



• August 15-18, 2010 • Dallas, Texas •  
• Dallas Convention Center •



# FEMP Services

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Program Manager



Federal Energy Management Program

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- FEMP Mission and Structure
- Key Products and Services
- The Future

NREL's newest PV array at the National Wind Technology Center near Boulder, Colo.



# FEMP: Facilitation Role

FEMP Saves Federal Energy:  
50+ Trillion BTU or almost 25%  
of ALL Federal Improvement

*FEMP is a service organization*

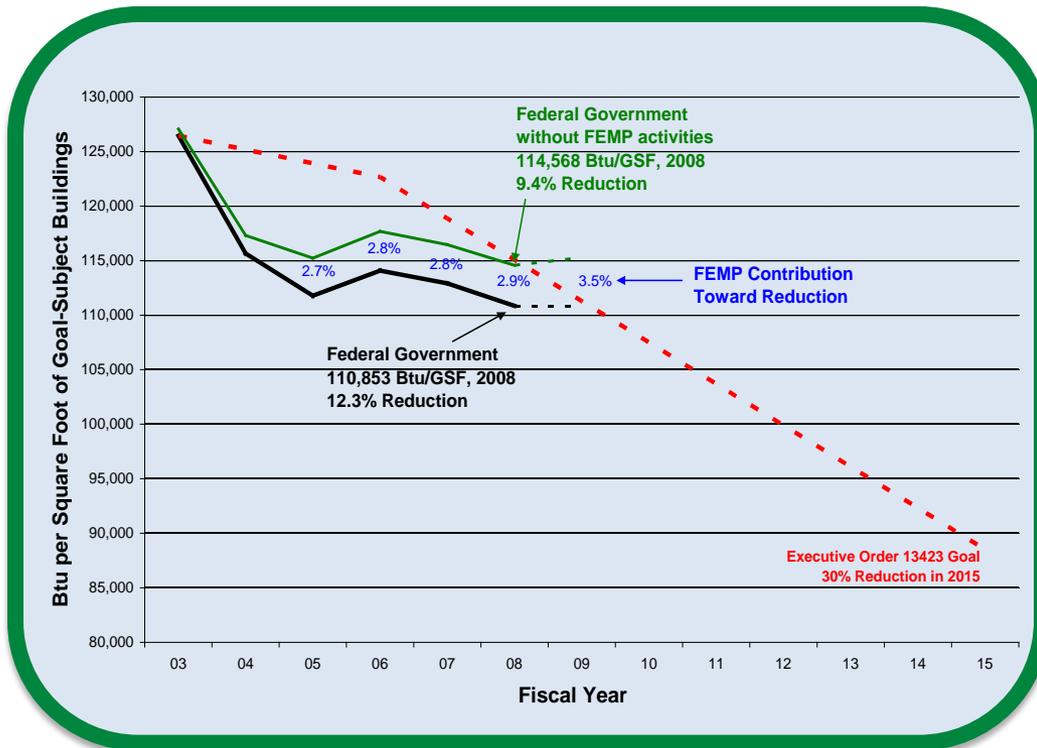
*FEMP has strategic reach into  
ALL Federal Agencies*

*FEMP activity is demand driven  
based on:*

- Total US Government investment levels in energy efficiency/renewables
- Actions of other agencies

*FEMP expands impact of USG  
investments:*

- **Reduces** transaction costs & time to deployment
- **Accelerates** U.S. Government adoption of EE and RE technologies



# The Mission

*FEMP facilitates the Federal Government's Implementation of sound, cost-effective energy management and investment practices to enhance the nation's energy security and environmental stewardship.*



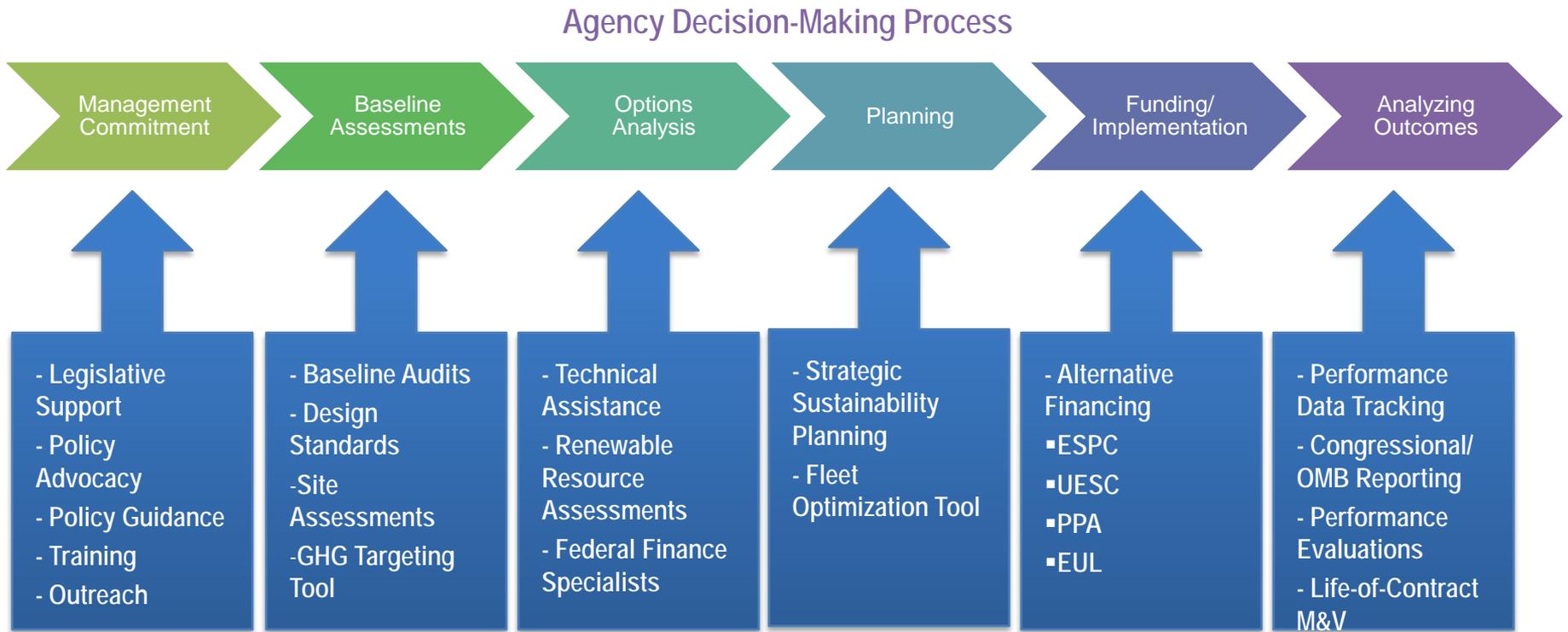
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## **What does this mission mean for a sustainable Federal Government?**

- Federal demand for sustainability is increasing, as is the demand for FEMP services. FEMP's mission is more vital to the Federal Government than ever before.
- FEMP encourages the adoption of sustainable practices, informs agencies about their options, and makes sustainable procurement decisions easier.
- While agencies are ultimately responsible for decisions resulting in sustainability and compliance, FEMP's input helps improve overall quality of such decisions.
- Encouraging Federal agencies to undertake energy management projects is easier if they know support services from FEMP are available.

# FEMP Influence on Agency Process

FEMP activities influence agency decisions toward sustainable outcomes



FEMP Influence at All Levels of Activity

# FEMP Influence – Scope and Reach

What/Who Does FEMP Influence?	To Do What?	How? (Tactics)	To Achieve What Goals?	How Do We Measure Success?
<p><u>Federal Policy Making</u> White House Congress</p>	<ul style="list-style-type: none"> <li>➤ Set meaningful Federal goals</li> <li>➤ Clarify requirements</li> <li>➤ Demonstrate Federal leadership</li> </ul>	<ul style="list-style-type: none"> <li>➤ Promote and support legislation/executive orders                             <ul style="list-style-type: none"> <li>➤ Guidance</li> </ul> </li> <li>➤ Provide expertise to policy makers</li> </ul>	<p>Sustainability Performance goals set forth in Executive Orders and legislation, including:</p> <ul style="list-style-type: none"> <li>➤ GHG reductions</li> <li>➤ Energy conservation</li> <li>➤ Water conservation</li> <li>➤ Renewable energy consumption</li> <li>➤ High-performance sustainable buildings                             <ul style="list-style-type: none"> <li>➤ Sustainable purchasing</li> </ul> </li> <li>➤ Vehicle petroleum reduction</li> <li>➤ Alternative fuel use</li> <li>➤ Sustainable design standards</li> </ul>	<ul style="list-style-type: none"> <li>➤ Adoption of FEMP recommendations                             <ul style="list-style-type: none"> <li>➤ Working relationships with Federal partners</li> </ul> </li> </ul>
<p><u>Agency Leadership</u> Federal Executives Senior Sustainability Officers</p>	<ul style="list-style-type: none"> <li>➤ Achieve agency compliance</li> <li>➤ Set leadership goals</li> <li>➤ Create sustainable policies</li> </ul>	<ul style="list-style-type: none"> <li>➤ Track and report agency progress</li> <li>➤ Interpret regulatory requirements</li> <li>➤ Convene interagency partnerships</li> </ul>		<ul style="list-style-type: none"> <li>➤ Annual performance measurement</li> <li>➤ Feedback across peer networks</li> </ul>
<p><u>Agency Implementation</u> Energy Managers Facility Managers</p>	<ul style="list-style-type: none"> <li>➤ Design sustainable Federal communities</li> <li>➤ Realize value from investments</li> <li>➤ Demonstrate best practices</li> </ul>	<ul style="list-style-type: none"> <li>➤ Training</li> <li>➤ Technical Assistance</li> <li>➤ Share best practices</li> <li>➤ Provide financing options</li> </ul>		<ul style="list-style-type: none"> <li>➤ Demand for FEMP services                             <ul style="list-style-type: none"> <li>➤ Cost/benefit of FEMP services</li> </ul> </li> </ul>
<p><u>Individual Implementation</u> Procurement Human Capital Federal Employees</p>	<ul style="list-style-type: none"> <li>➤ Support markets for sustainable products                             <ul style="list-style-type: none"> <li>➤ Adopt efficient practices</li> </ul> </li> <li>➤ Set examples among peers</li> </ul>	<ul style="list-style-type: none"> <li>➤ Incentivize and award superior performance</li> <li>➤ Provide networks to share expertise and experience</li> <li>➤ Enable sustainable purchases</li> </ul>		<ul style="list-style-type: none"> <li>➤ Surveys                             <ul style="list-style-type: none"> <li>➤ User statistics</li> <li>➤ Success stories</li> </ul> </li> </ul>

# FEMP Service Structure

## Federal Energy Management Program

*Program Manager*

### Project Transaction Services

- Identification of alternative financing options
- Alternative finance training
- Baseline audits
- Project facilitation
- Project evaluation and selection
- Full project life-cycle support
- Commissioning
- Measurement and verification

### Applied Technology Services

- Vehicle fleet management
- Sustainable design
- Greenhouse gas reduction
- Renewable energy
- Water conservation
- Laboratory and data center design
- Operations and maintenance best practices
- Metering
- Efficient products and emerging technologies
- Intra-EERE coordination

### Decision Support Services

- Interagency coordination
- Memoranda of understanding
- Rulemaking and regulations
- Strategic planning
- Annual reporting
- Energy awareness and public engagement
- Budget planning, analysis, and reporting
- Customer service management and planning
- Collection and dissemination of "lessons learned"

# Examples – Project Transaction Services

## Project Transaction Services

Identification of alternative financing options

Alternative finance training

Baseline audits

Project facilitation

Project evaluation and selection

Full project life-cycle support

Commissioning

Measurement and verification

Power Purchase Agreements

Utility Energy Service Contracts

FEMP's Super ESPC Contract enabled agency investments totaling \$457 million in 2009

FEMP's Super ESPC Contract has resulted in guaranteed savings of over \$5.6 billion to the Federal Government

A 2007 FEMP "E4" energy audit at a single USDA facility led to the adoption of 27 projects at seven facilities in three years, and the award of an ESPC delivery order at two additional facilities

# Examples – Applied Technology Services

## Applied Technology Services

- Vehicle fleet management
- Sustainable design
- Greenhouse gas reduction
- Renewable energy
- Water conservation
- Laboratory and data center design
- Operations and maintenance best practices
- Metering
- Efficient products and emerging technologies
- Intra-EERE coordination

FEMP expertise was essential in providing Federal agencies guidance on complying with E.O. 13514's greenhouse gas reduction goals

From 2003 – 2009, FEMP has provided over 325 audits and training under its Technical Assistance program to Federal agencies

FEMP's Industrial Facilities Initiative deploys the resources and technologies of EERE's Industrial Technologies Program to the federal market through assessments, webinars, and other tools

# Examples – Decision Support Services

## Decision Support Services

Interagency coordination  
Memoranda of understanding  
Rulemaking and regulations  
Strategic planning  
Annual reporting  
Energy awareness and public engagement  
Budget planning, analysis, and reporting  
Customer service management and planning  
Collection and dissemination of “lessons learned”

The FEMP-led DOE-DoD Memorandum of Understanding enables DoD access to National Laboratories and greater collaboration of EERE-DoD research agendas

FEMP rulemaking interprets and implements the energy requirements of EPCA and EISA across the Federal Government

FEMP coordinates the Federal government’s Earth Day activities, providing the materials that ensure a unified Federal message

# Federal Interagency Coordination

FEMP assembles agencies to coordinate, exchange, and build partnerships through interagency coordination and collaboration:

- Interagency Energy Management Task Force (IATF)
- Interagency Sustainability Working Group (ISWG)
- Federal Utility Partnership Working Group (FUPWG)
- Energy Savings Performance Contract (ESPC) Working Group
- Renewable Energy Working Group
- Energy-Efficient Products Working Group
- Federal Water Working Group
- Federal Partnership for Green Data Centers
- Interagency Committee on Alternative Fuels and Low Emission Vehicles (INTERFUEL)
- New Technologies Working Group
- You Have the Power Working Group
- Communications Working Group
- Technology Transfer Consortium
- Federal ESPC Steering Committee



# FEMP Technical Assistance

FEMP audits and technical assistance by agency (FY 2003 – FY 2008)

Agency	Quantity
Army	51
GSA	47
DOI	38
Navy	21
DOE	20
Air Force	18
HHS	11
Treasury	9
VA	9
NASA	8
DOT	7
USDA	6
Marine Corps	6
Smithsonian	6
USPS	6
DOD	5
SSA	5
DHS	4

Agency	Quantity
Air National Guard	4
National Guard	4
DOC	3
Army Corp of Engineers	3
Defense Commissary Agency	2
DOJ	2
National Science Foundation	2
State	2
AOC	1
EPA	1
National Geospatial Intelligence Agency	1
DLA	1

# Examples of Tech Assistance

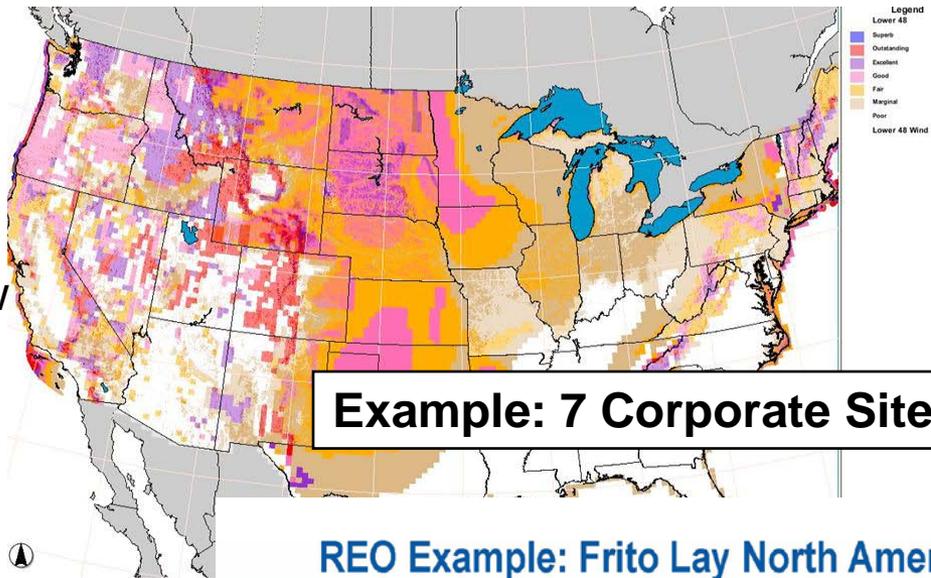
- Initial screenings or assessments of facility needs and/or technology feasibility
- Renewable energy resource assessments
- Strategic energy planning and benchmarking
- Technical reviews of designs and proposals
- Energy audit training
- Operations and maintenance support
- Federal vehicle fleet technical support
- Evaluate financial strategies, procurement specifications, and acceptance of installed systems
- High-performance green building technical support
- Net Zero Energy technical support



San Clemente Island wind turbine system

# Renewable Energy Assessments:

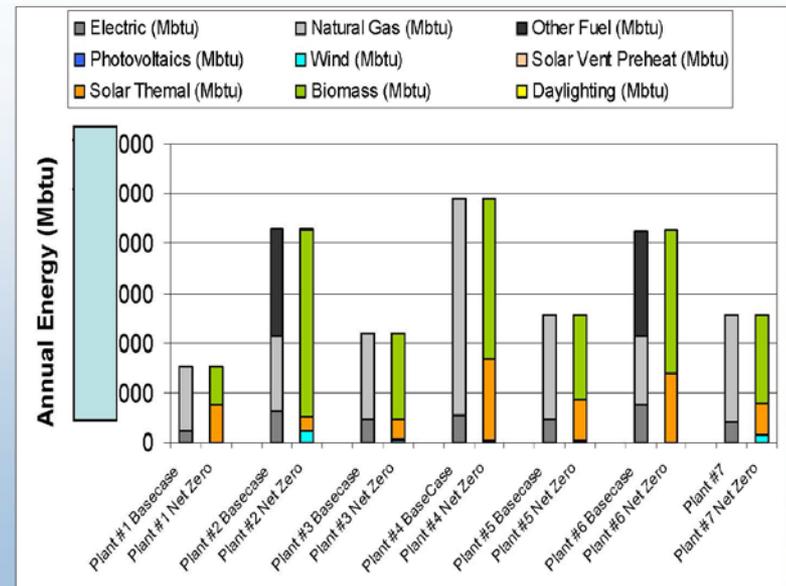
- NREL has developed “Renewable Energy Optimization” (REO), a new tool which helps a technical expert identify and prioritize the best renewable options.



- REO uses information from each site (utility bills, etc) combined with NREL GIS data on renewable resources and technology characteristics to screen several facilities at a high level to determine where to conduct more detailed feasibility studies.

NREL and FEMP are continuing to improve the tool. NREL POC is Andy Walker 303-384-7531

**REO Example: Frito Lay North America Minimum Life Cycle Cost (Net Zero constraint)**



# Data Centers

FEMP is Here to Help You Achieve Results!

Save Money → Reduce Loads → Improve Reliability → Be Resilient!

*Reversing the Trend*  
**FEMP Will Help Agencies :**

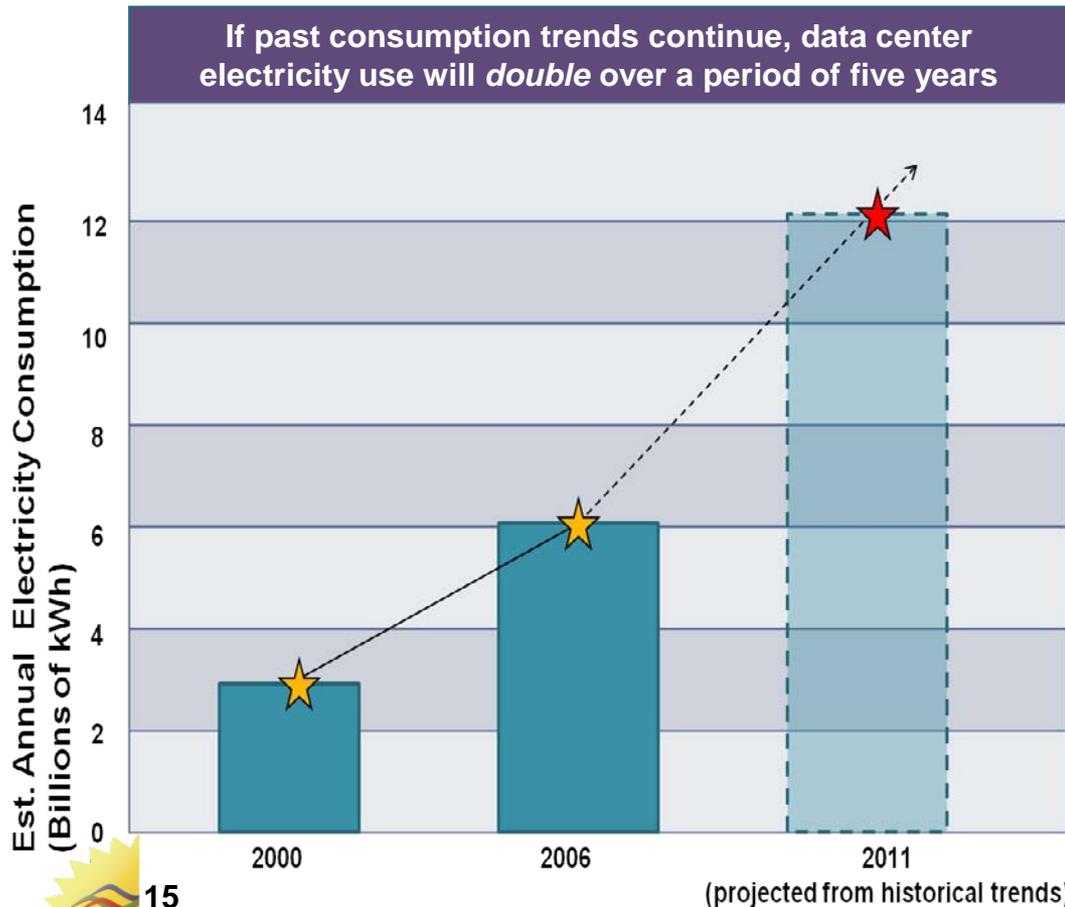
*Get up to speed with best practices & technology case study publications*

*Increase awareness of opportunities to increase efficiency & reliability through FEMP workshops*

*Share best practices through forums and the Federal Partnership for Green Data Centers*

*Benchmark & assess efficiency opportunities with technical assistance & using the DCPro tool suite*

*Conduct energy audits to determine appropriate level of investment by providing access to technical experts*



# DOE – DoD MOU

*Purpose: Identify a framework for cooperation and partnership to strengthen coordination of efforts to enhance national energy security, and demonstrate Federal Government leadership in transitioning America to a low carbon economy.*

Working together on energy management, efficient and renewable energy technologies, alternative fuels, energy infrastructure, nuclear and fossil energy, and water efficiency through strategic planning, joint initiatives, technology evaluation and testing, basic and applied research, and human capital development.



See: <http://www.energy.gov/news/documents/Enhance-Energy-Security-MOU.pdf>

# Operational Energy Support: Afghanistan and Iraq

Teams with DOE National Lab expertise made recommendations on energy and water use in war zone.

## Afghanistan, Marine Corps

- Short term, reduce the load: improve the efficiency of generator load distribution, insulation options for various building structures, behavioral changes
- Long term: deployment of renewables and microgrids, changes to acquisition/contracting processes; alternatives to trash and human waste processing; and utilization of systems designed for use in remote/undeveloped settings



## Iraq, Air Force

- **96.6%** of USAF fuel usage in the CENTCOM AOR is burned in aircraft
- Efficiencies in aviation operations can and will drive increased capabilities.
- Invest in Infrastructure where there is appropriate return on investment
- Incentivize Efficiencies

# Net Zero Energy (NZE) Community Concept

- A Net Zero Energy Community (ZEC) is one that has greatly reduced energy needs through efficiency gains so that the balance of energy needs for vehicles, thermal energy, and electric energy within the community is met by renewable energy.”
- FEMP is working with DoD on NZE and Carbon Neutral activities that are developing protocols, based on real projects, that help a base or community take the steps to approach Net Zero.

## Baseline

- Current energy consumption

## Energy Efficiency

- Retrofit improvement potential
- New construction design optimization

## Renewable Energy

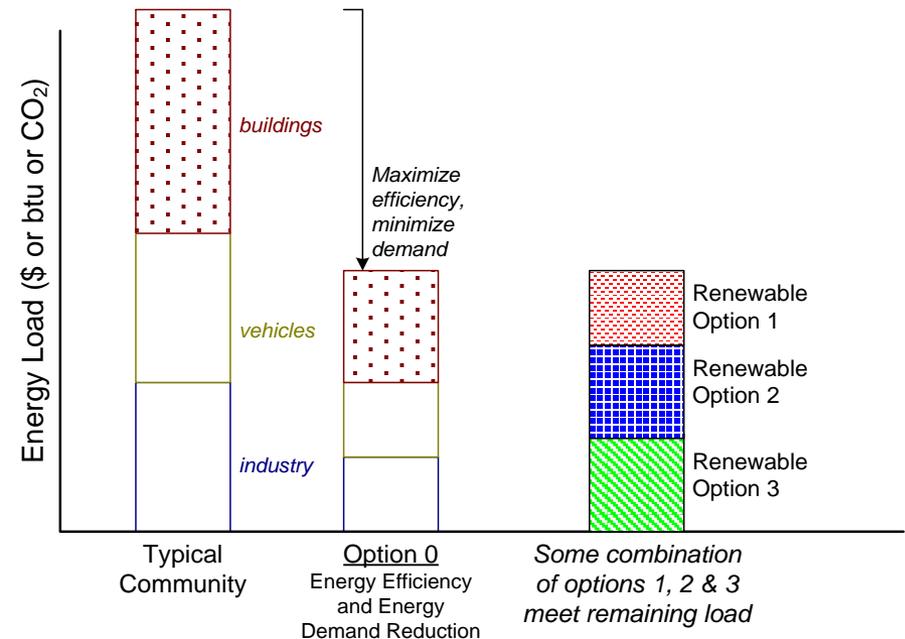
- Deployment of renewable energy

## Electrical Systems

- Interconnection and microgrid

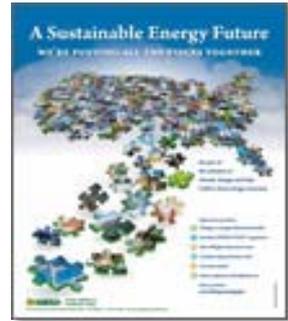
## Transportation

- Reduce and replace fossil fuel use

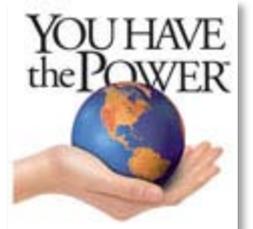


# Recognition and Outreach

- Award Programs (NECPA)
  - Award program for outstanding Federal facility energy managers
    - Federal Energy & Water Management
    - Departmental Energy Management Awards
  - Award criteria and guidelines based on legislation and executive orders
  - Honor individuals and organizations making significant contributions
- Energy Awareness Campaigns
  - You Have the Power; Earth Day; Energy Awareness Month
  - Establishes consistent, targeted energy messages across Federal sector
  - Motivates individual employees and accelerates organizational change to increase energy efficiency and sustainability practices
  - Recognizes innovation and achievement for organizations and employees
  - Receives continual updates through agency coordinators and quarterly meetings
  - 66% of survey respondents are very satisfied with program

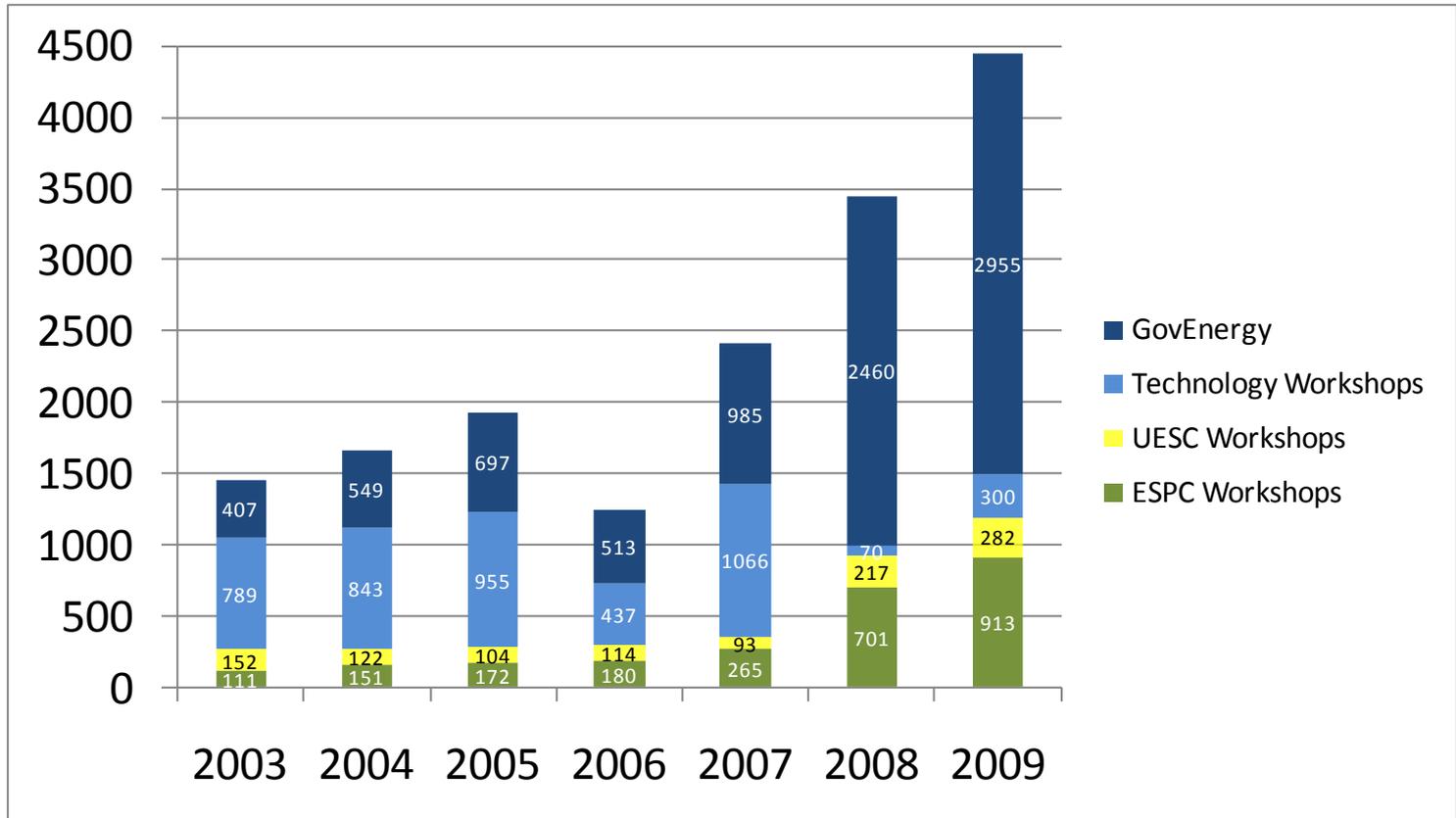


**LEAD by  
EXAMPLE**



# FEMP Training Reach

Number of FEMP workshop attendees (FY 2003 – FY 2008)



# Central Information Resource

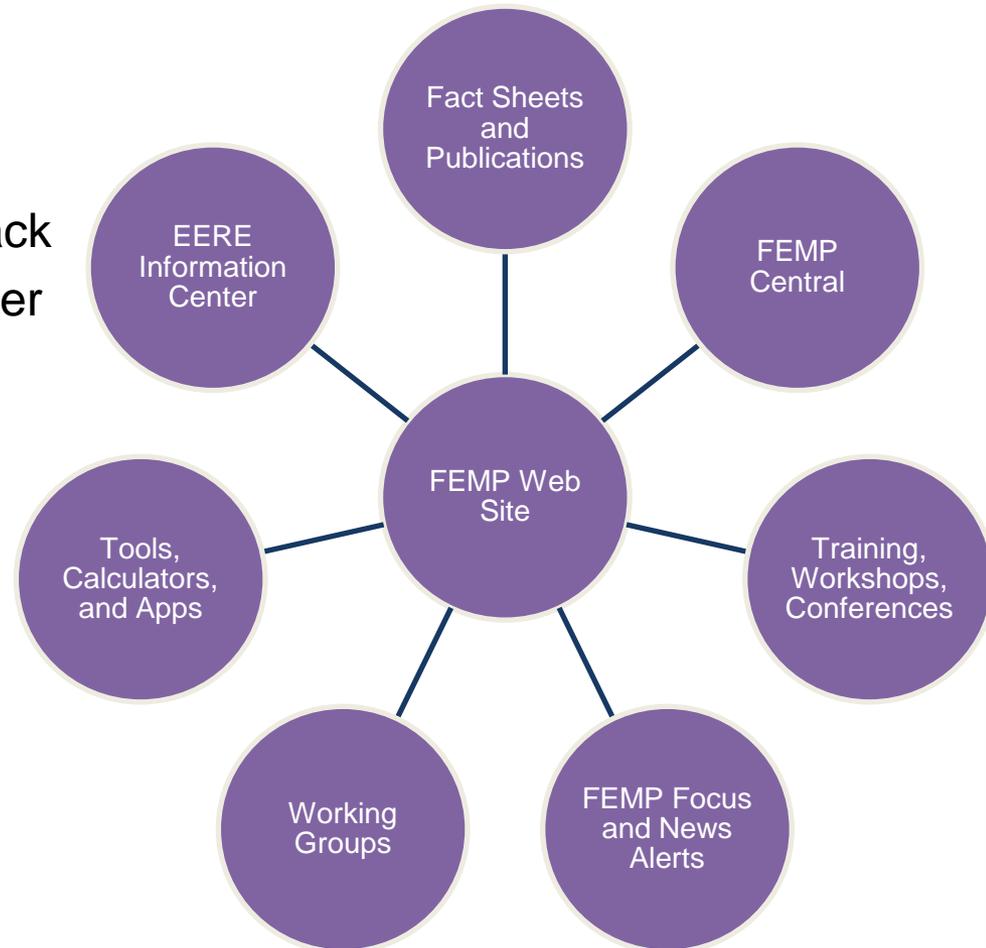
FEMP provides a single, central source for Federal energy management resources for all agencies and personnel levels

Web site as a central resource

- Revised with Federal agency feedback
- Receives >100,000 visits each quarter
  - More than 1,150 visits a day



<http://www.femp.energy.gov>



# Service-Focused Mission

**FEMP's Customer Service Representatives (CSRs) ensure that each Federal agency is provided services specific to their needs**

Broadcasting Board of Governors	Chris Tremper, 202-586-7632, chris.tremper@ee.doe.gov	Department of Transportation (DOT)	Amanda Sahl, 202-586-1662, amanda.sahl@ee.doe.gov
Department of Agriculture (USDA)	Boyan Kovacic, 202-586-4272, boyan.kovacic@ee.doe.gov	Environmental Protection Agency (EPA)	Mark Reichhardt, 202-586-4788, mark.reichhardt@ee.doe.gov
Department of Commerce (DOC)	Joe Konrade, 202-586-8039, joseph.konrade@ee.doe.gov	General Services Administration (GSA)	Schuyler (Skye) Schell, 202-586-9015, schuyler.schell@ee.doe.gov
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Department of Energy (DOE)	Cyrus Nasserri, 202-586-9138, cyrus.nasserri@ee.doe.gov	National Archives and Records Administration (NARA)	Rebecca Dyer, 202-586-8215, rebecca.dyer@ee.doe.gov
Department of Health and Human Services (HHS)	David McAndrew, 202-586-7722, david.mcandrew@ee.doe.gov	Smithsonian Institution	Teresa Carroll, 202-586-6477, teresa.carroll@ee.doe.gov
Department of Homeland Security (DHS)	Ab Ream, 202-586-7230, ab.ream@ee.doe.gov	Social Security Administration (SSA)	Annie Haskins, 202-586-4536, annie.haskins@ee.doe.gov
Department of Housing and Urban Development (HUD)	Stephen Walder, 202-586-9209, stephen.walder@ee.doe.gov	Tennessee Valley Authority (TVA)	Shawn Herrera, 202-586-1511, shawn.herrera@ee.doe.gov
Department of Justice (DOJ)	Tracy Logan, 202-586-9973, tracy.logan@ee.doe.gov	U.S. Air Force	Hayes Jones, 202-586-8873, hayes.jones@ee.doe.gov
Department of Labor (DOL)	Nate Folkemer, 202-287-6033, nathaniel.folkemer@ee.doe.gov	U.S. Army	Anne Crawley, 202-586-1505, anne.crawley@ee.doe.gov
Department of State	Mark Reichhardt, 202-586-4788, mark.reichhardt@ee.doe.gov	U.S. Marine Corps	William Raup, 202-586-2214, william.raup@ee.doe.gov
Department of the Interior (DOI)	Joe Konrade, 202-586-8039, joseph.konrade@ee.doe.gov	U.S. Navy	Will Lintner, 202-586-3120, william.lintner@ee.doe.gov
Department of the Treasury	Schuyler (Skye) Schell, 202-586-9015, schuyler.schell@ee.doe.gov	U.S. Postal Service (USPS)	Brad Gustafson, 202-586-5865, brad.gustafson@ee.doe.gov
		U.S. Railroad Retirement Board (RRB)	Chris Tremper, 202-586-7632, chris.tremper@ee.doe.gov
		Veterans Affairs (VA)	Scott Richlen, 202-586-2078, scott.richlen@ee.doe.gov

# The Future Things to Think About



- Greenhouse Gases
- Organizational Cultural Change
- Building Performance, not design
- Greater use of Power Purchase Agreements and Enhanced Use Lease's
- Break-down of distinction between "Operational" and "Non-Operational" energy in DOD
- Enterprise Sustainability

# Greenhouse Gases

- EO 13514 is a game changer – Implementation is Leadership not Technical Challenge
- GHG reductions become integrating metric for agency performance – cuts across all activities
- Develop and implement agency-wide GHG accounting and management process through the SSPP
- Agencies must undertake specific actions:
  - Utilize FEMP's GHG training course to train field and HQ staff



- FEMP's GHG reporting workbook and online reporting tool
- Verify & validate data – prepare Inventory Management Plan
- Report agency-wide inventory by January 31<sup>st</sup> 2011

# Vision for Institutional Change Towards Sustainability

- Agency leadership provides the vision, resources, and direction for a sustainable organization
- Responsible actors, e.g., IT group, energy managers, HR, mission leads, procurement, are enabled by leadership to take action to promote sustainable practices and are recognized and accountable for their actions
- Total engagement by agency staff in sustainable behaviors evolves as part of how they do business-as-usual.



# Building Performance

- Benchmarking and monitoring over time
- Sophisticated controls with real-time performance data
- Ability to measure and verify every aspect of building performance
- Integration of “Human” component of energy/sustainability
- Continuous commissioning will become the norm
- Federal adoption of Carbon Neutral Buildings



# Power Purchase Agreements

- PPAs have huge potential for growth
  - Designed specifically for renewable projects
  - Minimal risk to government
    - Agency only pays for what is produced
    - Power usually priced at or below current rates
    - Provides long term stability in energy costs and budgets
  - RE developer eligible for tax incentives, accelerated depreciation
  - No agency up-front capital required
- Will not be wide spread until agencies get clear long term contracting authority at the site level
  - FAR Part 41 authority is only 10 years (not long enough)
  - 10 USC 2922A – provides DOD 30 year authority
    - Sec. Def. approval required,
    - Applicability to non-geothermal projects disputed
- CBO Scoring issues are primary barrier to getting long term authority approved



# Enhanced Use Lease

- EULs can be an effective way to expand third party development of large scale projects
  - EUL is a real estate agreement
  - Generally used for large projects where power will be exported
  - Focus is on under-utilized land
  - Agency may receive cash payment or in-kind consideration ( i.e. renewable power, renewable equipment)
- Only DOD and VA have broad EUL authority
- Authority needs to be expanded to all agencies



**GovEnergy 2010**

# What is “tactical” energy?

Which one of these pictures represents “tactical” energy ?

Which one fails if the U.S. grid goes down?

Which one has higher carbon footprint?



Which one is a “tactical” energy source?

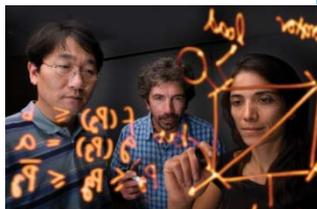
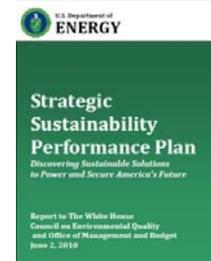
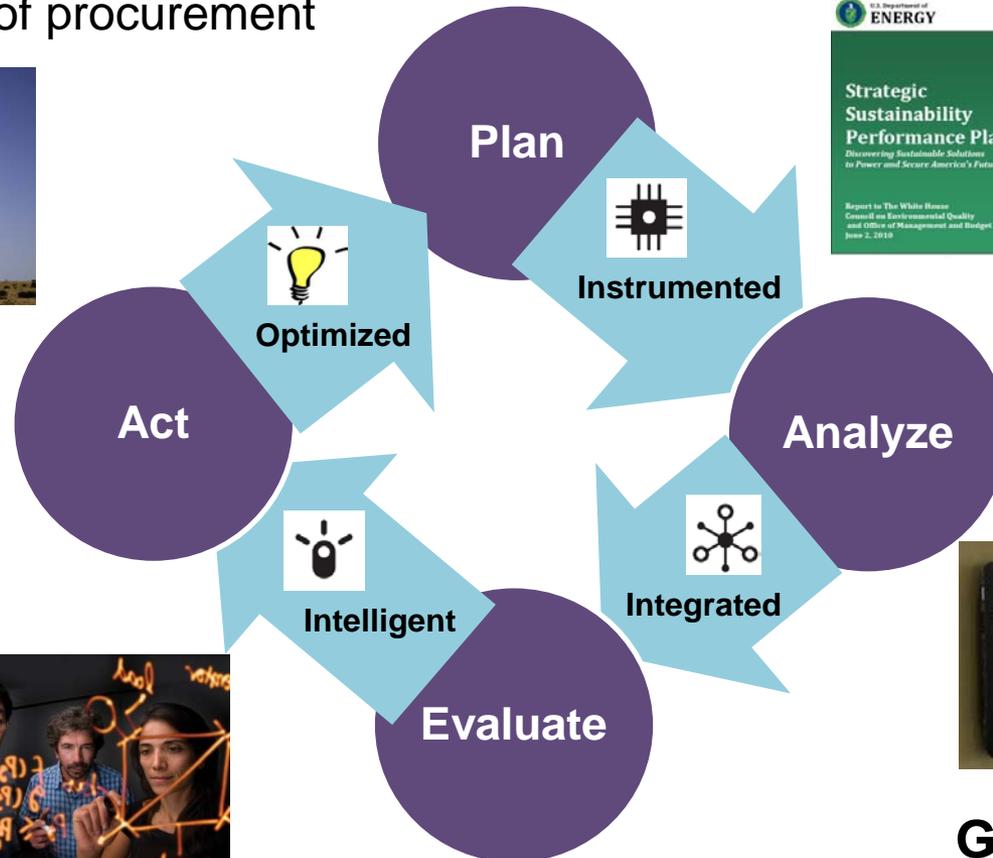
Which one can meet the needs of deployed assets with fewest risks”

Which one can reduce your GHG’s at home when not deployed?



# “ENTERPRISE SUSTAINABILITY”

- New enterprise level information management systems connected with real-time sensor network
- Real-time knowledge of building performance, GHG emissions, employee behavior and consumption activities
- Lifecycle sustainability impacts known and considered for all goods and services at time of procurement



**For more information, visit**



**[www.femp.energy.gov](http://www.femp.energy.gov)**