



Performance Contracting

ENERGY STAR Monthly Partner Web Conference

February 21, 2007

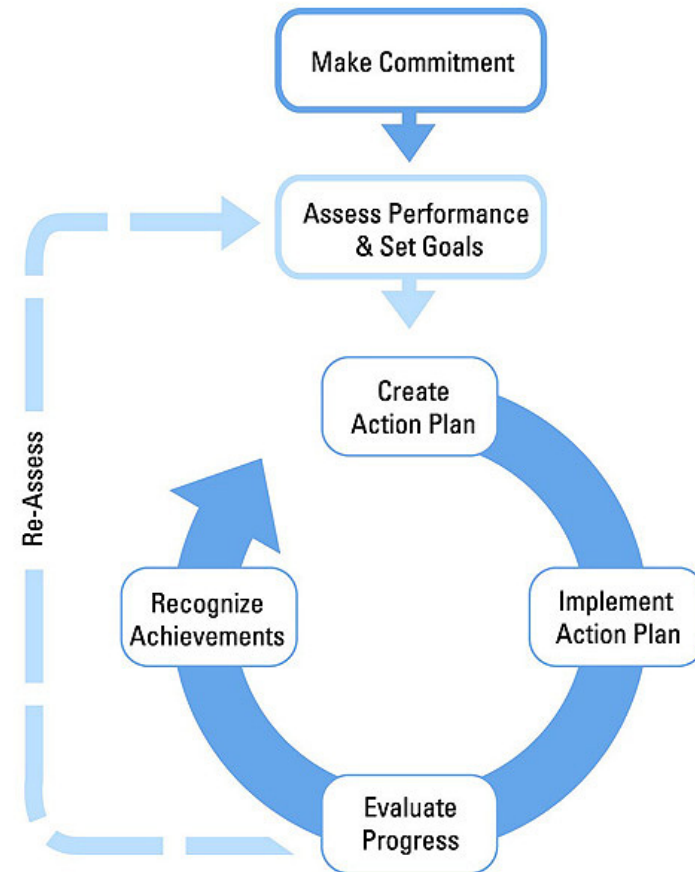
Call-in Number: 1-866-299-3188

Conference Code: 202 343 9965

About The Web Conferences



- Monthly
- Topics are structured on a strategic approach to energy management
- Opportunity to share ideas with others
- Slides are a starting point for discussion
- Open & Interactive
- Supports the **ENERGY STAR Challenge** to build a better world, 10% at time



Web Conference Tips



- Mute phone when listening! Improves sound quality for everyone.
Use * 6 – to mute and # 6 to un-mute
- Hold & Music – If your phone system has music-on-hold, please don't put the web conference on hold!
- Presentation slides will be sent by email to all participants following the web conference.

Today's Web Conference



Performance Contacting

Presenters:

- Andrew Morton, Johnson Controls
- Jeff Dominick, National Renewable Energy Lab

**Energy Savings Performance Contracting
Overview**
ENERGY STAR Monthly Partner Meeting
Feb. 21, 2007

By Andrew Morton - Johnson Controls
And
***Jeff Dominick - National Renewable Energy
Laboratory***



Johnson Controls -- Energy Efficiency Business

SUPPLY ENERGY EFFICIENCY PRODUCTS & SERVICES

Automobiles

Through development of advanced batteries for hybrid vehicles....and lighter weight interior systems that increase fuel efficiency



Buildings

Through systems and services that reduce energy usage while improving comfort and productivity



National Renewable Energy Laboratory

- ***US Department of Energy Laboratory in Golden, CO***
- ***Conducts Research, Development, and Demonstration of Renewable Energy and Energy Efficiency Technologies***
- ***ESPC activities funded by DOE Federal Energy Management Program (FEMP)***
 - <http://www1.eere.energy.gov/femp/financing/superespcs.html>



Performance Contract Concept

- ***Procurement Method***
 - Immediate facility improvements
 - Paid from future energy savings
- ***Implements Capital Improvements***
 - Reduce energy & O/M costs
 - Address deferred maintenance

Performance Contract Concept (cont.)

- ***Comprehensive Approach***

- Maximize benefit to facility
- Combine longer payback measures with shorter ones for reasonable overall payback

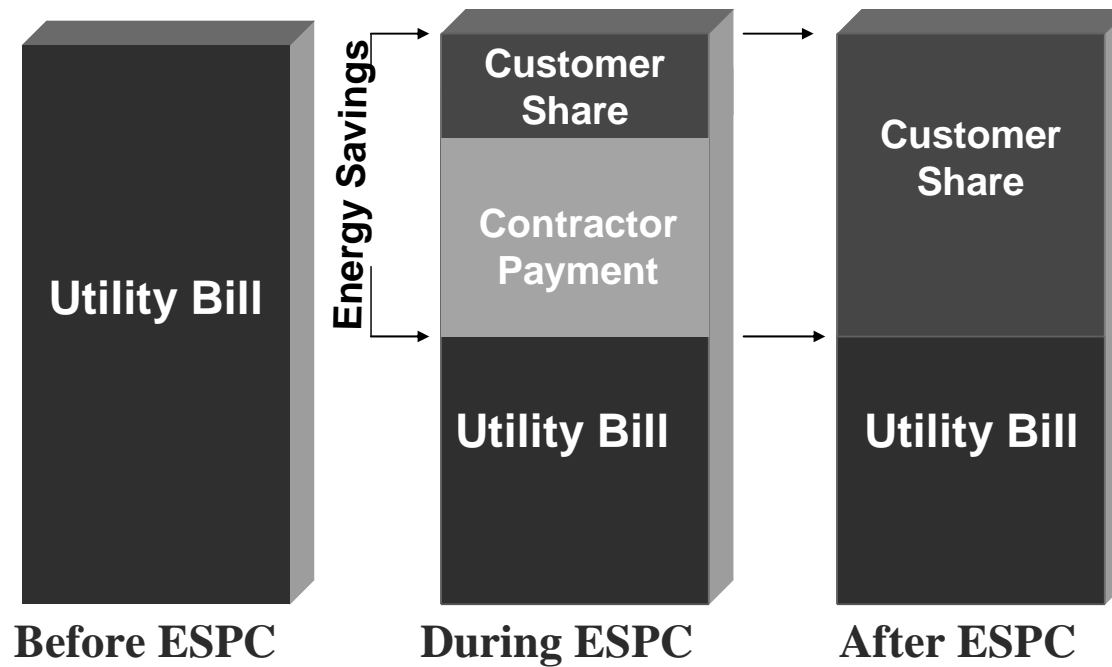
- ***Substantial Risk Transfer***

- From facility to Energy Service Co.
- Design, implementation, performance
- Guarantee that debt service paid from savings

Effect on Utility Bill

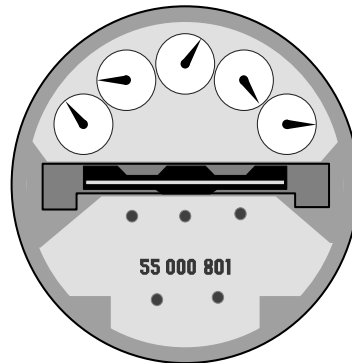
- ***Energy Conservation Measures reduce energy bill (utility budget)***
- ***Utility budget reallocated to:***
 - Pay reduced bills due to lower usage
 - Pay ESCo including debt service
 - Potential for positive cash flow
- ***Ongoing savings remain as positive cash flow after end of contract term***

Effect on Utility Bill



Energy Conservation Measures

Lighting Retrofits
Chiller Replacements
Boiler Conversions
Cooling Tower Replacements
Thermal Energy Storage
Pump Replacements
Variable Speed Pumping
HVAC Replacements
VAV Conversion



Central Plant/Co-generation
Energy Management Control
Systems
Indoor air quality improvements
Window Replacements
Roof Repair / Replace
Water Conservation
Other Potential Items:
Refuse Reduction
Recycling Programs

How It Works

ESPC contractor develops project by:

- ***Performing an Energy Audit***
- ***Designing the Project***
- ***Arranging Financing***
- ***Acquiring and Installing Equipment***
- ***Training Personnel***
- ***Operating and Maintaining Equipment (Optional)***

Savings Used

- ***Reduced Energy Costs***
- ***Reduced O&M Expenses***
- ***Various Methods to Verify***
 - One Time Measured/Stipulated
 - On-going Measurements
 - Utility Bill Comparison

Guaranteed Savings!!!

Customer Steps to Start

1. Educate Yourself on ESPC

2. Select an Energy Service Company

3. Define & Communicate:

- Your key business objectives
- Current challenges
- Ideas & Needs for Facility Improvements
- Risk tolerance & How much to shift to ESCo

Industry Benefits of ESPC

- ***Allows Comprehensive Evaluation of Site***
- ***Bundled Project Results in Systems Working together***
- ***Annual M&V Activities Allows for Regular Communication***
- ***Opportunity for O&M Services***
- ***Defined Contracting Process***

Keys for Successful Projects

Beginning with the Customer's Objectives...

- ***Understand expectations***
- ***Involve key decision makers early in process***
- ***Set reasonable timeline***
- ***Prioritize facility improvements to pursue (remember ESPC's are bundled projects)***
- ***Regular Updates to keep everyone informed***
- ***Keep the Overall Project Goals in focus***

Customer Benefits From ESPC

- ***Access to ESCo energy efficiency expertise***
- ***ESCo assumes risk of performance (guarantees the ROI)***
- ***Facility improvements***
- ***Provides energy savings***
- ***Addresses O&M deficiencies***

Impact of ESPC in Federal Government

- ***300 Projects throughout the Federal Government***
 - Over \$1.8 billion in private sector investment
- ***Energy Savings***
 - 14.4 trillion Btu annually
 - Equivalent to energy consumed by 143,000 households or a city of a half million
- ***Dollar Savings***
 - \$5.0 Billion Total
 - \$3.5 Billion Investment payback
 - \$1.5 Billion Net savings to government**

ESPC Example

Twenty Nine Palms Marine Base, California

- ***\$65 million in projects privately financed***
 - New chilled water plant and air conditioning upgrades
 - Dual-Fueled 7.5 megawatt co-generation plant
 - 8 acre, 1.1 megawatt photovoltaic solar farm
- ***Result: \$6.9 million in guaranteed savings annually for a total savings of \$138 million over 20 years***



Twenty Nine Palms ESPC Ancillary Benefits

- ***New chilled water plant***
 - Improved quality of life for Marines in barracks
 - Additional capacity for new barracks saving MilCon
- ***Dual-Fueled Co-Gen Plant***
 - Energy Security: If a disruption in natural gas, system can immediately switch to diesel fuel stored on base (2 week supply)
 - New gas lines buried in concrete casing for additional security
- ***Photovoltaic Solar Farm***
 - Renewable energy source
 - Provides 7% of base electric load



Indiana Prisons ESPC

- **Four industrial grade biomass boilers converting Indiana corn into heat for four prison complexes**
- **Some of the corn grown on prison property**
- **Other energy conservation measures included in the project:**
 - Energy management system
 - Water conservation devices
 - Lighting upgrades
 - Mechanical and HVAC upgrades
- **Project**
 - \$30.4 million ESPC
 - \$7 million guaranteed energy and operation savings annually
 - \$25 million in facility capital infrastructure upgrades



CLOSING THOUGHTS

- ***ESPCs are Effective Procurement Method***
- ***Energy Retrofit Projects are Self-Funded***
- ***ESPCs Create Accountability***
- ***Choose ESPC Contractor Wisely – Long Term Partnership***
- ***Involve Key Decision Makers Early***
- ***Document Expectations & Stay Focused on the Goals***

Resources Available

- ***Federal Energy Management Program (FEMP)***
www.eere.energy.gov/femp (click on ***Financing Mechanisms***)
- ***National Association of Energy Services Companies (NAESCO)*** ***www.naesco.org***
- ***Andrew Morton, Johnson Controls, 720-635-6607***
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- ***Jeff Dominick, NREL, 303-384-7307***
jeffrey_dominick@nrel.gov



Questions & Discussion

Upcoming Web Conferences



March – Energy Management Diagnostics

April – Award Wining Energy Programs: The
ENERGY STAR Partners of Year

May – Assessing Facility Energy Management
Practices

Download past web conference presentations at:

www.energystar.gov/index.cfm?c=networking.bus_networking

Questions or comments? Contact: tunnessen.walt@epa.gov



Thank You!