of Developmental Services)
- Studies to replace plant started in 1980's, however new utility lines "killed" cashflow
- Cost of new natural gas system for one month = facility used to pay for 2 days of oil
- Other upgrades include lighting, new windows, energy controls
- Combined with another site in Wrentham, **\$2.5 million savings annually**, more actual
- <https://www4.eere.energy.gov/challenge/showcase/commonwealth-of-massachusetts/hogan-wrentham>

Energy saved: **48%**

Energy \$: **48%**

GHG reductions:
~2500 cars off the road

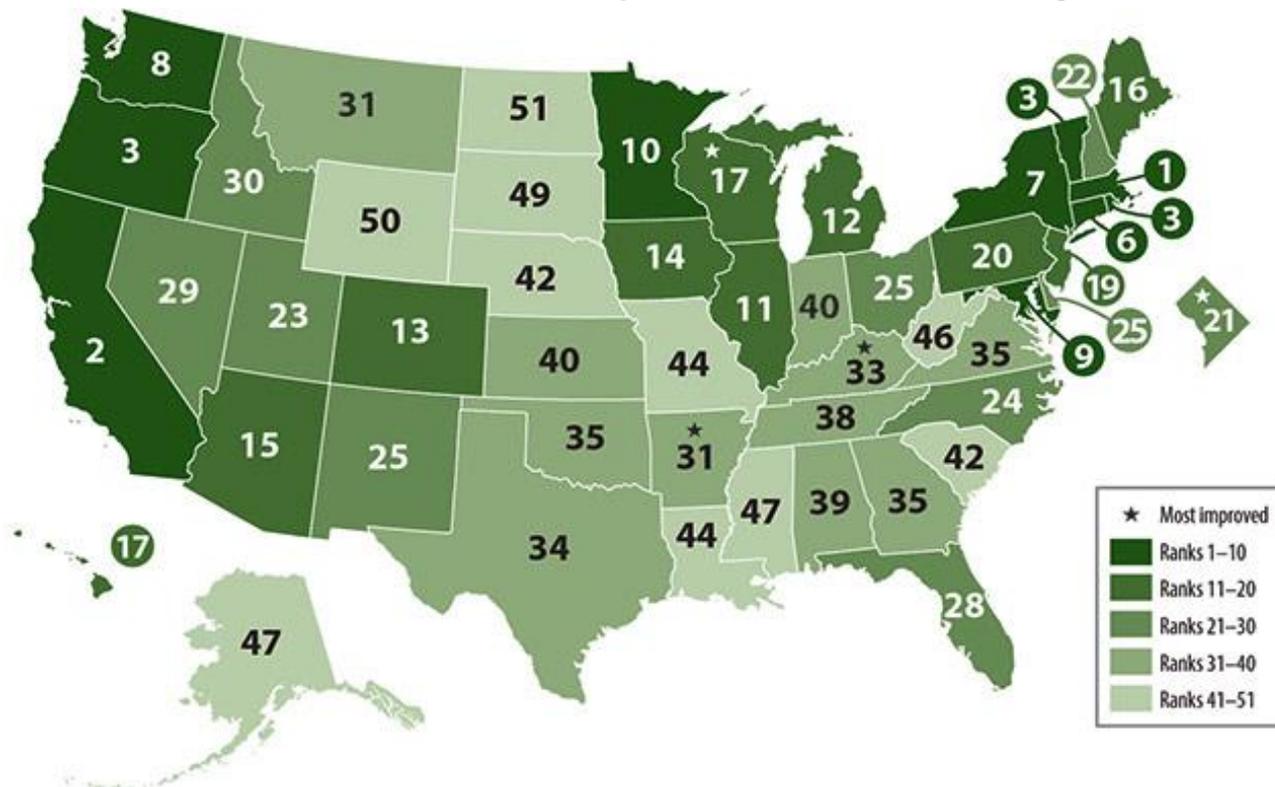
Advantages/Disadvantages

Bonds (i.e. CEIP, “revenue, municipal bonds, other bonds)

- ✓ Lower Finance Rates =
 - ✓ Greater cashflow
 - ✓ More Measures
- ✓ Decisions concerning how much and what are internal
- ✓ Funding and thus payment is similar to other bonds
- ✓ Can leverage more funding from other bonds, grants, utilities
- ✓ Can be “off-cap”
- ✓ Good if you are planning lots of projects/long term program
- ✓ Allows for more competition
- ✓ Allows financing to be separated from procurement/project decisions
- ✓ Less risk on contractor = lower cost
- ✓ Guarantee not required

- ❖ Not as readily available
- ❖ Need to do up front work
 - ❖ Persuade bonding authority
 - ❖ Develop process to ensure appropriate accounting controls
- ❖ May be debt service limits of some agencies
- ❖ Not best for one or two projects, or smaller projects
- ❖ Does not necessarily capture savings for next project
- ❖ Mass becomes a “lender” who needs to manage repayment
- ❖ More risk on Commonwealth

American Council for an Energy-Efficient Economy: #1 Ranking



- Massachusetts ranked #1 in energy efficiency, four years in a row
- CEIP and robust Green Communities Program part of advantage



Massachusetts Department
of Energy Resources

Where to Go From Here

- Developing more robust LCCA to capture savings from other sources
- Develop more consistent models for predicting CEIP spending/repayment
- Use for non-building energy upgrades, roads, etc.
- Market “Green Bonds” effectively, taking advantage of better rates
[http://www.massbondholder.com/sites/default/files/files/QE%20August%202014%20Green%20Report\(1\).pdf](http://www.massbondholder.com/sites/default/files/files/QE%20August%202014%20Green%20Report(1).pdf)
- Incorporating more M&V, training, and post-construction “Maintain the Gain”
- Does not fix issue with governmental entities not budgeting enough for rate increases or load growth
- Encouraging more participation, many agencies still not comfortable taking on repayment, rather it all G.O. bond funded.

Alice Dasek

U.S. Department of Energy



The Performance Contracting Accelerator

Better Buildings Webinar

Alice Dasek

February 3, 2015

The Accelerator Today: \$1.7 Billion Commitment

- Alabama
- Cincinnati, OH
- Colorado
- Connecticut
- El Paso, TX
- Fort Worth, TX
- Hawaii
- Houston, TX
- Illinois
- Massachusetts
- Michigan
- Minnesota
- Montana
- Nevada
- New Mexico
- Newark, NJ
- North Carolina
- Philadelphia School District
- Virgin Islands
- Virginia
- Washington State

Program Structure

- Streamlining the ESPC Process
 - Flagship Activity: Model ESPC Document Review
- Empowering the Market
 - Flagship Activity: Tailoring and Testing eProject Builder
- Individual Barrier Resolution
 - Two-Prong Approach

Pillar 1: Streamlining the ESPC Process

Flagship Activity:

Reviewing Existing Model ESPC Documents

Purpose:

Shorten ESPC transaction costs and timeline

Outcomes:

- Partners participated in document review
- New documents available on State & Local Solution Center

Pillar 2: Empowering the Market

Flagship Activity:

Tailoring and Testing eProject Builder

Purpose:

Arm clients with data to make the business case for ESPC, negotiate strong ESPC projects, and standardize project results reporting

Outcomes:

- Partner feedback being incorporated into ePB
- Partner ESCOs are entering projects executed to date

Pillar 3: Resolving Specific ESPC Barriers

Activity:

Each partner elects one barrier to ESPC investment to resolve within 18 months

Purpose:

Support successful, permanent, innovative, and replicable resolution of individual partner barriers

Outcomes:

- Partner plans in place
- Tailored technical assistance underway

Thank You

Alice Dasek

alice.dasek@ee.doe.gov

202-287-1595

Additional Resources

For More Information

- NAESCO
 - [Current Size and Remaining Market Potential of U.S. ESCO Industry](#)
- Metrus Energy
 - [“Kuakini Medical Center – Metrus Energy and Energi” Implementation Model](#)
 - [“Efficiency Services Agreement \(ESA\) In BAE Facilities Nationwide” Implementation Model](#)
- U.S. DOE
 - [ESPC Accelerator Web Page](#)
 - [State & Local Solution Center – ESPC page](#)
 - [State & Local Solution Center – Model Documents](#)

More Information (cont'd)

- Commonwealth of Massachusetts
 - [Energy Program for State Offices](#)
 - [Energy Program for Municipalities, including link to Energy Management Services](#)
 - [Treasurer's Green Bond Program](#)
 - ["Hogan/Wrentham Comprehensive Energy Project" Showcase Project](#)

Q & A

Join Us for the Next Better Buildings Webinar

Energy Efficiency in the Franchise: Best Practices from Better Buildings Franchisors

Date: Tuesday, March 3

Time: 3:00 – 4:00 PM EST

Overview: Finding energy savings opportunities for a business franchise can be easy, but getting them implemented can be hard. While franchisors typically supply business knowledge, architectural designs and equipment, franchise agreements and business models are not often designed to make it simple for franchisees to capture energy efficiency opportunities as they arise.

Learn about the programs and tools being employed by Better Buildings partners Dunkin Brands and InterContinental Hotels Group to bridge this gap and motivate franchisees to save energy and reduce their environmental impact.

Register [here](#).

Additional Questions? Feel Free to Contact Us

betterbuildingswebinars@ee.doe.gov

Today's Presenters	Donald Gilligan NAESCO dgilligan@naesco.org Aaron Panzer Metrus Energy aaron.panzer@metrusenergy.com	Jenna Ide Commonwealth of Massachusetts jenna.ide@state.ma.us Alice Dasek Department of Energy Alice.Dasek@EE.Doe.Gov
DOE Program Leads	Holly Carr DOE, Better Buildings Challenge holly.carr@EE.Doe.Gov	Kristen Taddonio DOE, Better Buildings Alliance kristen.taddonio@EE.Doe.Gov
Program Support	Zach Abrams ICF International zach.abrams@icfi.com	John Jameson ICF International john.jameson@icfi.com

Follow us on Twitter @BetterBldgsDOE

Appendix



Results: Large Industrial

BAE SYSTEMS

Project Scope	Project Cost	Annual Savings	Term	Ongoing Services
<i>Merrimack, NH – 467,000 ft² mixed-use office, manufacturing, environmental, testing</i>				
<ul style="list-style-type: none"> • Lighting Retrofits & Controls • Air Compressor Replacement • Transformer Replacement • Demand Control Ventilation 	~\$1.0M	<ul style="list-style-type: none"> • > \$200K in Utility Savings • 1.1M kWh of Electricity • 31K Therms of Natural Gas • ~400 tons of CO₂ 	Simple Payback: > 5 years ESA Term: 10 years	Metrus covers \$60K+ in annual project O&M and M&V services
<i>Greenlawn, NY – 492,000 ft² mixed-use office, manufacturing, environmental testing</i>				
<ul style="list-style-type: none"> • Lighting Retrofits & Controls • Boiler & Chiller Replacement • Variable Frequency Drives for AHU & Water Pumps 	~\$2.2M	<ul style="list-style-type: none"> • > \$300K in Utility Savings • 300K kWh of Electricity • 125K Therms of Natural Gas • ~800 tons of CO₂ 	Simple Payback: > 7 years ESA Term: 11 years	Metrus covers \$35K+ in annual project O&M and M&V services
<i>Nashua, NH – 686,000 ft² mixed-use office, manufacturing, environmental testing</i>				
<ul style="list-style-type: none"> • Boiler Plant Improvements • VAV & Control Upgrades • Energy Policy • Building Envelope 	~\$2.3M	<ul style="list-style-type: none"> • > \$310K in Utility Savings • 700K kWh of Electricity • 125K gallons of Fuel Oil • ~950 tons of CO₂ 	Simple Payback: > 6 years ESA Term: 10 years	Metrus covers \$37K+ in annual project O&M and M&V services
<i>NH Headquarters – 509,000 ft² mixed-use office, manufacturing, environmental testing</i>				
<ul style="list-style-type: none"> • Lighting Retrofits • Boiler Replacement • Variable Frequency Drives & Motors • Building Envelope 	~\$2.2M	<ul style="list-style-type: none"> • > \$200K in Utility Savings • 1.1M kWh of Electricity • 31K Therms of Natural Gas • ~1,150 tons of CO₂ 	Simple Payback: > 6 years ESA Term: 10 years	Metrus covers \$50K+ in annual project O&M and M&V services



Results: Large Healthcare System

- Metrus' ESA project with Kuakini Health System is a campus-wide retrofit that is generating significant annual energy savings for the hospital

Key Project Characteristics and ESA Terms



- Total Project Cost: \$5.8 million
- Project Scope: New chiller plant, lighting upgrade, energy management system, new steam boilers and air-handling unit VFDs
- ESA Term: 10 years
- ESA Rate: Set at 22% below utility rates
- Savings: \$1.1 million annual savings:
 - Electricity: 3.4 million kWh
 - Natural Gas: 10,800 therms
 - Non-energy: \$32k of avoided costs
- Ongoing Services: Metrus covers key maintenance & monitoring services



Results: Fortune 50 Company

- First Fortune 50 ESA and first in a low-power-price geography (Midwest)
- Initial project at F50's facility is start of a multi-site ESA program

Key Project Characteristics and ESA Terms



- Total Project Cost: \$3.1 million
- Project Scope: Lighting upgrades, chiller replacements and demand control ventilation
- ESA Term: 10 years
- ESA Rate: Set 5% below utility rates
- Savings: \$483k annually includes:
 - Electricity: 3.8 million kWh
 - Natural Gas: 31,300 therms
 - Non-energy: \$158k of avoided costs
- Ongoing Services: Metrus pays for ongoing maintenance and monitoring costs



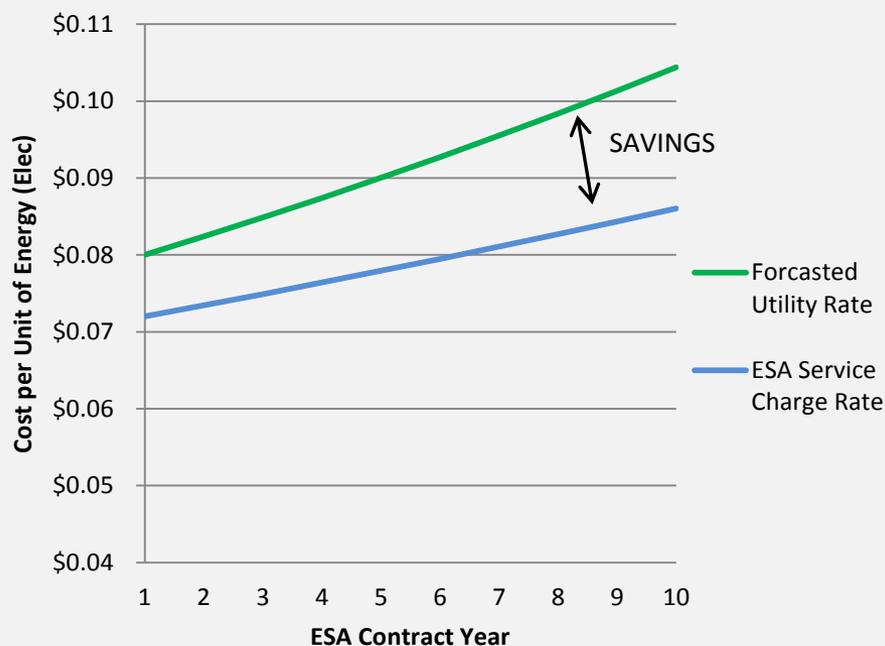
The ESA: Measurement & Verification

- Service charge payments are based on actual project performance and energy savings, as defined by measurement & verification (M&V) protocols
- At the end of each billing period, ESCO/Contractor prepares an M&V report to quantify the project's performance and energy savings
- [International Performance Measurement & Verification Protocols](#) have been used in the efficiency industry for decades



The ESA: Service Charge

$$\text{Service Charge} = (\text{Energy Units Saved}) * (\text{Service Rate, \$/unit}) + \text{Non-Energy Savings}$$



Billing Period	Quarterly
Energy Units Saved	Quantity of energy units saved during billing period (e.g., kWh of electricity)
Service Rate	\$ per unit of energy units saved (e.g. \$/kWh of electricity)
Non-Energy Savings	% of non-energy savings that are attributed to project operation
Annual Escalation	Service Charge escalates at a fixed annual rate

- Savings created by:
 - Year 1 Service Charge is \leq Avoided Utility Cost
 - Fixed Annual Escalation is \leq Expected Utility Rate Increase



Appendix: Frequently Asked Questions

- **At what point in the process does Metrus enter the conversation?**
 - Metrus supports the project at any point during the development process (prior to preliminary audit or post detailed audit). Engaging Metrus early as a development resource (accounting, financial, legal) can accelerate the closing process.
- **Under an ESA, who holds title to all project assets?**
 - Metrus holds title to all project assets financed under an ESA, and is responsible for ensuring project performance via maintenance. Customers bear no performance or technology risk, paying only for realized savings. Customers have periodic termination and FMV buyout options over the term of the contract.
- **For accounting purposes, is the ESA considered an “off-balance sheet” transaction?**
 - The ESA is designed to be treated as a “services agreement” rather than a “lease” and Metrus customers have treated it as such. However, each customer is responsible for making its own accounting determination.
- **What happens if actual savings fall above or below expectations?**
 - A customer pays only for realized savings. If realized savings > expected savings, Metrus and the customer “share” those additional savings (i.e., the customer pays Metrus the pre-agreed upon \$/kWh price for the additional units saved). If realized savings < expected savings, the customer pays Metrus only for realized savings.
- **What happens if a customer makes operational changes that impact project operations?**
 - The ESA is structured to cover technical, but not operational or behavioral risks associated with a project. Operating hours are typically a stipulated component of IPMVP calculated savings. For example, if a customer reduced the number of shifts in a facility from 3 to 2, realized savings and ESA payments would continue to be calculated based on 3 shifts. Alternatively, the customer would have the option of early termination/buyout.
- **What happens if the customer sells the facility during the ESA term?**
 - The customer may elect to (1) transfer the ESA to the new building owner subject to Metrus credit approval, (2) terminate the ESA prior to end of term subject to early buyout costs, or (3) purchase the project equipment.