



U.S. Department of Energy
Energy Efficiency and Renewable Energy

federal energy management program

Energy Management in the Federal Sector

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DOE Federal Energy Management Program
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IAC Student Meeting



Presentation Outline

- Background
 - Education/Work
- Federal Energy Management Program (FEMP)
 - Mission/Goals
 - Services
- Career Opportunities



Background

- Education
 - Degree
 - Internships
- Work
 - Architect of the Capitol



FEMP strives to enhance energy security, environmental stewardship and cost reduction within the Federal Government by:

- advancing energy efficiency and water conservation;
- promoting the use of renewable energy, sustainable building design, and distributed energy resources; and
- improving utility management decisions at Federal facilities



E.O. 13123: Federal Energy Management Goals

- Reduce energy consumption
 - Facility energy per square foot to be reduced by 30 percent in 2005 and 35 percent in 2010 relative to 1985
 - Industrial/laboratory energy to be reduced by 20 percent in 2005 and 25 percent in 2010 relative to 1990
- Expand use of renewable energy
 - 2.5% of Federal facility electricity consumption by 2005
- Reduce greenhouse gas emissions 30 percent by 2010 compared to 1990



New Goals under EPACT 2005

Energy Efficiency

Reduce energy intensity per square foot (in all Federal buildings) by 2% annually from 2006 through 2015 compared to a FY 2003 baseline.

Renewable Electricity Consumption

Goal	Fiscal Year
Not less than 3%	2007-2009
Not less than 5%	2010-2012
Not less than 7.5%	FY 2013 and thereafter



- FEMP is one of 11 programs in DOE's Office of Energy Efficiency and Renewable Energy (EERE)
- FEMP one of the two that focuses on deployment; the other nine are primarily R&D

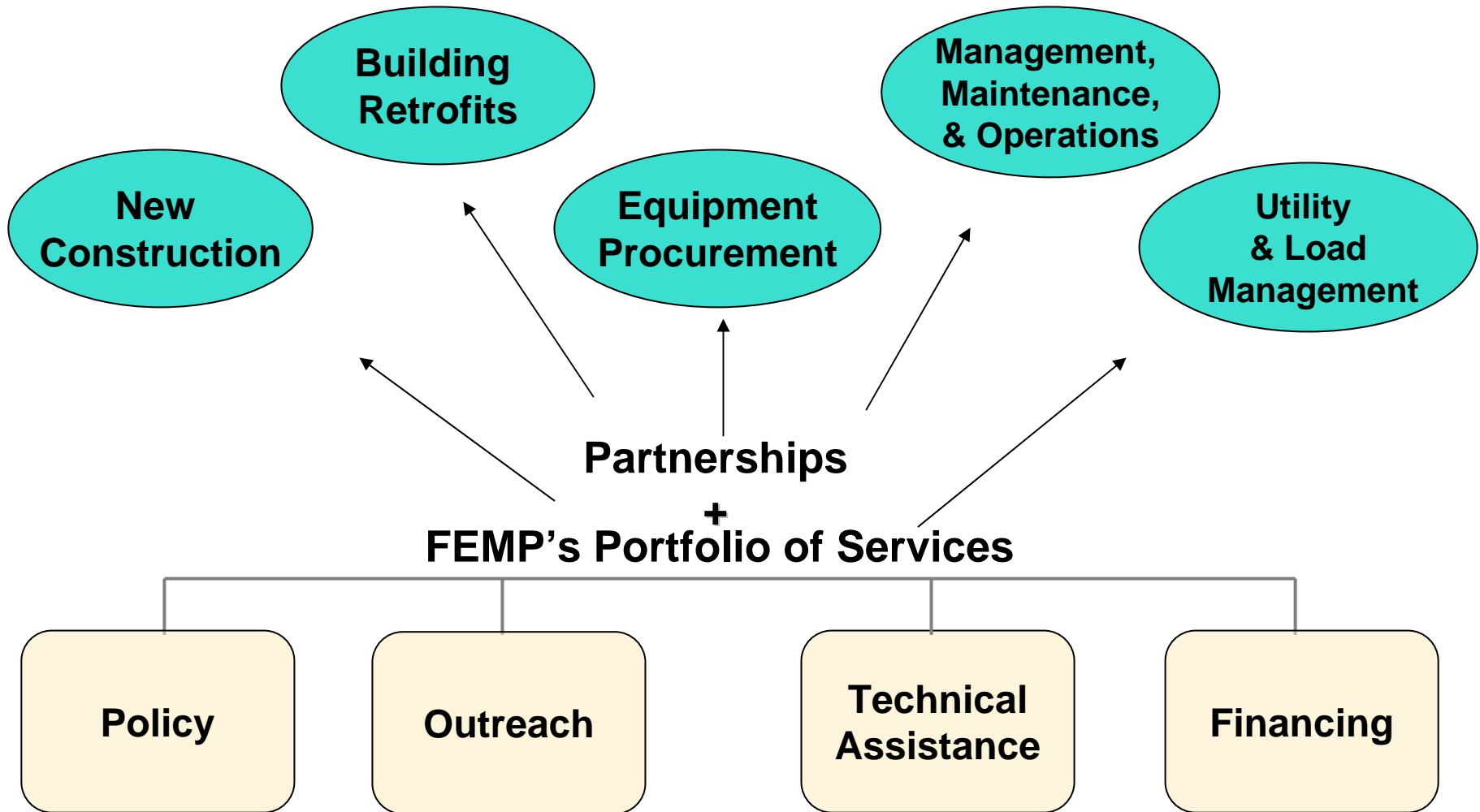


- The Federal Energy Universe
 - 500,000 facilities with a total area of over 3.0 billion sq. ft.
 - 1.7% of our nation's total energy use of approximately 98 quadrillion Btu
 - Annual energy bill \$5.1 billion; 0.5% of total Government expenditures.
- The largest user of energy in the country >>> “Lead by example” cannot be optional, it has got to be mandatory
- Need for an entity to lead the “Lead by Example” effort.





Targeted Opportunities: Customer Needs





Major Activities

- Develop an understanding of R&D technologies
- Identification and analysis of technologies available for deployment.
- Testing and Validation
- Demonstration
- Design assistance
- Training
- Implementation tools
- Publications and outreach



Tech Transfer Initiative: Targeted Approach

- Highly energy efficient products for residential and commercial buildings
- Technologies with potential for large energy savings on a national scale (Lack of market penetration in the Federal sector)
- Products requiring late-stage (two years or less) development prior to commercialization; AND
- Products commercialized, yet not established in the market



- Promotes energy and water efficiency and renewable energy in federal facilities
- Provides cost-effective strategies for both new design and retrofit activities
- Project Assistance examples
 - Screening to identify and prioritize opportunities
 - Feasibility Studies, Life Cycle Cost Analysis
 - Procurement Specifications
 - Design Review
 - Evaluation of LEED and EnergyStar Ratings Assessments
 - Distributed Energy Resources (DER)



New San Francisco Federal Building (GSA)

- Innovative design for mixed mode ventilation
- FEMP TA modeling with EnergyPlus saved \$1.5M in construction costs with \$9M in energy savings projected over 20 year period
- Lessons learned from FEMP TA to 20 GSA projects documented
- FEMP/TA by Lawrence Berkeley National Laboratory (\$30k) & GSA added \$25k





Case Study

29 Palms Marine Corps Air Ground Combat Center

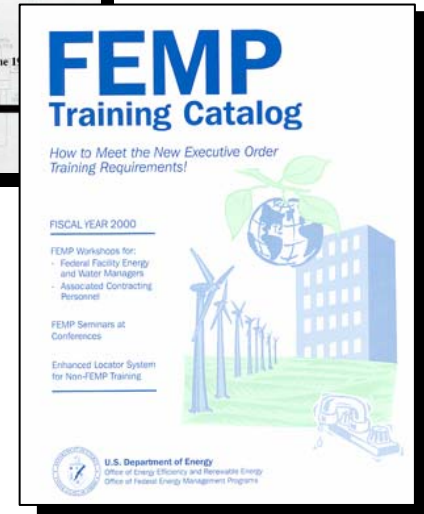
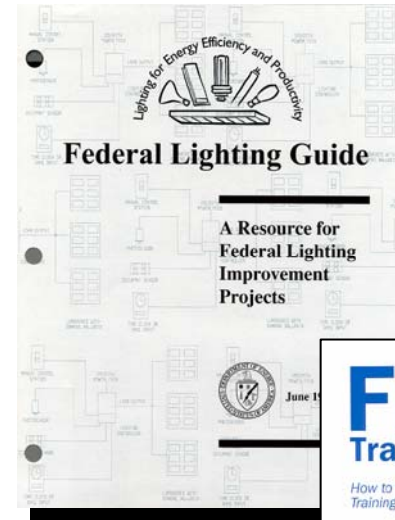
- 7.2-MW dual-fuel cogeneration
- Gas turbine
- Total cost \$18 million
- Annual cost savings \$5.8 million
- FEMP provided independent and unbiased review of design, and contributed to improving efficiency
- Partners
 - EERE DE/CHP Program
 - U.S. Naval Facilities Engineering Service Center (NFESC)
 - Johnson Controls Inc.
 - 29 Palms Marine Corps Air Ground Combat Center
 - Federal Energy Management Program
 - Renewables





Information and Outreach

- Technical Assistance
 - SAVEnergy Audits
 - Design Assistance
 - DER/CHP
 - Renewable Energy /Green Power
 - Labs21
 - Industrial Facilities
 - Alert Audits
- Technical Information Training
 - Software Tools
 - Buying Energy Efficient Products
 - New Technology Demonstration Program
 - Federal Relighting Initiative





Case Study

A series of case studies with 1 year of measured performance data



Heating Water with Solar Energy Costs Less at the Phoenix Federal Correctional Institution"; the first in the "Achieving Results with Renewable Energy in the Federal Government" case study document series, was published in September 04.



*Arraj Courthouse, Denver, CO
(Buildings-integrated
Photovoltaics)*



*Naval Air Station, San Diego, CA
(750 kW PV –2005)*



*NREL Chemical Storage building,
Golden, CO
(Transpired solar collectors -2005)
IAC Student Meeting*



*Social Security Administration
Philadelphia, PA
(Solar water heating –2006)*



Career Opportunities

- FEMP Closely Coordinated with DOE Research Programs
 - DOE National Laboratories
- FEMP Procurement Recommendations
 - Rely on Credible Rating System Based on Significant DOE Research
- FEMP Benefits from Strong Technical Societies
 - Standards
 - Trained Architects, Engineers, ESCOs



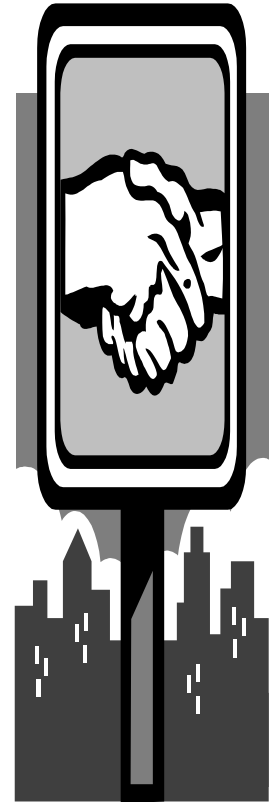
Major Program Partners

- Federal Agencies
- DOE National Laboratories
- Associations
- Utilities
- Equipment Manufacturers
- Industry Partners/Energy Service Companies



How Does Partnering Work?

- **Private partners play key roles:** promote, market, sell, finance, implement
 - ESCOs and Utilities
 - CHP industry & associations (USCHPA, AGCC, IDEA, etc.)
- **FEMP**
 - provides assistance to identify and catalyze projects;
 - offers federal agencies unbiased technical assistance on equipment, design and financing to help agencies secure best-value projects





FEMP Contacts

- Website: <http://www.eere.energy.gov/femp/>
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