

# Energy Efficient Procurement:

## *Why It Matters, What to Do, & Lessons From the Field*

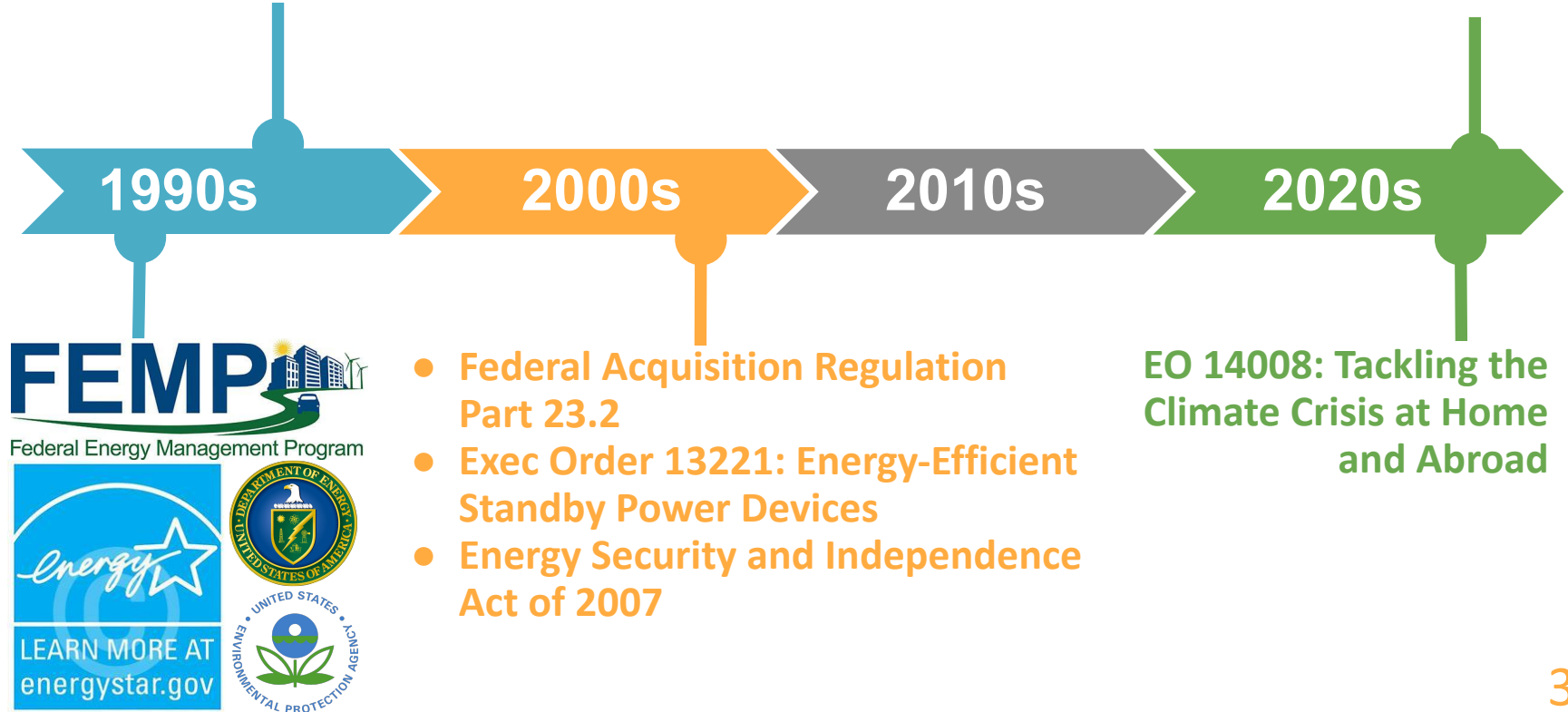




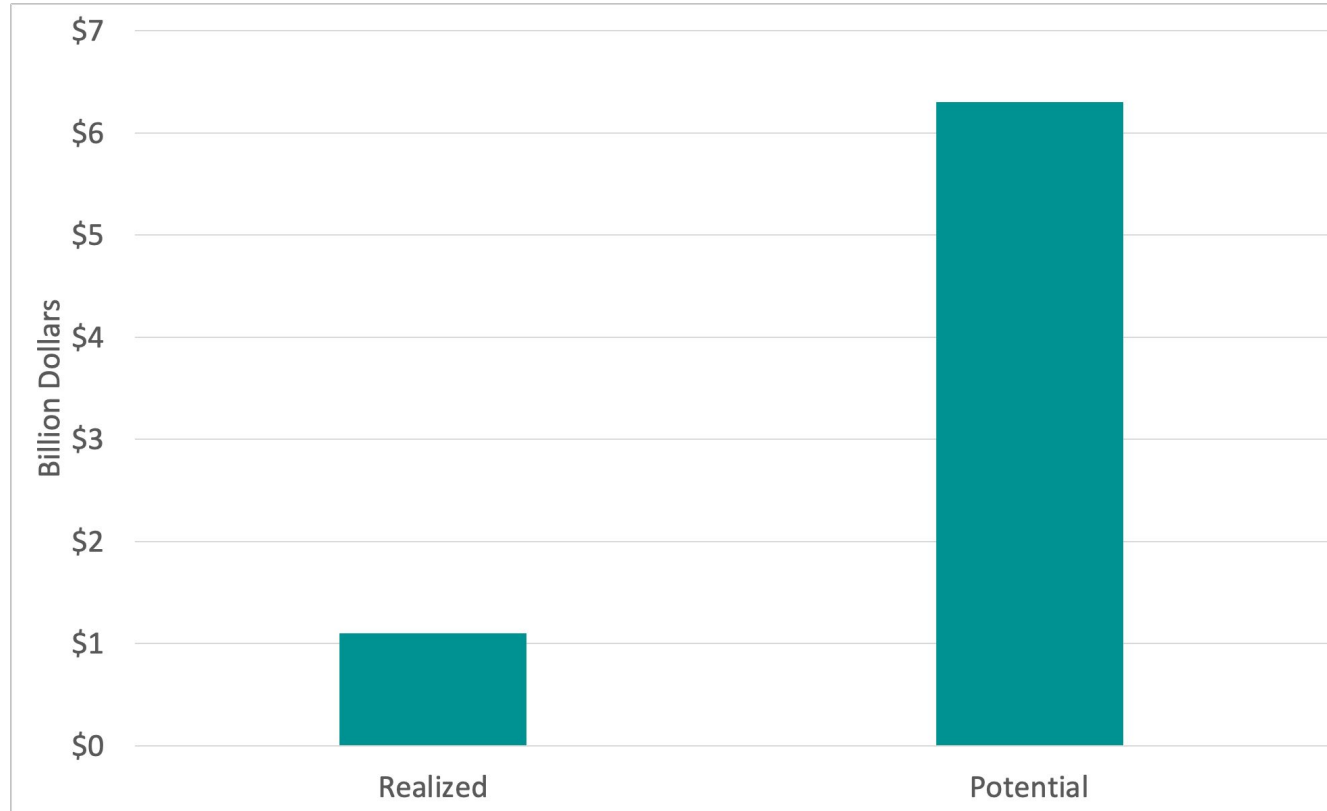
# Why is it important to buy energy-efficient products?

## Energy Policy Act of 1992

## EO 13990: Protecting Public Health and the Environment and Restoring Science To Tackle the Climate Crisis



# Energy Cost Savings





# Purchasing Challenges

1. Unclear Contracting Language
2. Lack of Feedback
3. Competing Organizational Priorities

# Challenge 1: Unclear contracting language for vendors

**Tip #1:** Emphasize energy-efficiency in multiple sections of the solicitation

# Unclear language lead to missed savings

Commonly solicited products	Missed lifetime energy cost savings	Missed lifetime GHG Savings (ton CO2 eq)
One residential split air-conditioner	\$ 541	4
One residential boiler	\$ 780	9
One ice machine, air-cooled	\$ 1,633	21



**Specify energy efficiency requirements and communicate these requirements using five key sections of the solicitation:**

- Section C. Statement of Work/Description
- Section C. Technical Specifications
- Section I. Contract Clauses
- Section L. Instructions to Offerors
- Section M. Evaluation Factors



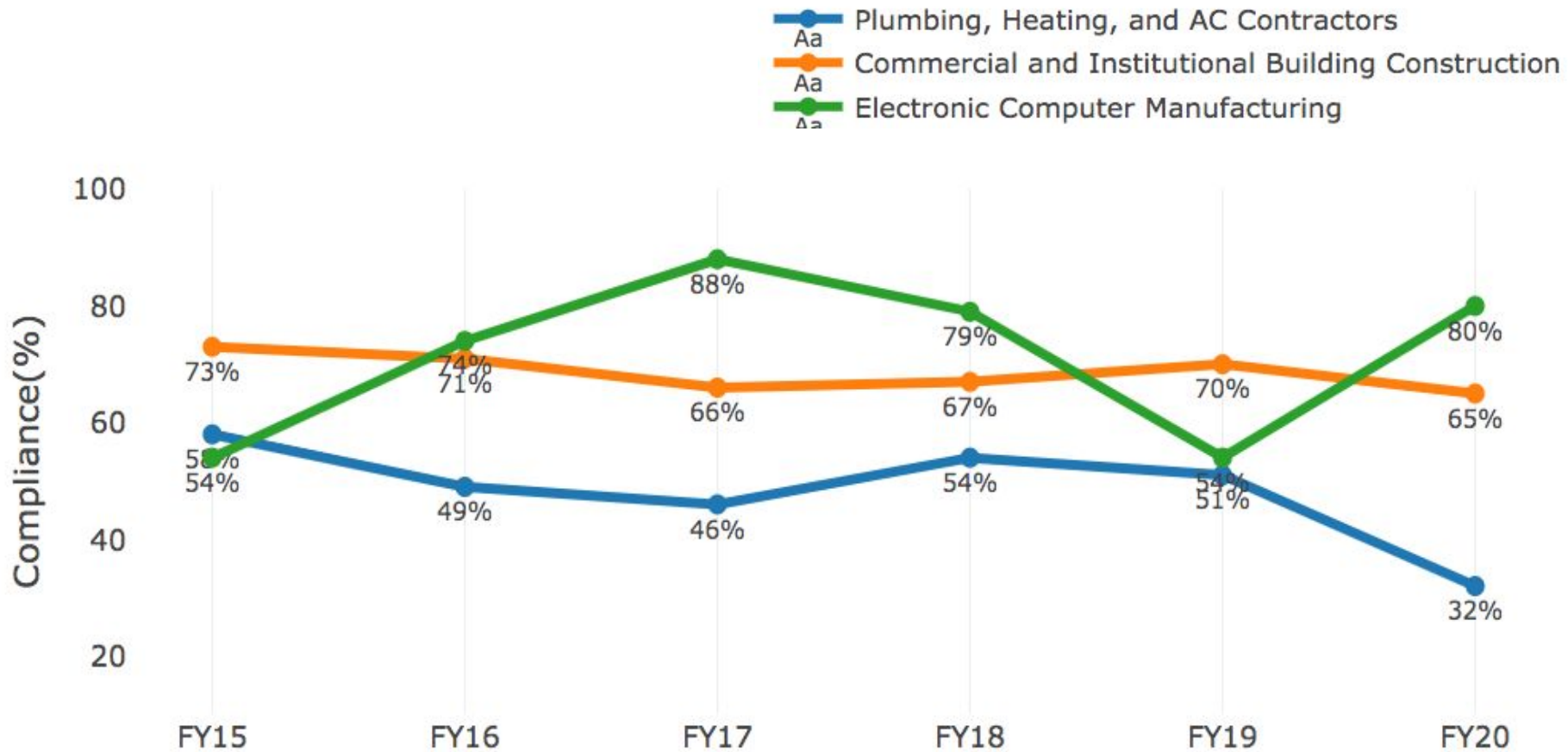


A - Solicitation/Contract Form	6
B – Bid Schedule	7
C - Description/Specifications	8
D – Packaging and Marking	9
E – Inspection and Acceptance	10
F – Deliveries or Performance	11
G – Contract Administration Data	12
H – Special Contract Requirements	14
I – Contract Clauses	15
J – List of Documents, Exhibits and Other Attachments	20
K - Representations, Certifications, and Other Statements of Bidders	21
L – Instructions, Conditions, and Notices to Bidders	24
M- Evaluation Factor for Award	27

# Challenge 2: Lack of procurement feedback

**Tip #2:** Dive into your procurement data

More than **60%** of survey respondents reported that they **do not receive any type of feedback** that enables them to **evaluate compliance** with energy-efficiency requirements for purchasing.





# Challenge 3: Competing priorities

**Tip #3:** Understand your agency's organizational context

# Change requires intention





# How can FEMP help your agency meet energy goals?

Purchasing Energy-Efficient Water-Cooled Electric Chillers

Home » Facility & Fleet Optimization » Energy-Efficient Products » Product Search » Purchasing Energy-Efficient Water-Cooled Electric Chillers

The Federal Energy Management Program (FEMP) provides acquisition guidance for water-cooled electric chillers, a product category covered by FEMP efficiency requirements. Federal laws and requirements mandate that agencies purchase ENERGY STAR-qualified or FEMP-designated products in all product categories covered by these programs and in any acquisition actions that are not specifically exempted by law.

FEMP's acquisition guidance and efficiency requirements apply to water-cooled chillers that provide space cooling in federal buildings. Product performance must be measured in accordance with ISO 5201/590 test procedures. Free-cooling, condensersless, and combination chiller-heat pump units are excluded.

This acquisition guidance was updated in July 2018.

Find Product Efficiency Requirements

Federal purchases must meet or exceed the minimum efficiency requirements in Table 1.

TABLE 1. EFFICIENCY REQUIREMENTS FOR WATER-COOLED ELECTRIC CHILLERS (kW/TON)					
Chiller Type	Capacity (tons)	Full-Load Optimized Applications (Gradients must meet both levels)		Part-Load Optimized Applications (Gradients must meet both levels)	
		Full Load Efficiency	Integrated Part-Load Value (IPLV)	Full Load Efficiency	Integrated Part-Load Value (IPLV)

Electric Chillers, Air-Cooled and Water-Cooled

The table below includes minimum efficiency requirements for the following FEMP-designated covered product categories: [electric chillers, air-cooled](#); and [electric chillers, water-cooled](#).

These ASHRAE 90.1-2013 Table 6.8.1-3 equipment types are excluded: air-cooled absorption, single effect; water-cooled absorption, single effect; absorption double effect, indirect fired; and absorption double effect, direct fired chillers.

WATER-CHILLING PACKAGES: MINIMUM EFFICIENCY REQUIREMENTS				
Equipment Type	Size Category	Units	Minimum Efficiency	
			Path A (Full-Load Optimized Applications)	Path B (Part-Load Optimized Applications)
Air-cooled	<150 t	EER	≥10.40 FL	≥9.70 FL

# n Resources

Water-cooled, electrically operated positive displacement	≥150 t and <300 t	kW/t	≥10.61 FL	≥10.61 FL
			≤0.54 IPLV	≤0.44 IPLV
Water-cooled, electrically operated positive displacement	≥300 t and <600 t	kW/t	≤0.61 FL	≤0.62 FL
			≤0.52 IPLV	≤0.41 IPLV
Water-cooled, electrically operated positive displacement	≥600 t	kW/t	≤0.56 FL	≤0.58 FL
			≤0.50 IPLV	≤0.38 IPLV
Water-cooled, electrically operated centrifugal	<150 t	kW/t	≤0.61 FL	≤0.69 FL
			≤0.55 IPLV	≤0.44 IPLV
Water-cooled, electrically operated centrifugal	≥150 t and <300 t	kW/t	≤0.61 FL	≤0.63 FL
			≤0.55 IPLV	≤0.40 IPLV
Water-cooled, electrically operated centrifugal	≥300 t and <400 t	kW/t	≤0.56 FL	≤0.59 FL
			≤0.52 IPLV	≤0.39 IPLV
Water-cooled, electrically operated centrifugal	≥400 t and <600 t	kW/t	≤0.56 FL	≤0.58 FL
			≤0.50 IPLV	≤0.38 IPLV
Water-cooled, electrically operated centrifugal	≥600 t	kW/t	≤0.56 FL	≤0.58 FL
			≤0.50 IPLV	≤0.38 IPLV

Technical Resources

FEMP-Designated Product

FEMP has calculated that a 125-ton water-cooled positive displacement chiller meeting the required 0.715 kW/ton efficiency level saves money if priced no more than \$8,200 above the less efficient model. The best available model saves the average user more \$13,000 above the less efficient model. Table 2 compares these types of product purchases and calculates the lifetime cost savings of purchasing efficient models. Federal purchasers can assume products that meet FEMP-designated efficiency requirements are life cycle cost-effective. FEMP provides cost calculators that enable comparison between the cost-effectiveness of chillers of different efficiency levels.

TABLE 2. LIFETIME SAVINGS FOR AN EFFICIENT 125-TON WATER-COOLED POSITIVE DISPLACEMENT CHILLER IN A FULL-LOAD APPLICATION				
Performance	Best Available	Required Model	Less Efficient	
Full Load Efficiency (kW/ton)	0.702	0.715	0.727	
Annual Energy Use (kWh)	175,500	176,800	184,200	
Annual Energy Cost (\$/yr)	\$15,800	\$16,100	\$16,600	
Lifetime Energy Cost (23 years)	\$282,100	\$287,300	\$286,200	
Lifetime Energy Cost Savings	\$13,000	\$8,200	-----	

View the Performance and Model Assumptions for Table 2

Determine When FEMP-Designated Products Are Cost-Effective

An efficient product is cost-effective when the lifetime energy savings (from avoided energy costs over the life of the product, discounted to present value) exceed the additional up-front cost (if any) compared to a less efficient option. FEMP considers up-front costs and lifetime energy savings when setting required efficiency levels. Federal purchasers can assume that ENERGY STAR-qualified products and products that meet FEMP-designated efficiency requirements are life cycle cost-effective. In high-use applications or when energy rates are above the federal average, purchasers may save more if they specify products that exceed federal efficiency requirements, as shown in the Best Available column above.

Claim an Exception to Federal Purchasing Requirements

Products meeting ENERGY STAR or FEMP-designated efficiency requirements may not be life cycle cost-effective



# Contracting for Efficiency Webinar Series





## FEDERAL ENERGY MANAGEMENT PROGRAM



# Federal Energy Management Program

[Laws and Requirements](#)[Training Opportunities](#)[Federal Sustainability Progress](#)

The Federal Energy Management Program (FEMP) works with its stakeholders to enable federal agencies to meet energy-related goals, identify affordable solutions, facilitate public-private partnerships, and provide energy leadership to the country by identifying and leveraging government best practices. [Learn about FEMP.](#)

# Contact us:

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