

Charting a Course to Energy Independence

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Federal Efficiency Goals & Reporting Requirements for Specialty Buildings

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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.



Evolution of Energy Reduction Goals

- Prior to EPAct 2005, energy reduction goals varied by facility type, per Clinton E.O. 13123:

Standard facilities	30-percent reduction by FY 2005 35-percent reduction by FY 2010 (below FY 1985 baseline)
Industrial/laboratory facilities	20-percent reduction by FY 2005 25-percent reduction by FY 2010 (below FY 1990 baseline)

- EPAct 2005 amendments combined these sectors into one goal-subject category for energy reduction goal
 - Created **single** energy reduction target for all federal facilities, regardless of building type



Historical Progress Toward Industrial/Laboratory Goal 1990-2005

	FY 1990			FY 2005				FY 2005 (unadjusted)		
	GSF (Thou.)	Billion Btu	BTU/GSF	GSF (Thou.)	Billion Btu	BTU/GSF	%Δ 1990-2005	Billion Btu	BTU/GSF	%Δ 1990-2005
USDA ^{1†}	13,403.8	2,416.2	180,262	14,533.3	1,375.0	94,612	-47.5	1,375.9	94,672	-47.5
EPA†	2,090.0	747.0	357,414	3,706.7	793.5	214,065	-40.1	1,310.3	353,485	-1.1
TVA	404.9	112.2	277,180	404.9	75.2	185,799	-33.0	75.2	185,799	-33.0
GSA†	10,071.3	4,354.0	432,313	20,288.5	5,893.5	290,487	-32.8	5,959.8	293,751	-32.1
IBB	1,012.5	1,406.9	1,389,496	962.6	910.8	946,187	-31.9	910.8	946,187	-31.9
DOE†	18,852.8	7,507.9	398,237	24,291.2	7,083.7	291,615	-26.8	7,269.6	299,269	-24.9
DOC†	3,090.6	976.6	315,975	5,717.2	1,358.9	237,678	-24.8	1,552.0	271,454	-14.1
DOD†	183,779.2	39,209.1	213,349	158,230.2	26,459.4	167,221	-21.6	27,239.7	172,152	-19.3
HHS ^{2†}	18,294.7	7,738.3	422,981	24,567.2	8,482.0	345,258	-18.4	8,494.6	345,768	-18.3
TRSY†	7,018.5	1,773.8	252,734	9,005.7	1,865.1	207,103	-18.1	1,891.7	210,054	-16.9
NASA†	12,787.9	4,142.9	323,972	12,159.8	3,303.9	271,710	-16.1	3,469.3	285,309	-11.9
SSA ³	611.3	215.5	352,599	611.0	183.5	300,362	-14.8	183.5	300,362	-14.8
TOTAL	271,417.5	70,600.4	260,117	274,478.3	57,784.6	210,525	-19.1	59,732.3	217,621	-16.3

¹USDA Agricultural Research Service laboratory facilities consumption is measured in Air-Quality Adjusted Btu/Square Foot.

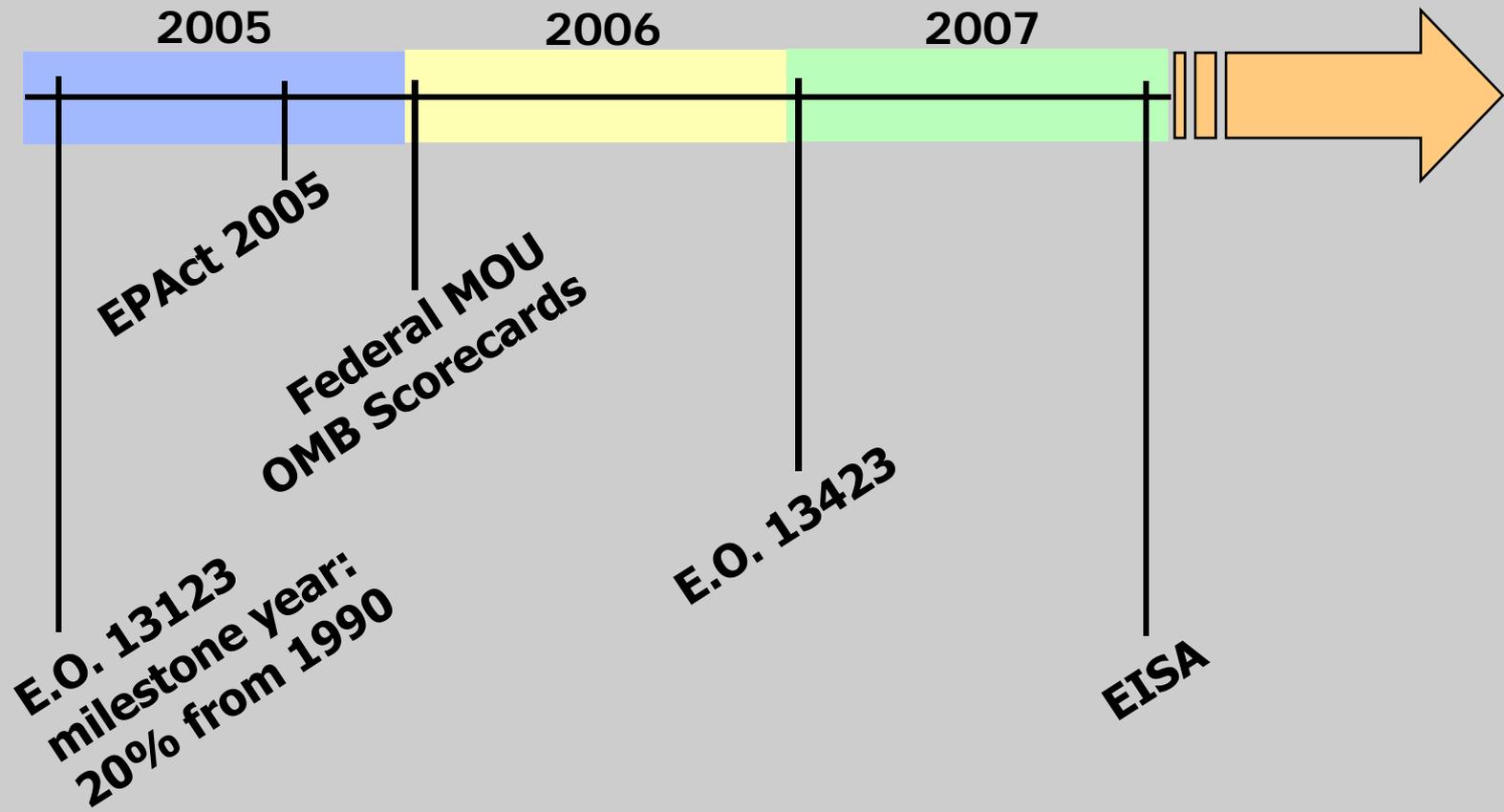
²HHS/NIH adjusted its baseline to account for mandated air quality improvements in later years.

³Indicates estimated baseline

†Indicates that reductions were made to FY 2005 energy use and Btu/GSF (shown in italics) to reflect purchases of renewable energy.



Recent Timeline of Legislation and Mandates





Federal Energy-Related Legislation & Mandates

- Energy Policy Act of 2005 (EPAAct 2005)
- Federal Leadership in High Performance and Sustainable Buildings Memorandum of Understanding (MOU)
- Office of Management and Budget (OMB) Scorecards
- Executive Order (E.O.) 13423
- Energy Independence and Security Act of 2007 (EISA)



Federal Facility Categories for Energy/Sustainability Requirements

Federal Real Property Profile

EISA Sect. 432 "Covered Facilities"

Buildings Subject to 30% Energy Reduction Goal

Gov't Owned Space

Leased Space

- Sustainable G.P. Compliant
- Energy Star Labeled
- GSA Delegated

Full Service Leases

Proposed Buildings

Owned:
30% more efficient than ASHRAE;
Eliminate fossil use by 2030

Leased:
Energy Star after 2010

Goal Excluded

Goal Excluded

D&D





Federal Energy Efficiency Requirements

- **EPAAct 2005**
 - **2-percent** annual reduction in energy intensity
 - Cumulative **20-percent** reduction by FY 2015 (compared to FY 2003 baseline)
- **E.O. 13423**
 - **3-percent** annual reduction in energy intensity
 - Cumulative **30-percent** reduction by FY 2015 (compared to FY 2003 baseline)
- **EISA**
 - Adopted E.O. 13423 requirements



Energy Intensity Goal Exclusions

What Federal buildings are subject to the goals and what are the criteria for excluding them from the goals?

Type of Building/Structure	Criteria for Goal Exclusion	Reporting Requirement
Non-Federal Building where tenant agency receives no energy bills (No Expectation to Report)	None required	None
Structures and Processes Not Qualified as Federal Buildings (Assumed Excluded)	None required	<ul style="list-style-type: none">• Identity of Structure/Process• Energy consumption & costs• Square footage (if applicable)
Federal Buildings Excluded from Energy Performance Requirements	<ol style="list-style-type: none">1. Impracticability due to energy intensiveness or national security function2. Completed energy management reports3. Compliance with all energy efficiency requirements4. Implementation of all cost-effective energy projects in the building	<ul style="list-style-type: none">• Identity of Building• Energy consumption & costs• Square footage



Non-Federal Buildings (No Expectation to Report)

- Buildings that are privately owned but happen to be co-located on Federal lands or military installations
 - fast food restaurants
 - credit union buildings
 - privatized family housing on military bases
- Buildings with Fully-Serviced Leases
 - Landlord is responsible for paying energy bills
 - Agency has little control over building operations



Structures/Processes Assumed to be Excluded

- Outside parking garage, airport, and street lighting not directly associated with a building
- “Cold Iron Energy” consumed by Federal ships
- Buildings where energy usage is skewed significantly
 - buildings entering or leaving the inventory during the year, down-scaled operationally to prepare for disposal, or undergoing major renovation and/or major asbestos removal
- Certain types of leased space where:
 - the Government may pay for some energy but not all,
 - the space comprises only part of a building, or
 - the expiration date of the lease limits the ability to undertake energy conservation measures.
- ***Separately-metered*** energy-intensive loads that are driven by mission and operational requirements
 - training simulators, health-care equipment, facilities which generate and/or transmit electricity or steam, waterway shipping locks, and transmitters and other types of electronic installations.



Criteria for Excluding Federal Buildings

For each Federal building (or collection of buildings) to be excluded, the agency must demonstrate four critical findings:

- Energy requirements are impracticable based on:
 - the energy intensiveness of activities carried out in the Federal building or collection of Federal buildings; or
 - the fact that the Federal building or collection of Federal buildings is used in the performance of a national security function.
- All Federally required energy management reports have been completed and submitted
- Agency has achieved compliance with all energy efficiency requirements
- Implementation of all practicable, life cycle cost-effective projects at the excluded building(s)



Some Advice Regarding Exclusion of Specialty Buildings

- Take a portfolio approach to meeting this **agency-wide** energy intensity reduction goal
 - Usually not appropriate to hold specialty buildings to the same performance in the face of varying mission tempo
 - Separately meter and exclude only the process if impact is overwhelming
- Don't exclude facilities that may offer the greatest energy saving opportunities
 - Central plants to cogeneration
 - Process load ECMs



Renewable Energy Requirements

- **EPAct 2005**
 - Requires at least **7.5 percent** of annual electricity consumption to come from renewable sources by FY 2013
- **E.O. 13423**
 - Requires at least **half** of the statutorily required renewable energy to come from “new” sources (i.e., brought into service after January 1, 1999)
- **EISA**
 - Requires **30 percent** of the hot water demand in new federal buildings (and major renovations) to be met with solar hot water equipment, if life-cycle cost-effective



Water Efficiency and Quality Requirements

- **E.O. 13423**
 - Requires federal facilities to reduce annual water consumption intensity by **2 percent** annually for a cumulative reduction of **16 percent by the end of FY 2015** (compared to an FY 2007 baseline)
- **EISA**
 - All development and redevelopment projects at federal facilities having a footprint greater than 5,000 square feet are required to use site planning, design, construction, and maintenance strategies to maintain and restore the predevelopment hydrology (i.e., control stormwater runoff)



Overall Facility Goal Progress

Federal Facility Performance under EPACT and E.O. 13423, FY 2008

Goal/Requirement	FY 2008 Federal Performance (Preliminary)
EO 13423/EISA: Reduce energy intensity (Btu/sq.ft.) by 9 percent compared to 2003; 30 percent reduction required in 2015.	19 of 22 covered agencies exceeded the goal. The government decreased energy use per square foot by 12.4% in FY 2008 relative to FY 2003. (9.4% without additional credits)
EPACT/EO 13423: Use renewable electric energy equivalent to a least 3 percent of total electricity use; at least half of which must come from sources developed after January 1, 1999.	16 of 22 agencies met the goal. The government purchased or produced renewable energy in FY 2008 equivalent to 3.4% of electricity use.
E.O. 13423: Reduce water consumption intensity (Gal/sq.ft.) relative to 2007 baseline, by 2 percent annually; 16 percent by the end of fiscal year 2015.	18 of 22 agencies met the goal. The government reduced water use per square foot by 2.9% in FY 2008 compare to FY 2007.



Energy and Water Audit Requirements

- **EOs 13123/13423**
 - Required(s) annual energy and water audits of **at least 10 percent** of facility square footage
- **EISA**
 - Agencies must designate “covered facilities” comprising at least 75% energy use
 - Each covered facility must have a designated energy manager responsible for:
 - ◆ Completing comprehensive energy and water evaluation audits for **at least 25 percent** of all “covered” facilities each year
 - ◆ Implementing identified energy conservation measures (ECMs)
 - ◆ Following up on implemented ECMs



Advanced Metering Requirements

- **EPAAct 2005**
 - Requires metering of individual buildings; advanced meters for **electricity** at all federal facilities, where cost-effective, by **October 1, 2012**
- **EISA**
 - Requires metering of individual buildings; advanced meters for **natural gas and purchased steam** at all federal facilities, where cost-effective, by **October 1, 2016**



High Performance Building Requirements

- **EPA Act 2005**
 - Requires newly constructed federal buildings be designed to use at least **30 percent** less energy than specified in the American Society of Heating, Refrigerating, and Air-Conditioning Engineers (ASHRAE) standard 90.1-2004, where life-cycle cost-effective
- **Federal High Performance/Sustainable Buildings MOU**
 - Requires federal buildings be designed to earn the ENERGY STAR® label for new construction and major renovations.
 - **New construction:** reduce energy use **30 percent** below ASHRAE 90.1-2007
 - **Major renovations:** reduce energy use **20 percent** below pre-renovation 2003 baseline



High Performance Building Requirements

- **Federal MOU (ENERGY STAR)**
 - For commercial and institutional buildings, ENERGY STAR offers ratings & recognition for the 11 most common space types.
 - Industrial - ENERGY STAR offers 5 ratings & recognition for industrial plants.
 - ENERGY STAR offers rating but not recognition for Municipal Water Treatment Plants.
 - ENERGY STAR is working on a number of new ratings
 - Non-standard buildings are difficult for ENERGY STAR to develop ratings for
 - For existing specialty buildings, building owners can use ENERGY STAR's Portfolio Manager tool track and benchmark a sites performance against itself, over time



High Performance Building Requirements (cont'd)

- **E.O. 13423**
 - New construction/renovation/extension of leases
 - ◆ All federal agencies are required to address each of the MOU's "Guiding Principles"
 - Existing buildings
 - ◆ By 2015, federal agencies are required to incorporate the sustainable practices of the MOU's "Guiding Principles" in at least **15 percent** of an agency's full building inventory



High Performance Building Requirements (cont'd)

- **EISA**

- Established a Federal High-Performance Green Buildings Office and Advisory Committee at GSA, headed by the Federal Director
- Established a Commercial High-Performance Green Buildings Office at DOE, headed by the Commercial Director
- By 2010, federal agencies will be required to lease space that has earned the ENERGY STAR label in the most recent year
- Federal buildings overseen by GSA must be equipped with ENERGY STAR-qualified lighting fixtures and bulbs or those designated by DOE's Federal Energy Management Program



Zero Energy/Carbon Neutrality Requirements

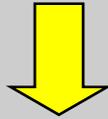
- **EISA**
 - Established a zero-energy commercial buildings initiative
 - ◆ National goal to achieve zero net energy use for commercial buildings built after 2025
 - ◆ Retrofit all pre-2025 buildings to zero net energy use by 2050
 - Requires federal energy-related carbon neutrality
 - ◆ For all new federal buildings and major renovations, fossil fuel-generated energy consumption must be **eliminated by 2030**



Federal Energy Reporting Process

Annually

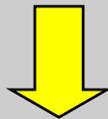
- Agencies submit *Annual Report on Energy Management* to DOE/OMB



- DOE compiles *Annual Report to Congress on Federal Government Energy Management*

Biannually

- Agencies submit summary of progress on OMB scorecard milestones



- OMB formally evaluates agencies' performance in achieving milestones in a scorecard, which is available for public review



Contact and Links

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- Exclusion Criteria:
http://www1.eere.energy.gov/femp/pdfs/exclusion_criteria.pdf
- EISA Section 432 Covered Facilities Criteria/Evaluation Guidelines
http://www1.eere.energy.gov/femp/pdfs/eisa_s432_guidelines.pdf
- 10 CFR 433 Performance Standards for New Federal Buildings:
http://ecfr.gpoaccess.gov/cgi/t/text/text-idx?c=ecfr&tpl=/ecfrbrowse/Title10/10cfr433_main_02.tpl