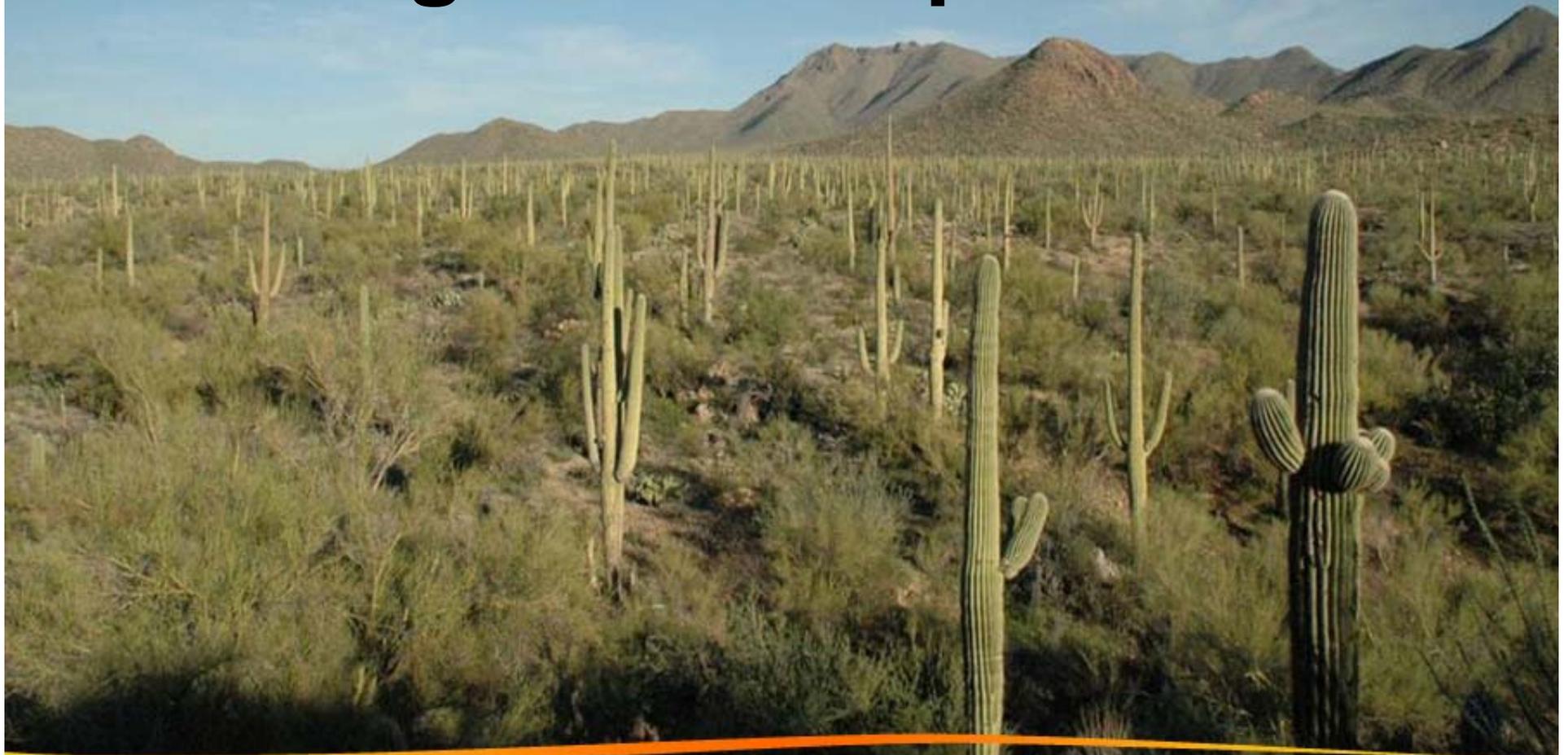


EISA Sect 432's Facility Management Requirements



Phoenix, AZ

August 3-6, 2008



EISA Sect 432's Facility Management Requirements

Chris Tremper, DOE FEMP

Malcolm Verdict, Texas A&M

Karen Curran, GSA



GovEnergy
www.govenergy.gov



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)



Pending Guidance/DOE Action, OMB Role, & Financing Authority

- DOE Guidance/Decisions:
 - guidelines on designating energy managers
 - criteria for covered facilities and evaluations (audits)
 - guidelines for project implementation and follow-up measures
 - Select benchmarking system or develop another
- OMB energy scorecards to be based on the requirements of Section 432
 - Scorecards available to Congress, other Federal agencies, and the public
- Authorizes agencies to use appropriations, private financing, or a combination to comply with its requirements
 - ESPCs, UESCs for evaluations/project implementation



Draft Guidelines/Criteria

- *Facility Energy Management Guidelines and Criteria for Energy and Water Evaluations in Covered Facilities*
 - Combines guidelines on designating energy managers and criteria for covered facilities and evaluations (audits)
- Draft in review at DOE
 - Anticipated publication: late August/early September



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
- Recommended “course of study”: completion of 32 course hours



Scope of Facility Energy Managers

- 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”.

Total Reported Energy-Using Sq. Ft. / 5,000,000 Sq. Ft. = Required # of Energy Managers

Results over 0.5 are rounded up to a full time employee and fractional amounts less than 0.5 can utilize a part time employee. For example:

Installations from 2.5 to 5 million square feet: 1 full-time energy manager

Installations from 7.5 to 10 million square feet: 2 full-time energy staff



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



Designation of Facility Energy Managers

- Unique identifier for each designated energy manager
 - Protects privacy of personnel
 - web-based tracking system user ID
- Master list maintained by Interagency Energy Management Task Force member (HQ energy coordinator)



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



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 due: June 16, 2009
 - Recently evaluated facilities (previous two calendar years) may count toward the first set



Commissioning Component of Energy
& Water Evaluations

Sec. 432 Facility Commissioning Requirements

Malcolm Verdict, C.E.M.

Energy Systems Laboratory

Texas A&M University

mverdict@tamu.edu

979-847-8949



August 3-6, 2008



Commissioning Component of Energy & Water Evaluations

432 (f)(3)(B) Commissioning Evaluations

“As part of the evaluation. . . , the energy manager shall identify and assess **recommissioning** measures (or, if the facility has never been commissioned, **retrocommissioning** measures) for each such facility.”



Commissioning Component of Energy & Water Evaluations

‘Recommissioning’ means a process--

- “(i) of commissioning a facility or system beyond the project development and warranty phases of the facility or system; and
- “(ii) the primary goal of which is to ensure optimum performance of a facility, in accordance with design or current operating needs, over the useful life of the facility, while meeting building occupancy requirements.



Commissioning Component of Energy & Water Evaluations

- **Retrocommissioning** means a process -- of commissioning (optimizing performance) a facility or system that was not commissioned at time of construction of the facility or system.



Commissioning Component of Energy & Water Evaluations

432 Guidance Recommends a 2-Step Process

1. **Initial Assessment** [4-8 hrs/bldg] to determine cost & feasibility of detailed facility assessment
2. **Detailed Assessment** [1-4 days/bldg] for identifying opportunities to improve overall performance, comfort, deferred maintenance issues, & preliminary HVAC-related retrofit opportunities



Commissioning Component of Energy & Water Evaluations

What Facilities Are Good Candidates?

- Buildings over 50,000 ft. sq. that are heated and/or cooled with a functional building automation system,
- Central thermal energy & power plants and energy intensive facilities such as data centers, health care & research centers



Commissioning Component of Energy & Water Evaluations

Waiver For Smaller Facilities

- Re/retrocommissioning is required for:
 - buildings > 50,000 ft.2 &
 - buildings > 25,000 ft.2 that house energy intensive operations (i.e. data centers, health care facilities & central utility plants)
- Waiver for <50,000 ft.2 - Generally not cost effective to re/retrocommission



Commissioning Component of Energy & Water Evaluations

Commissioning evaluations are very different from energy audits:

- Focus on performance optimization & energy-related deferred maintenance
- Focus is NOT on identifying energy retrofits
- Typically performed independent of an energy audit
- Process should be ongoing, not just every 4 years
- Paybacks typically less than retrofits (.5 to 3 yrs)
- Expertise required beyond typical energy auditor ~~



Audit Component of Evaluations



Audit Component of Evaluations

- Audit report is based on the ESPC Preliminary Assessment (PA) level audits
 - also referred to as Initial Proposal (IP)
- 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



Remaining Requirements to be Addressed

- Implementation of Identified ECMs
 - guidance on identifying sources of investment
 - Direct funding, ESPC, UESC,
- Follow-up on Implemented Measures
 - Measurement & Verification
- Web-Based Tracking/Certification
- Benchmarking System and Guidance



Insights into Web-Based Facility Tracking

Karen Curran

General Services Administration
Energy Center of Expertise



Web-Based Tracking Requirements

- Deployed by Dec. 19, 2008
- Certify Compliance for...
 - Energy and Water Evaluations
 - Implementation of Energy and Water Measures
 - Follow-up on implemented measures
- Web-Based Tracking System should track:
 - Covered facilities
 - Status of meeting requirements for compliance
 - Estimated cost and savings for measures required to be implemented
 - The measured savings and persistence of savings for implemented measures
 - Benchmarking information required to be disclosed



Web-Based Tracking Requirements (Cont'd)

- **Ease of Compliance – ensure that...**
 - Accomplished with streamlined procedures and templates to minimize demands of Federal employees
 - Coordinated with other reporting requirements
- **Availability**
 - Web-based tracking system required to be available to Congress, other Federal Agencies, and the public through the Internet
 - Exemptions – allowed for national security purposes
- Requirements only apply to “Covered Facilities”



GSA Thoughts

- Simple way to transfer data already present in our own systems into the deployed system
- Minimize the duplication of effort
- Firewall concern and HSPD12 Issues
 - Publicly available data requirement will be difficult given IT security issues we have experienced



Current GSA Systems

- Inside GSA firewall
- EUAS and ECOE Project DB have enhancements in progress now
- EUAS – Energy Usage and Analysis System
 - Records energy and water consumption and costs
 - Categorizes inventory for ease of reporting
 - User friendly reporting
- ECOE Project Database
 - Tracks energy projects from submission forward
 - Includes funded and financed projects



ECOIE Project DB

- Captures many of the required fields for Web-based certification system
- Current planned enhancements include more customized reporting and better searching capabilities
- Envision connecting with contracting database for direct feed for award and substantial completion dates

ECOE Project Database

ECEM - Project Maintenance - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Refresh Home Search Favorites

Address <http://159.142.200.171/Project/Project.asp> Go

GSA Energy Center of Expertise Database

[HOME](#) [Project Maintenance](#) [Contacts](#) [User Maintenance](#) [Admin](#) [Logout](#)

View Projects

To view or edit an existing project, search for the project using any of the following filters below and click on the Search Now button. If you wish to add a new project click on Add New Project.

Project Type: Fully-Funded

Building Number:

PCN:

Status: All

- All
- Approved Energy Project
- Approved-Funds Available
- Approved-Regional Funds
- Approved-Withdrawn
- Being Implemented
- Completed
- FY07 Submission
- FY08 Submission
- FY09 Submission
- Not Approved For Energy Funds

Done Trusted sites

www.governenergy.gov

August 3-6, 2008

ECOE Project Database

ECEM - Project Maintenance - Microsoft Internet Explorer

File Edit View Favorites Tools Help

GSA Energy Center of Expertise Database

HOME Project Maintenance Contacts User Maintenance Admin Logout

Add New Project or click on a project to edit an existing project.

Region: 0 -- [View Projects in All Regions](#)

Project List as of 7/31/2008

Reg	Project	Building	Project Type	Bldg#	PCN	Status
1	Lighting Retrofit / Occupancy Sensor	CPT JF Williams CG and Federal Building Thomas P. O'Neill, Jr. Federal Building	Fully-Funded	MA0011ZZ MA0153ZZ	VMA01020	Approved-Funds Available
1	O'Neil Bldg recommissioning	O'Neill	Fully-Funded	MA0153ZZ	VMA01065	Approved-Funds Available
1	O'Neill RetroCommissioning Measures	Thomas P. O'Neill, Jr. Federal Building	Fully-Funded	MA0153ZZ	VMA01151	Approved-Funds Available
1	Providence Courthouse Re-commission	Pastore	Fully-Funded	RI0010ZZ	VRI01068	Approved-Funds Available
1	PV System / Wind potential	North Troy Border Station Highgate Springs Border Station Burlington FB	Fully-Funded	VT0756BT VT0057ZZ VT0024ZZ	IVT00743	Approved-Funds Available
1	Repair Solar DHW Sites	Smith FB Muskie FB	Fully-Funded	ME0061ZZ ME0068ZZ	VME01147	Approved-Funds Available
1	Various Energy Measures - Gignoux FB, Portland, ME	Gignoux Federal Court House	Fully-Funded	ME0034ZZ	VME01152	Approved-Funds Available
1	VENDING MISER: all Region machines		Fully-Funded			Approved-Funds Available
1	Wind Turbine Study	Jackman Border Station	Fully-Funded	ME0823BJ	VME01260	Approved-Funds Available

Done Trusted sites

ECOIE Project Database

ECEM - Edit Project - Microsoft Internet Explorer

File Edit View Favorites Tools Help

 **Energy Center of Expertise Database**

HOME Project Maintenance Contacts User Maintenance Admin Logout

Project Financial Funding ECM Contacts Building Equipment Monitoring

Edit Project Project Last Updated: 9/10/2007 13:59 Approximate Percent Complete: %

Enter any project specific information here and click the Add or Save Changes button. Click Delete to delete this project and all information related to it.

Project Name: *

Energy Coordinator: * (admin only - if not in the list, the energy coordinator must be created.)

Description:

Project Type: * **Contract Awarded:** (mm/dd/yyyy)

Project Priority: * **Project Status:** *

PCN: **Project Created:** 10/23/2006

Renewable Energy Component: **Total ECM Annual Energy Savings:** 5,979.50 MMBTU/yr

Funding Requested: \$1,560,708.00 **ECOIEID:** 03-07-00473

Done Trusted sites

ECOE Project Database

ECM - Financial - Microsoft Internet Explorer

File Edit View Favorites Tools Help

HOME Project Maintenance Contacts User Maintenance Admin Logout

Project Financial Funding ECM Contacts Building Equipment Monitoring

Financial - Energy Conservation Opportunities at US Ctise Minneapolis, MN

Enter any financial information and click 'Save Changes'. You may also upload any supporting documentation for this project. To do this, click 'Select Supporting Documentation' and browse for the document that you wish to upload. Click 'Add File' and the file will be displayed in 1 of the 3 text boxes. Click 'Save Changes' to attach the file to the project. You may attach up to 3 files before you must click the 'Save Changes' button. Please wait for the files to upload.

ECOeid: 05-08-00595

Funding Requested:	<input type="text" value="351,243.00"/>	\$	Simple Payback:	<input type="text" value="5.06"/>
Actual Project Investment:	<input type="text" value="0.00"/>	\$	SIR:	<input type="text" value="2.84"/>
Substantial Completion Date:	<input type="text"/>	(mm/dd/yyyy)	Savings Resulting from Funded Amount:	<input type="text" value="69,392.00"/>

Total Project Annual Cost Savings: \$69,392.00

M&V Methods:

Notes: KC -Energy Center received supporting information and BLCC reports.

Cancel Save Changes

Select Supporting Documentation

Done Trusted sites

ECOIE Project Database

ECIE - Funding - Microsoft Internet Explorer

File Edit View Favorites Tools Help

GSA Energy Center of Expertise Database

HOME Project Maintenance Contacts User Maintenance Admin Logout

Project Financial Funding ECM Contacts Building Equipment Monitoring

Funding - Schwartz FB - Various ECMs-->

To add a new Funding item, simply enter the information, and click on the Add button below. To edit an existing record, click on the date and change the appropriate information. To delete existing data, click on the X next to each item.

ECOIEID: 09-04-00283

Date Funds Authorized: (mm/dd/yyyy) Amount: \$

Budget Activity: Source:

Description:

ASID:

Date	B/A	Source	Amount	Description	ASID
04/20/2005	55	Energy Line Item	523,113.00	FY05 Funding Phase1	VCA00872
07/15/2005	55	Energy Line Item	70,540.00	FY05 Phase 2 Funding	VCA00872
Total Funds Available:			593,653.00		

Done Trusted sites

ECOE Project Database

ECOE - ECM - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Project Financial Funding ECM Contacts Building Equipment Monitoring

ECM - CMS Energy Conservation Measures-->

To add a new ECM item, simply enter the information, and click on the Add button below. To edit an existing record, click on the ECM Number and change the appropriate information. To delete existing data, click on the X next to each item.

Project ECM Number: * ECOEID: 03-07-00473

ECM Title: *

Total Annual Energy Savings: (MMBTU/Yr) Implementation Expense: \$

Estimated Annual Energy Cost Savings: \$ Finance Contractor Markup: %

Other Annual Cost Savings: \$ ECM Total Cost: 0.00 \$

Total Estimated Annual Cost Savings: 0.00 \$ Simple Payback: 0 (years)

Annual Water Savings: (Kgal/Yr)

Add

	ECM Number	ECM Title	Total Annual Energy Savings (MMBTU/Yr)	Estimated Annual Energy Cost Savings	Other Annual Cost Savings	Total Estimated Annual Cost Savings	Total Implementation Cost	Simple Payback (years)
X	1	Add VSD to heating pumps	279.10	7,973.00	0.00	7,973.00	30,967.00	3.88
X	2	Replace office and corridor lighting	5,700.40	171,603.00	0.00	171,603.00	1,529,741.00	8.91

Done Trusted sites



GSA Benchmarking Approach

- Assign Regional Energy Targets
- Utilize EUAS Reports
 - Comparison over baseline years
 - Sorted bldg report to compare to other GSA bldgs by category type or location
- Building Benchmarking Report – Deployed for testing Aug 18th
 - Compare specific building to the Regional Avg, CBECS data, and Regional Target



Benchmarking System

- By Dec.19, 2008, system selected or developed and guidance for use of the system issued
- Energy Managers must enter energy use data for each metered building that is a covered facility
- Disclosure
 - Updated each year and include previous years' info to allow tracking of building performance over time



Benchmarking: Facility Types

- Recognize limitations for benchmarking particular building types
- Establish benchmarking building types:
 - Education
 - Food Sales
 - Food Service
 - Health Care
 - In-patient
 - Walk-in clinics
 - Housing (residential)
 - Industrial
 - Laboratories, R&D
 - Lodging, prisons, barracks
 - Mercantile
 - Office
 - Public Assembly
 - Public Order and Safety
 - Service, Post offices
 - Warehouse and Storage
 - Museums
 - Libraries



For More Information (EISA 432 in general)

- Would you like to know more about this subject?
- Chris Tremper
U.S. Department of Energy, EE-2L
1000 Independence Avenue, SW
Washington, DC 20585
- chris.tremper@ee.doe.gov
- 202-586-7632

Don't forget to fill out and drop off your session evaluations!



For More Information (GSA insights into Web-based tracking/benchmarking)

- Would you like to know more about this session?
- Karen Curran
General Services Administration
Energy Center of Expertise
- Karen.curran@gsa.gov

Don't forget to fill out and drop off your session evaluations!



For More Information (Re/retro-commissioning)

- Would you like to know more about this session?
- Malcolm Verdict, C.E.M.
Associate Director, Energy Systems Laboratory
Texas A&M University
3581 TAMU, 215 WERC
College Station, TX 77843-3581
- 979-847-8949
- email: mverdict@tamu.edu
- <http://esl.eslwin.tamu.edu/>

Don't forget to fill out and drop off your session evaluations!