



# Energy Performance Contracting

2015 Municipal Forum

# Brief Understanding

Q. What is energy performance contracting?

A. Money saved from energy improvements pay for the financing of those improvements.

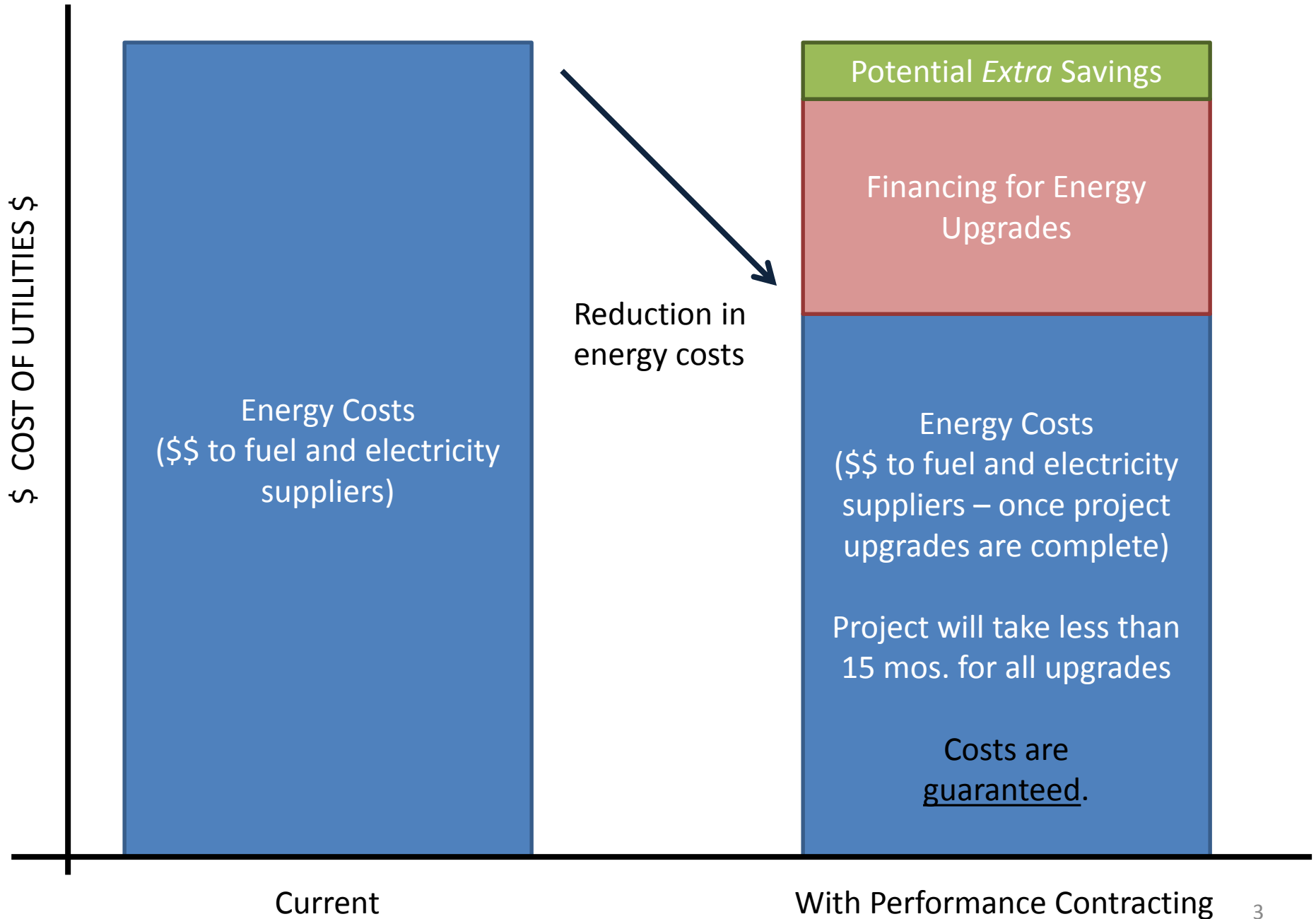
Q. What can be accomplished with energy performance contracting?

A. Use of high-energy (\$) savings to pay for upgrades to capital projects (i.e. boilers, RTUs, etc.)

Q. How does this affect the budget and/or taxpayers?

A. The current budget for utilities is enough to pay the reduced-cost utilities and project financing with potential for additional savings realized by the Town. Residents would not see an tax-impact.

# How Energy Performance Contracting Works



# Background & Process

## 2013

- State Issues RFQ for Energy Savings Companies (ESCOs) – 13 selected/qualified

## 2014

- March/April: Enfield Sends Letters of Interest with Technical Facility Profiles to selected ESCOs

[http://www.ct.gov/deep/lib/deep/energy/lbe/Letter\\_of\\_Interest.pdf](http://www.ct.gov/deep/lib/deep/energy/lbe/Letter_of_Interest.pdf)

[http://www.ct.gov/deep/lib/deep/energy/lbe/Technical\\_Facility\\_Profile.pdf](http://www.ct.gov/deep/lib/deep/energy/lbe/Technical_Facility_Profile.pdf)

- May/June: Enfield Issues RFP to selected ESCOs

[http://www.ct.gov/deep/lib/deep/energy/lbe/Exhibit B RFP to Select QESP 08 06 12.pdf](http://www.ct.gov/deep/lib/deep/energy/lbe/Exhibit_B_RFP_to_Select_QESP_08_06_12.pdf)

- June: Enfield selects Town's TPA/TSP

# Background & Process

- July: Enfield conducts interviews of four ESCOs  
(with TSP)
- July: Enfield selects ESCO to move forward with IGEA (investment grade energy audit)
- Aug-Oct: ESCO conducts IGEA
- November: ESCO finalizes Preliminary Site Assessment (PSA)

# Background & Process

**2015**

Enfield, ESCO, & TSP Together:

- Development of Project Scope
- Understanding of Acceptable Timeline
- Agreement on M&V Protocols
- Understanding on Markups
- Financing Workshop
- Preliminary IGEA submitted
- Review & Approval of IGEA from TOE & Peregrine
- Financing Workshop
- Financing Bid

# ESCO Project - Facilities

## Town Buildings

- Emergency Medical Services
- Enfield Senior Center
- Pearl Street Library
- Central Library
- LaMagna Activity Center
- Enfield Town Hall
- Department of Public Works
- Enfield Police Department
- Adult Day Care
- Family Resource Center
- Village Center of Thompsonville\*
- Buildings and Grounds

## Other

- Street Lighting

*\*PSA only*

## School Buildings

- JFK Middle School
- Eli Whitney School
- Hazardville Memorial School
- Nathan Hale School
- Henry Barnard School
- Edgar Parkman School
- Prudence Crandall School
- Enfield Street School
- Thomas Alcorn School
- Harriet Beecher Stowe School
- Head Start

## Facilities Not Included

- WPCF
- Fermi High School
- Enfield High School
- Old Town Hall

# ESCO Project – Potential ESMs

- Lighting & Lighting Controls
- Vending Misers
- Daylight Harvesting
- Building Management System Upgrades
- Building Envelope Improvements
- Boiler Burner Controls
- Pip Insulation
- Steam Trap Retrofit
- Walk-In Freezer/Cooler Controls
- Kitchen Hood Controls
- De-Stratification Fans
- Demand Control Ventilation
- Window A/C Unit Controls
- Mechanical Upgrades –  
Boiler/Chiller/HVAC
- Water Conservation
- Solar Thermal Domestic Hot Water
- Retro-Commissioning
- Geothermal Installation
- Solar Photovoltaic
- Microgrid
- High Efficiency Transformers
- Power Factor Correction
- Demand Response
- Street Lighting
- Energy Dashboards
- Desktop Computer Power Management
- Computer Peripheral Power  
Management
- GreenPoint Printer Management  
System
- Server Virtualization
- Security System Upgrades
- Pool System Upgrades



# Performance Contracting Project

## Things to consider:

- What projects lends themselves to performance contracting?
- What is a payback period we are comfortable with?
- Does the simple payback of the ESM fit inside the desired payback period?
- What was not included in the recommended project scope?
- Can we include other capital projects into the total project?
- Are there major capital projects that can fit into the project and finance model?

# ESCO Project

## List of Energy Saving Measures & Infrastructure Improvements Per Building Option 1

ESM #	ESM Description	Emergency Medical Services	Enfield Senior Center	Pearl Street Library	Central Library	Lamagna Activity Center	Enfield Town Hall	Department of Public Works	Enfield Police Department	Adult Day Care	Family Resource Center	Village Center of Thompsonville	Building and Grounds	JFK Middle School	Eli Whitney School	Hazardville Memorial School	Nathan Hale School	Henry Barnard School	Edgar Parkman School	Prudence Crandall School	Enfield Street School	Thomas Alcorn School	Harriet Beecher Stowe School	Head Start	Street Lighting
1A	Lighting and Lighting Controls (LED)													X											
1B	Lighting and Lighting Control (T8)	X	X	X		X	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X	X
2	Street Lighting Upgrades																								X
3A	Boiler Replacements & Pump Upgrades				X		X			X				X	X										
4A	Replace Multi-Zone AHU & Cooling System				X																				
5	Building Management System Upgrades		X		X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X
6	Building Envelope Improvements	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
7	Water Conservation	X	X	X	X	X	X	X	X	X	X			X	X	X	X	X	X	X	X	X	X	X	X
8	Walk-In Freezer/Cooler Controls													X											
9	Desktop Computer Power Management	X	X	X	X	X	X	X		X	X		X	X	X	X	X	X	X	X	X	X	X	X	X
10	Computer Peripheral Power Management													X	X	X	X	X	X	X	X	X	X	X	
11	Plug Load Power Management													X	X	X	X	X	X	X	X	X	X	X	
12	Pipe Insulation			X		X	X							X	X		X	X	X	X	X	X	X	X	

# Best Project Options

## 4 Projects for your consideration

- **2 Projects = Strictly Energy Saving Projects**
  - Maximize Energy Savings/Minimize Project, Cost, & Payback
- **2 Projects = Energy Savings + Major Project**
  - Maximize Use of Energy Savings to include other capital costs at no additional cost to taxpayer
- **1 Recommendation** *(based on Council's preference)*

# ESCO Project – Options

## Option 1:

- Lighting and Lighting Controls (LED) – *JFK Middle School Only*
- Lighting and Lighting Control (T8)
- Street Lighting Upgrades
- Boiler Replacements & Pump Upgrades
- Replace Multi-Zone AHU & Cooling System
- Building Management System Upgrades
- Building Envelope Improvements
- Water Conservation
- Walk-In Freezer/Cooler Controls
- Desktop Computer Power Management
- Computer Peripheral Power Management
- Plug Load Power Management
- Pipe Insulation

		Total Cost	Rebate	Net Cost	15 Year Energy Savings	15 Year O&M Savings	15 Year Total Savings
	<b>ESM SUB TOTAL</b>	\$ 10,279,082	\$ 1,176,076	\$9,103,006	\$ 9,106,301	\$1,641,546	\$ 10,747,847
	Customer Controlled Contingency	\$ 513,954	\$ -	\$ -	\$ -	\$ -	\$ -
	<b>GRAND TOTAL</b>	\$ 10,793,036	\$ 1,176,076	\$9,616,960	\$ 9,106,301	\$1,641,546	\$ 10,747,847

# ESCO Project – Options

## Option 2: -

- Option 1, but only LEDs in all buildings

	Total Cost	Rebate	Net Cost	15 Year Energy Savings	15 Year O&M Savings	15 Year Total Savings
<b>ESM SUB TOTAL</b>	\$ 10,957,519	\$ 1,227,016	\$ 9,730,503	\$ 9,457,576	\$1,667,331	\$ 11,124,907
Customer Controlled Contingency	\$ 547,876	\$ -	\$ -	\$ -	\$ -	\$ -
<b>GRAND TOTAL</b>	\$ 11,505,395	\$ 1,227,016	\$10,278,379	\$ 9,457,576	\$1,667,331	\$ 11,124,907

## Difference (from Option 1):

- Cost:** \$712,359
  - Rebate:** \$50,940
  - Net Cost:** \$661,419
- 15 Year Energy Savings:** \$351,275
  - 15 Year O&M Savings:** \$25,758
  - 15 Year Total Savings:** \$377,060

# ESCO Project – Options

## Option 3: -

- Option 1 +
  - Hazardville Memorial School Roof Top Units
  - Hazardville Memorial School Roof Replacement
  - Hazardville Memorial School Window Replacement

	Total Cost	Rebate	Net Cost	20 Year Energy Savings	20 Year O&M Savings	20 Year Total Savings
<b>ESM SUB TOTAL</b>	\$ 15,651,699	\$ 2,547,692	\$ 13,104,007	\$ 12,504,067	\$2,397,035	\$ 14,901,102
Customer Controlled Contingency	\$ 782,585	\$ -	\$ -	\$ -	\$ -	\$ -
<b>GRAND TOTAL</b>	\$ 16,434,284	\$ 2,547,692	\$ 13,886,592	\$ 12,504,067	\$2,397,035	\$ 14,901,102

### **Difference (from Option 1):**

- **Cost:** \$5,641,248
- **Rebate:** \$1,371,616
- **Net Cost:** \$4,269,632

*20 year payback*

**20 Year Energy Savings:** \$3,397,766

**20 Year O&M Savings:** \$755,489

**20 Year Total Savings:** \$4,153,255

# ESCO Project – Options

## Option 4: -

- Option 1 +
  - Hazardville Memorial School Roof Top Units
  - Hazardville Memorial School Roof Replacement
  - *Windows not included*

	Total Cost	Rebate	Net Cost	20 Year Energy Savings	20 Year O&M Savings	20 Year Total Savings
<b>ESM SUB TOTAL</b>	<b>\$ 13,343,809</b>	<b>\$ 1,918,758</b>	<b>\$ 11,425,051</b>	<b>\$ 12,442,882</b>	<b>\$2,397,035</b>	<b>\$ 14,839,917</b>
Customer Controlled Contingency	\$ 667,190	\$ -	\$ -	\$ -	\$ -	\$ -
<b>GRAND TOTAL</b>	<b>\$ 14,010,999</b>	<b>\$ 1,918,758</b>	<b>\$ 12,092,241</b>	<b>\$ 12,442,882</b>	<b>\$2,397,035</b>	<b>\$ 14,839,917</b>

### **Difference (from Option 3):**

- **Cost:** (\$2,423,285)
- **Rebate:** (\$628,934)
- **Net Cost:** (\$1,794,351)

*20 year payback*

**20 Year Energy Savings:** (\$61,185)

**20 Year O&M Savings:** \$0

**20 Year Total Savings:** (\$61,185)

# ESCO Project – Options

## Presented Options Summary



Option 1:

Option 2: Option 1, but LEDs in all buildings instead of T8s

Option 3: Option 1, *and* Hazardville School Roof Top Units, New Roof, & New Windows

Option 4: Option 1, *and* Hazardville School Roof Top Units & New Roof (*not windows*)

	Total Cost	Rebate	Net Cost	15/20 Year Energy Savings	15/20 Year O&M Savings	15/20 Year Total Savings
OPTION 1 TOTAL + Contingency	\$ 10,793,036	\$ 1,176,076	\$ 9,616,960	\$ 9,106,301	\$ 1,641,546	\$ 10,747,847
OPTION 2 TOTAL + Contingency	\$ 11,505,395	\$ 1,227,016	\$ 10,278,379	\$ 9,457,576	\$ 1,667,331	\$ 11,124,907
OPTION 3 TOTAL + Contingency	\$ 16,434,284	\$ 2,547,692	\$ 13,886,592	\$ 12,504,067	\$ 2,397,035	\$ 14,901,102
OPTION 4 TOTAL + Contingency	\$ 14,010,999	\$ 1,918,758	\$ 12,092,241	\$ 12,442,882	\$ 2,397,035	\$ 14,839,917

-  - 15 Year Financing/Payback
-  - 20 Year Financing/Payback



# ESCO Project – Financing

- **What avenues does the Town have?**
  - Lease-Financing
  - Bonding
- **What benefits can the Town utilize from PC?**
  - PURA (Public Utility Regulatory Agency) – 1% rate buy down
  - Utility Incentives/0% financing for \$500,000
  - Multiple financing quotes
- **What are project lengths comprised of?**
  - Project principal pay-off + interest pay-off
  - Example:
    - 15 year project is roughly 13.5 years principal, 1.5 years interest*

# ESCO Project - Financing

More things to consider

What are our financing goals?

1. Short pay-off?
2. Money in our pocket?
3. Biggest bang for our buck?
4. Deferred/Eliminated capital costs?
5. Debt avoidance?

# ESCO Project – Financing

## Summary

### Option 1

Total Project Cost	\$ 10,279,082
Contingency	\$ 513,954
Project Sub Total	\$ 10,793,036
Eversource Financing	\$ (500,000)
Financed Amount	\$ 10,293,036
Interest Rate	2.50%
Average Annual Energy Savings	\$ 725,749
Average Annual Operational Savings	<u>\$ 109,436</u>
<b>Guaranteed Avg. Annual Savings</b>	<b>\$ 835,185</b>

Year 1 & 2 Utility Incentive \$ 588,038/year

*Option 1 does have a net benefit to the Town of **\$57,600**/year equaling a positive cash flow of **\$865,407** after 15 years.*

# ESCO Project – Financing

## Summary

### Option 2

Total Project Cost	\$ 10,957,519
Contingency	\$ 547,846
Project Sub Total	\$ 11,505,365
Eversource Financing	\$ (500,000)
Financed Amount	\$ 11,005,365
Interest Rate	2.50%
Average Annual Energy Savings	\$ 753,745
Average Annual Operational Savings	<u>\$ 111,155</u>
<b>Guaranteed Avg. Annual Savings</b>	<b>\$ 864,890</b>

Year 1 & 2 Utility Incentive \$ 613,508/year

*Option 2 does have a net benefit to the Town of **\$35,600**/year equaling a positive cash flow of **\$538,340** after 15 years.*

# ESCO Project – Financing

## Summary

### Option 3

Total Project Cost	\$ 15,651,699
Contingency	\$ 782,585
Project Sub Total	\$ 16,434,284
Eversource Financing	\$ (500,000)
Financed Amount	\$ 15,934,284
Interest Rate	2.65%

Average Annual Energy Savings	\$ 788,332
Average Annual Operational Savings	<u>\$ 119,852</u>
<b>Guaranteed Avg. Annual Savings</b>	<b>\$ 908,184</b>

Year 1 & 2 Utility Incentive \$ 1,273,846/year

*Option 3 has a customer contribution equaling **\$54,780**/year equaling a contribution of **\$986,203** after 19 years.*

# ESCO Project – Financing

## Summary

### Option 4

Total Project Cost	\$ 13,343,809
Contingency	\$ 667,190
Project Sub Total	\$ 14,010,999
Eversource Financing	\$ (500,000)
Financed Amount	\$ 13,510,999
Interest Rate	2.65%
Average Annual Energy Savings	\$ 773,752
Average Annual Operational Savings	<u>\$ 119,852</u>
<b>Guaranteed Avg. Annual Savings</b>	<b>\$ 893,604</b>
Year 1 & 2 Utility Incentive	\$ 959,379/year

*Option 4 does have a net benefit to the Town of **\$25,000**/year equaling a positive cash flow of **\$442,485** after 18 years (year 18 benefit is \$17,485).*

# What if...

- Town performed same work without Honeywell?

	<u>Total Cost</u>	<u>Mill Rate Increase*</u>
• Option 1	\$10,278,082	3.64
• Option 2	\$10,957,519	3.88
• Option 3	\$15,651,699	5.54
• Option 4	\$13,343,809	4.72

*\*Based on mill equaling \$2,826,190*

# Steps for Town Council Approval

- Presentation to DPW Subcommittee
- Present to full Council at Special Meeting
- Financing Workshop (optional for Council)
- Regular Council Mtg for further discussion, Q&A
- Public Hearing Date (set by Council)
- Council moves question to referendum
- Referendum



# How Enfield Was Successful

- Staff commitment & understanding
- Good relationship with ESCO
- Very good relationship with TSP
- Understanding of timeline (by everyone)
  - Work backwards from deadline
- Elected official understanding of project
- Resident understanding of project



# State of Connecticut Lead by Example

[http://www.ct.gov/deep/cwp/view.asp?a=4405&Q=513642&deepNav\\_GID=2121](http://www.ct.gov/deep/cwp/view.asp?a=4405&Q=513642&deepNav_GID=2121)