

Energy Savings Performance Contract (ESPC) Lesson Learned Panel

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**Karin King, LEED AP
Sr. Environmental Engineer
DOE/NNSA**

- EO 13423- *Strengthening Federal Environmental, Energy, and Transportation Management*
- DOE Transformational Energy Action Management (TEAM) Initiative- first agency to meet the goals, exceed the goals in energy intensity and greenhouse gas emissions, building efficiency, etc., and be a federal agency leader
- S-1 Memorandums to all Department Heads- EO 13423 Compliance Initiative and DOE Federal Leadership in High Performance and Sustainable Buildings
- DOE Orders 430.2B and 450.1A

- Enhance EMSs to implement EO 13423
- Utilize LEED Gold for all new construction/major renovations
- **Streamline the process for Energy Savings Performance Contracts (ESPCs)**
- Require Site Executable Plans (due Dec. 2008) to meet and exceed EO goals
- Initiate Department-wide program to enhance implementation of renewable energy generation
- Expand alternative fuel infrastructure

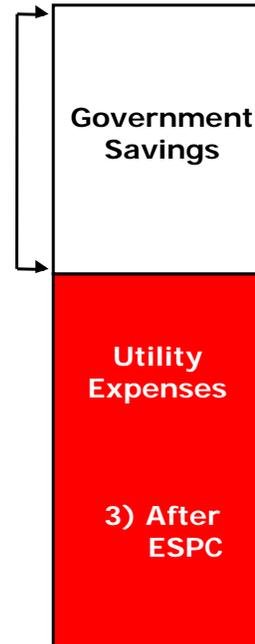
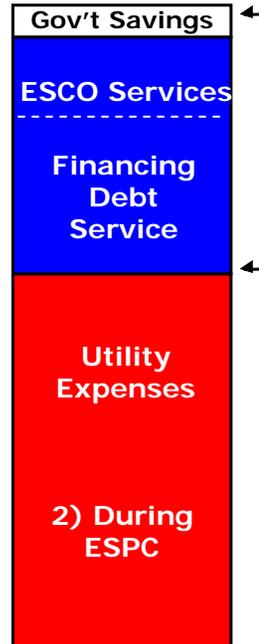
- Reduce energy intensity by no less than 30% by 2015
- Reduce potable water use by no less than 16% by 2015
- Install advanced electric metering
- LEED Gold for all new construction and major renovations
- 15% of “enduring” buildings in compliance with the High Performance Sustainable Design Guiding Principles by 2015 (DOE HPSB Working Group)
- Enhance EMS for implementing the goals

- Legislation authorizing Energy Savings Performance Contracts (ESPCs) was enacted in 1992.
- Super ESPCs were placed to streamline the process in 1998, and ESPCs were reauthorized through 2016 by the Energy Policy Act of 2005.
- More than 400 ESPC projects have been awarded by 19 different federal agencies in 46 states.
- \$1.9 billion has been invested in U.S. federal facilities through ESPCs, saving 16 trillion Btu annually, equivalent to the energy used by a city of about 450,000.

- **Energy Savings Performance Contracts (ESPCs)**
 - » A partnership and contracting method between the government organization and an energy service company (ESCO).
 - » ESCO conducts a comprehensive energy audit and identifies improvements
 - » ESCO designs and constructs a project that meets the agency's needs and arranges the financing to pay for it
 - » ESCO guarantees the installed energy conservation measures will result in cost savings sufficient to pay the ESCO for the project
 - » Agency uses the cost savings to pay for the building improvements over the life of the contract

- **Regional Super ESPCs** include ECMs such as: boiler/chiller plant improvements, building automation and energy management control systems, HVAC, lighting improvements, building envelope modifications, renewable energy systems, water and sewer system conservation, commissioning, etc
- **Technology Specific ESPCs-** Biomass, Geothermal Heat Pumps, PV
- For more info go to the DOE FEMP website or contact a Federal Energy Projects Financing Specialist:
www.eere.energy.gov/femp/financing/superespcs_contractstools.cfm

1) Before ESPC:
Federal Funds are expended on utilities and O&M costs.



3) After ESPC:
Government keeps all the savings after investment is paid off.

2) During ESPC:

- Private Sector finances, installs and (at govt's option), maintains new energy efficient equipment, *at no upfront cost to government*
- Savings are guaranteed by Energy Services Company
- Government pays off investment with Savings on utility bill

- **Phase 1-** Project Planning incl. Selecting an Energy Service Provider, Assemble the Team
- **Phase 2-** Initial Project Development incl. Site Survey, Initial Proposal, and Issue Notice of Intent to Award
- **Phase 3-** Negotiation and Award of Final Delivery Order incl. DO-RFP, Detailed Energy Survey, Final Proposal
- **Phase 4-** Implementation incl. remaining Design and Construction/Installation, Commissioning, Post Installation Measurement and Verification, Acceptance
- **Phase 5-** Performance Period incl. Measurement and Verification, and Contract Administration

- Laboratory is a 1 sq. mile complex in Livermore with an 11-sq. mile remote explosives test facility (Site 300) located 45 miles southeast of San Francisco, CA
- Multi-Program Facility established in 1952 and currently managed and operated by the Lawrence Livermore National Security LLC under new contract with DOE/NNSA
- Annual Budget ~ \$1.6B
- 671 Facilities at both sites: including seven nuclear facilities; 25 radiological facilities; five accelerators; 66 explosives facilities
- Replacement Plant Value: ~ \$4.0B (~ 7.2M sq. ft.)
- Annual Electricity Usage – 395,000 MWH

Aerial View of the Livermore Main Site



ESPC Drivers for DOE/NNSA/LSO

- Required to look beyond appropriated funds
- Projected increasing electrical demand and natural gas and water consumption (due to National Ignition Facility and Terascale Simulation Facility operations approx 30%)
- Rising energy and other utility costs
- Opportunity to modernize aging infrastructure and install advanced electric metering required
- Reduce deferred maintenance backlog
- Opportunity to conserve scarce resources

Reduce energy consumption by and improve water conservation.

Strategies include:

- Metering across the site per EPACT 2005
- Improve/Expand Energy Management Control System
- Procurement of energy efficient equipment and lighting
- Recommissioning of building mechanical systems
- Implementation of sustainable design
- Energy efficient retrofitting of certain facilities
- Procurement of low-flow water fixtures and modifications to existing landscaping and irrigation system

- Kick-off for Initial Proposal- April 2006
- ESPC Initial Proposal – October 2006
- ESPC Detailed Energy Study - October 2007
- ESPC (2 ECMs) Final Proposal- December 2007
- Delivery Order Award- June 2008
- Construction/Installation- 2 years
- Commissioning/Acceptance- 2 months
- Performance Period- Balance of Contract approx. 18 years

- Pursuit of DO #2 DES to hopefully start soon.

LLNL Initial Proposal ESPC Opportunities

- HVAC Controls
- Site wide Electric Metering
- Vending Machine Controls
- Fume Hood Modifications
- High Efficiency Air Filters
- Modular Building HVAC Tune-up
- Energy Efficient Lighting Upgrades
- High Efficiency Motors
- Variable Speed Drives & Drives
- Low Flow Water Closets & Urinals
- Irrigation Upgrades
- Retro-Commissioning Services (including LEED EB Certification)
- Cooling Tower Upgrade (Pilot)

Investment	Savings	Simple Payback	Term
\$32.8M	\$4M / year	8.2 years	TBD

- GOVENERGY- Phoenix, AZ, Aug 3-6, 2008
 - » www.govenergy.com
- DOE Energy Efficiency and Renewable Energy websites
 - » www.eere.energy.gov/
 - » www.eere.energy.gov/femp/financing/superespcs_contacts.html



Panel Contact Info



1- Karin King, DOE/NNSA

Email: karin.king@oak.doe.gov

Phone: (925) 422-0756

2- Wayne Evelo, DOE/NNSA

Email: wevelo@doeal.doe.gov

Phone: (505) 845-5501

3- Ernest Fossum, Idaho National Laboratory

Email: ernest.fossum@inl.gov

Phone: (208) 526-2513

4- Bathsheba Gilmore, Johnson Controls

Email: bathsheba.gilmore@jci.com

Phone: (510) 786-5714

5- Michael Holda, Lawrence Berkeley National Lab

Email: holda@mindspring.com

Phone: (209) 835-8150