

Charting a Course to Energy Independence

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Update on Implementation of EISA 2007 Section 432

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The mission of the Federal Energy Management Program is to facilitate the Federal Government's implementation of sound, cost-effective energy management and investment practices to enhance the Nation's energy security and environmental stewardship.



EISA's Framework for Facility Project Management

- Agencies must identify “**covered facilities**” that constitute at least 75% of energy use.
- Each facility must have a designated **energy manager** responsible for:
 - Completing **comprehensive energy/water evaluations** (audits) (25% of facilities each year)
 - **Implementing identified ECMs**; (bundling permitted)
 - **Following up** on implemented ECMs
- **Web-based tracking system** to certify compliance; including each facility's potential measures, estimated cost and savings of measures.
 - Tracking system will be available to Congress, other Federal agencies, industry, and the public
 - ◆ Some specific data exempted from disclosure for national security purposes.
- In addition to tracking system, energy managers shall enter energy use data for each facility into a **benchmarking** system (i.e., Energy Star Portfolio Manager)



Guidance/DOE Action, OMB Role, & Financing Authority

- DOE Guidance/Decisions:
 - guidelines on designating energy managers (released)
 - criteria for covered facilities and evaluations (released)
 - interim reporting guidance for evaluation findings (released)
 - guidelines for Web-based tracking, project implementation and follow-up (pending)
 - Select benchmarking system (pending)
- OMB energy scorecards to incorporate requirements of Section 432
- Authorizes agencies to use appropriations, private financing, or a combination to comply with its requirements
 - ESPCs, UESCs for evaluations/project implementation



Guidelines/Criteria

- *Facility Energy Management Guidelines and Criteria for Energy and Water Evaluations in Covered Facilities*
25 November 2009
 - Guidelines on designating energy managers
 - Criteria for covered facilities
 - Requirements for comprehensive evaluations
 - ◆ re/retro-commission
 - ◆ Audits
- www1.eere.energy.gov/femp/pdfs/eisa_s432_guidelines.pdf



Facility Energy Managers

- Responsible for ensuring compliance by the facility, may include:
 - contractor of a facility,
 - part-time employee of a facility, and
 - individual who is responsible for multiple facilities
- Must meet the definition of “trained energy manager” from EPCRA 1992
- Agency may determine own limits of responsibility of facility energy manager
 - *Example from the U.S. Army, Energy Regulation 420-1, Chapter 23: “1 manager/5 million square feet of space”*



Resource Efficiency Managers (REMs)

- Work onsite at Federal facilities
- Typically contractors
- Cost savings resulting from reduced use of resources cover the REM's salary
- For sites with annual energy budgets of \$3-5M
 - Sites with smaller energy budgets can and often do share the services of a single REM.
- Guidebook available:
www1.eere.energy.gov/femp/pdfs/rem_guidebook.pdf



Role of Agency HQ energy coordinators

- Identifying the covered facility inventory,
- Ensuring that each covered facility has a designated facility energy manager,
- Maintaining the agency's internal list of facility energy managers, and
- Prioritizing and assigning 25 percent of covered facilities for yearly evaluations.



Criteria for Covered Facilities

- “Facility” means any building, installation, structure, or other property owned or operated by, or constructed or manufactured and leased to, the Federal Government. This includes--
 - A group of facilities at a single location or multiple locations managed as an integrated operation; and
 - Contractor-operated facilities owned by the Federal Government.



Designating Covered Facilities

- Facilities that constitute at least 75 percent of *all* facility energy use at each agency
 - Goal-subject and excluded facilities
- Rank facilities with greatest energy use in descending order until 75% target is reached
- Include as many facilities as it can be managed since 75 percent of facility energy use is the *minimum* requirement



Initial Findings: Covered Facilities Identified

- Energy use of designated covered facilities
 - 299 trillion Btu
 - 77% of facility energy use (Target: 75%)
- Square footage of designated covered facilities
 - 1.7 billion square feet
 - 54% of facility square footage (total 3.2 billion)
- Energy Intensity of covered facilities
 - 173,000 Btu/square foot



Comprehensive Energy and Water Evaluations

- Evaluations have two components:
 - Commissioning
 - Audit
- Evaluate all covered facilities within four years
 - “approximately 25% per year
- First set of evaluations were due: June 16, 2009
 - Recently evaluated facilities (previous two calendar years) may count toward the first set



Audit Component of Evaluations

- Audit contains:
 - documented findings of a walk-through survey
 - energy consumption/cost savings potential
 - building conditions
 - energy consuming equipment
 - hours of use or occupancy



Audit Details: ECM Description

For each ECM, the following information is required:

1. Title and narrative description
2. Location(s) affected
3. Projected energy usage, cost, and savings
4. Interface with agency equipment and detailed description of existing energy consuming equipment and systems.
5. Extent of any utility interruptions needed for the installation
6. Agency support required during implementation
7. Potential environmental impacts and NEPA compliance actions
8. Applicable utility rebates, system benefits funding, financial and tax incentives



Audit Details: ECM Prioritization/ Data Points

- Identified energy and water efficiency measures should be prioritized based on life cycle cost effectiveness
- ECM data points for the Web-based tracking system:
 1. Description of measure
 2. Estimated cost of measure
 3. Estimated annual energy/water consumption and cost savings
 4. Estimated life-cycle energy/water savings
 5. Estimated life-cycle cost savings
 6. Savings-to-Investment Ratio (SIR)
 7. Payback Period
 8. Summary of the economics of bundled ECMs with total interactive life-cycle savings, SIR, and payback period.



Resources for Completing Evaluations

- Government in-house facility engineering staff
- DOE National Laboratory staff through a work-for-others interagency agreement
- Private sector contractors
 - on a fee-for-service basis
 - ◆ (GSA) Schedule 03FAC, Facilities Maintenance and Management, Energy Management Support and Services Solutions (www.gsa.gov/energyservices), under Category 871 201, Energy Audit Services
 - Financed arrangement under an ESPC or UESC



Using ESPC or UESC for Evaluations

- Consider potential funding source
- Retain an ESCO or utility if the intention is to finance the implementation of measures through ESPC/UESC
 - Use the same ESCO for audit and implementation
- Implementation of identified commissioning measures can be included in the detailed energy survey used to develop the final ESPC/UESC proposal

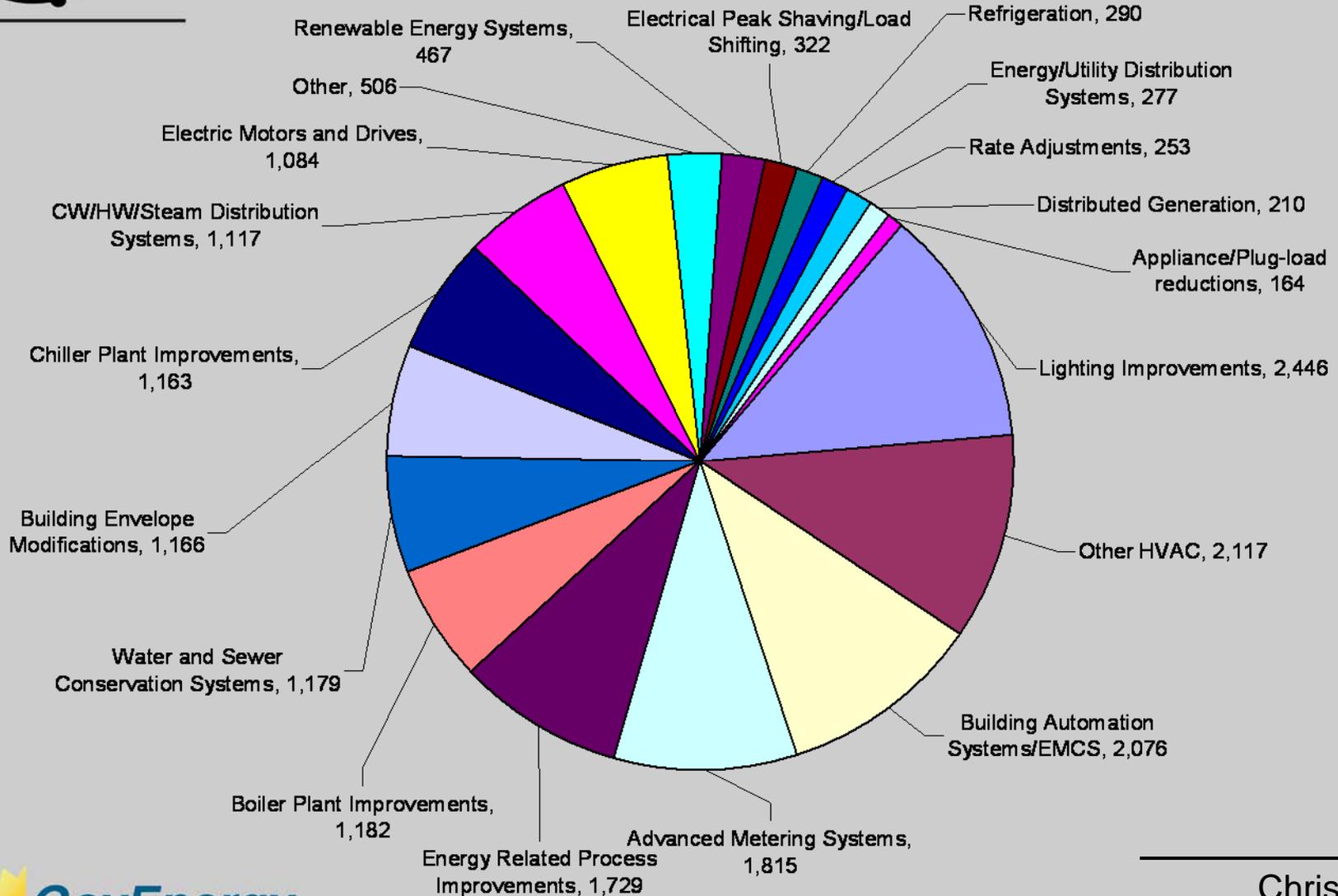


Preliminary Agency Findings: Investment Potential and Benefits

- Initial findings of comprehensive evaluations required by EISA Section 432; submitted by agencies 30 June 2009:
 - 773.5 million Ft² evaluated, 25% of 3.1 billion Ft² total
 - \$5.3 billion in *potential* project investment identified
 - *Potential* annual energy savings: 27.7 trillion Btu
 - ◆ 8% reduction from current levels
 - *Potential* annual water savings: 6.9 billion gallons
 - ◆ 4% reduction from current levels
- Extrapolating for total Gov't building inventory:
 - \$20+ billion in *potential* investment opportunity (energy and water)
 - 100 trillion Btu potential annual energy savings (28% reduction)
 - 28 billion gallons annual water savings (17% reduction)

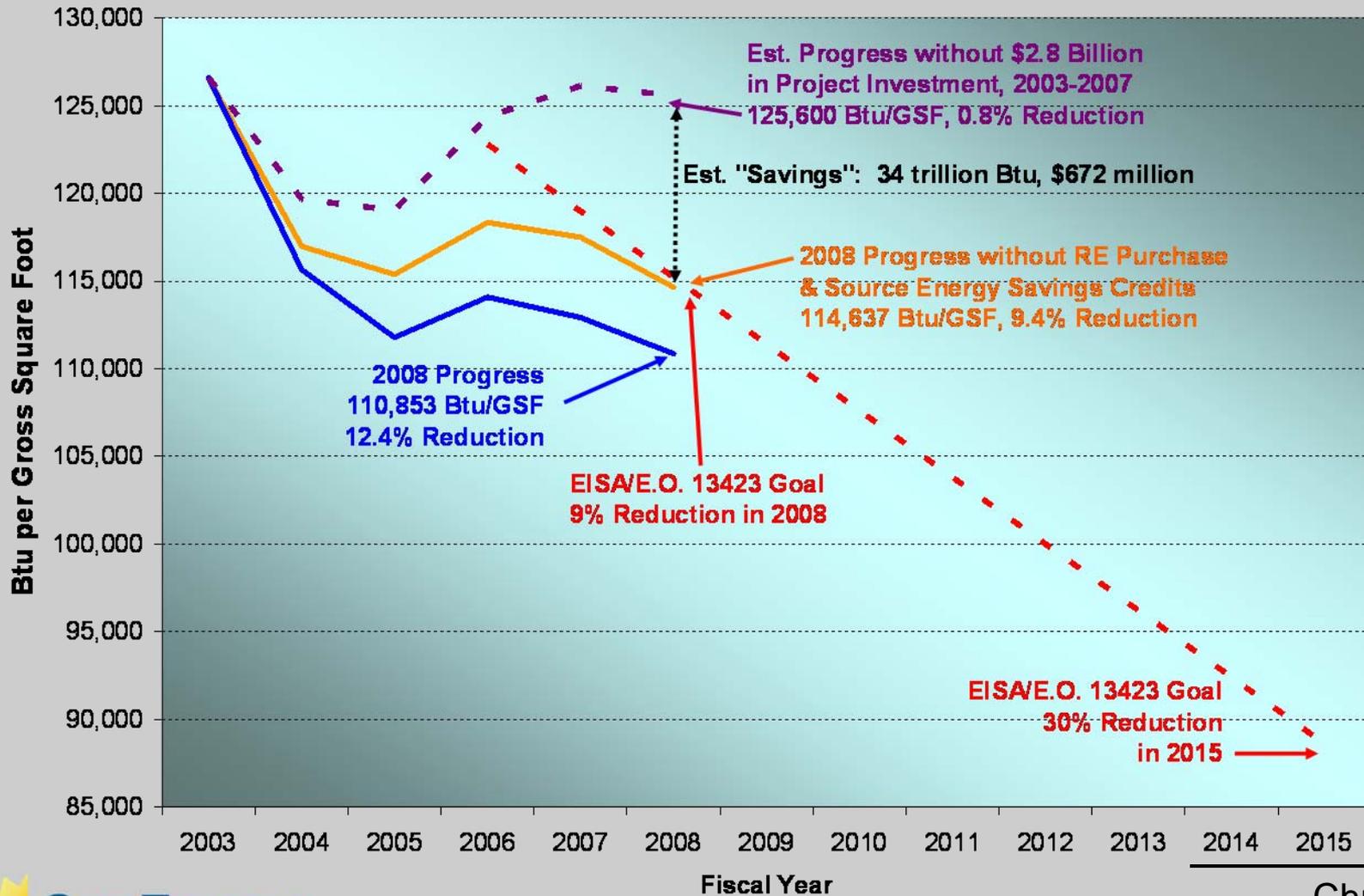


Mix of 19,563 Identified Potential Efficiency Measures





Tracking *Implemented* Projects to Reveal "Savings"





Status/Milestones for Web-Based Project Tracking

- Interagency working group meeting was convened by FEMP in October 2008
 - reviewed screen mock-ups and discussed appropriate level of detail to require.
- FEMP recently executed Recovery Act funding to implement the system.
 - Beta testing version: October 2009
 - Widespread deployment for agency use: January 2010
 - Deployment of publicly-available interface: August 2010
- Agency data submitted in January and June of 2009 will form the foundation of the system



Rudimentary Framework

Agency	Covered Facility	Energy Manager	Data to be submitted January 5, 2009	
	Agency Facility Number Facility Name City State Zip Code Gross Square Footage (Thou.) Annual Energy Use (Million Btu)	Unique Identifier Last Name First Name E-Mail	Data Optional	
	Other Designations Exempt from Public Disclosure Subject to Reduction Goal Excluded from Reduction Goal Subject to Water Goal			
	EISA Proj Mgmt Data Evaluation Status Implementation Status Measurement & Verification Status	Evaluation Status Complete: Yes/No checkbox Completion Date Est. Cost of Identified ECMs (\$) Est. Life-Cycle Cost Savings (\$) Est. Annual Energy Savings (Million Btu) Est. Annual Water Savings (Thou. Gal) ECMs Identified: check form ECMs Identified Commissioning (mandated) Boiler Plant Improvements Chiller Plant Improvements Building Automation Systems/EMCS Other HVAC Lighting Improvements Building Envelope Modifications CWHW/Steam Distribution Systems Electric Motors and Drives Refrigeration Distributed Generation Renewable Energy Systems Energy/Utility Distribution Systems Water and Sewer Conservation Systems Electrical Peak Shaving/Load Shifting Rate Adjustments Energy Related Process Improvements Advanced Metering Systems Appliance/Plug-load reductions Other ECMs	Implementation Status Projects Awarded: Yes/No checkbox Award Date Cost of Proposed ECMs (\$) Est. Life-Cycle Cost Savings (\$) Est. Annual Energy Savings (Million Btu) Annual Water Savings (Thou. Gal) <i>Method of Financing: check form</i> Appropriations ESPC Enhanced Use Lease UESC Other Finance Costs (\$) ECMs Implemented: check form ECMs Implemented...	M&V Follow-up Status Project M&V: Yes/No checkbox M&V Report Date Cost of Proposed ECMs (\$) Est. Life-Cycle Cost Savings (\$) Actual Annual Energy Savings (Million Btu) Actual Annual Energy Cost Savings (\$) Actual Annual Water Savings (Thou. Gal) ECMs M&Ved: check form ECMs M&Ved...
			Optional ECM Data Sheets (Separate Sheets for Evaluation, Implementation, and M&V Stages) ECM Name Description of measure Cost of ECM (\$) Life-Cycle Cost Savings (\$) Annual Energy Savings (Million Btu) Annual Water Savings (Thou. Gal) Savings-to-Investment Ratio (SIR) Payback Period (Years)	



Path Forward

- Draft/Issue consolidated Section 432 guidance:
 - Implementation of identified efficiency projects
 - Follow-up on implemented measures
 - ◆ M&V as part of 4-year cycle for recommissioning
 - ◆ Documentation of actual savings in Web-based tracking system
 - Accommodation of ARRA efficiency project tracking
 - Web-based tracking system user manual
 - EISA Section 432 requirements compliance certification
- Coordinate with benchmarking and other energy reporting requirements
 - Move to bottom-up reporting systems for increased data resolution necessary to support GHG inventory development



Thank you for your engagement

- Questions?
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