

## Learner's Guide

### Energy 101 Seminar

Instructor:  
Linda Mesaros  
Mesaros Associates, Inc.

FEMP Content Expert:  
Joe Konrade

Program #2  
Broadcast Date: March 4, 2010

## **Seminar: Energy 101**

### Background on the FEMP First Thursday Seminars

The First Thursday seminars are designed for Federal Energy Managers but are open to anyone whose scope of responsibility involves influencing decisions to increase energy efficiency, conserve water resources, and meet other Federal sustainability goals.

There are three ways to participate in the seminars.

1. Live streaming video available on the day of the event over the internet to a desktop computer or via a projection system in a conference room;
2. Digital and Analog Satellite downlink technology for group showings; and,
3. Archived streaming video available after the event over the internet on a desktop computer or via a projection system in a conference room.

To learn more about accessing specific seminars, access <http://www.femp.energy.gov/training>.

### Introduction to the Seminar “Energy 101”

The seminar “Energy 101” is being offered live on Thursday, March 4, 2010 at 1:30 p.m. Eastern Time.

For access and other course information, access: <http://www.femp.energy.gov/training>

Energy 101 provides an introduction to energy management including the following topics:

- an overview of energy management components: energy efficiency, renewable energy, and water efficiency;
- legislative basis for energy management;
- process for getting started in energy management;
- establishing baseline measurements;
- developing improvement plans;
- financing options;
- greening your purchasing; and,
- resources for energy managers.

The seminar will last 90 minutes.

### Learner Objectives

After completing this seminar and within your scope of responsibility:

1. Define energy management, energy efficiency, renewable energy, and water efficiency.
2. Access relevant Federal legislation and Executive Orders and FEMP’s crosswalk which compares the new Executive Order 13514 to other legislation and Executive Orders.
3. Explain a process diagram for performing energy management initiatives.

# FEMP FIRST THURSDAY SEMIN@RS

---

4. Determine how you will establish baseline measurements in various energy management arenas.
5. Discuss how to develop a Plan of Action.
6. Discuss various financing options that can be considered.
7. Access resources for greening your purchasing including FEMP designated, Energy Star, EPEAT, Water Sense, Biobased, EPP, and recycled content.

## Asking Questions

At the end of each seminar, there will be an opportunity for you to ask questions. You will be able to email, fax, or ask questions by phone. The phone, fax, and email information will be posted on the screen during the seminar.

During the live broadcast, ask questions by either:

- dialing the toll free number 800-775-3728,
- faxing questions to 865-381-0554,
- or by sending an email to [FTS@energyworkshops.org](mailto:FTS@energyworkshops.org).

## Upon Seminar Completion

Each participant who registers will be sent an email with a link to the seminar evaluation and the open book quiz. A link will also be available at the end of the Seminar Live Broadcast and Webcast. Upon completion of the evaluation and the open book quiz, you will be able to print a **Certificate of Completion** for your records.

## Resources for Your Use

Energy Efficiency and Renewable Energy web site:	<a href="http://www.eere.energy.gov/">http://www.eere.energy.gov/</a>
The U.S. Energy Information Administration web site:	<a href="http://www.eia.doe.gov/">http://www.eia.doe.gov/</a>
Department of Energy's Federal Energy Management Program:	<a href="http://www1.eere.energy.gov/femp/">http://www1.eere.energy.gov/femp/</a>
Federal Energy Management Program procurement:	<a href="http://www.eere.energy.gov/femp/procurement/">http://www.eere.energy.gov/femp/procurement/</a>
ENERGY STAR:	<a href="http://www.energystar.gov/purchasing">http://www.energystar.gov/purchasing</a>
EPEAT:	<a href="http://www.epeat.net">http://www.epeat.net</a>

## Definitions in Energy Management

For reference during the seminar, the following definitions are provided.

### biobased product -

Biobased products, as defined by section 9002 of the Farm Security and Rural Investment Act of 2002 (FSRIA or the 2002 Farm Bill), are commercial or industrial products (other than food or feed) that are composed in whole, or in significant part, of biological products, renewable agricultural materials (including plant, animal, and marine materials), or forestry materials.

**biomass -**

as defined by the Energy Security Act (PL 96-294) of 1980, “any organic matter which is available on a renewable basis, including agricultural crops and agricultural wastes and residues, wood and wood wastes and residues, animal wastes, municipal wastes, and aquatic plants.”

**biomass energy -**

energy produced by the conversion of biomass directly to heat or to a liquid or gas that can be converted to energy.

**British Thermal Unit (Btu) -**

the amount of heat required to raise the temperature of one pound of water one degree Fahrenheit; equal to 252 calories.

**energy -**

the capability of doing work; different forms of energy can be converted to other forms, but the total amount of energy remains the same.

**energy conservation -**

any behavior that results in the use of less energy. Turning the lights off when you leave the room and recycling aluminum cans are both ways of conserving energy.

**energy efficiency -**

the use of technology that requires less energy to perform the same function. A compact fluorescent light bulb that uses less energy than an incandescent bulb to produce the same amount of light is an example of energy efficiency. However, the decision to replace an incandescent light bulb with a compact fluorescent is an act of energy conservation.

**energy audit -**

a survey that shows how much energy you use in your house or apartment. It will help you find ways to use less energy.

**energy intensity -**

the relative extent that energy is required for a process.

**energy management -**

the sum of measures planned and carried out to achieve the objective of using the minimum possible energy while the comfort levels (in offices or dwellings) and the production rates (in factories) are maintained. It can be applied to a factory, to an office building, to a sport center, to a dwelling, and to any kind of building where energy use is required. To make an efficient use of the energy and, as a consequence, to save it, the actions are focussed on: energy conservation, energy recovery, and energy substitution.

**Energy Savings Performance Contracts (ESPCs) -**

Energy Savings Performance Contracts allow Federal agencies to accomplish energy savings projects without up-front capital costs and without special Congressional appropriations. Department of Energy (DOE) energy savings performance contracts are indefinite-delivery, indefinite-quantity (IDIQ) contracts designed to make ESPCs as practical and cost-effective as possible for Federal agencies. The Department of Energy (DOE) awarded these “umbrella” contracts to ESCOs based on their ability to meet terms and conditions established in IDIQ contracts. DOE ESPCs can be used for any Federally-owned facility worldwide.

**ENERGY STAR -**

ENERGY STAR is a United States government program created in 1992 by the US Environmental Protection Agency in

Page 3

an attempt to reduce energy consumption and greenhouse gas emission by power plants. What began originally as a voluntary labelling program has grown in to one of the largest efforts worldwide to promote energy efficient consumer products. ENERGY STAR labels are found on over 40 product categories and in the year 2005 alone is responsible for saving consumers over 12 billion dollars.

**Environmentally Preferable Products (EPP) -**

EPA's Environmentally Preferable Purchasing (EPP) Program is helping agencies across the federal government comply with green purchasing requirements, and, in doing so is using the federal government's enormous buying power to stimulate market demand for green products and services. Federal agencies are directed by federal laws, regulations and executive orders to make purchasing decisions with the environment in mind. EPA created the Environmentally Preferable Purchasing Program in 1993 to help federal officials meet these requirements.

**EPEAT -**

EPEAT is a system that helps purchasers evaluate, compare and select electronic products based on their environmental attributes. The system currently covers desktop and laptop computers, thin clients, workstations and computer monitors. Desktops, laptops and monitors that meet 23 required environmental performance criteria may be registered in EPEAT by their manufacturers in 40 countries worldwide. Registered products are rated Gold, Silver or Bronze depending on the percentage of 28 optional criteria they meet above the baseline criteria. EPEAT operates an ongoing verification program to assure the credibility of the registry.

**Federal Energy Management Program (FEMP) -**

a program of the U.S. Department of Energy (DOE) that implements energy legislation and presidential directives. FEMP provides project financing, technical guidance and assistance, coordination and reporting, and new initiatives for the federal government. It also helps federal agencies identify the best technologies and technology demonstrations for their use.

**Federal Energy Regulatory Commission (FERC) -**

an independent regulatory agency within the U.S. DOE that has jurisdiction over interstate electricity sales, wholesale electric rates, natural gas pricing, oil pipeline rates, and gas pipeline certification. It also licenses and inspects private, municipal, and state hydroelectric projects and oversees related environmental matters.

**Federal Power Marketing Administrations (PMA) -**

distinct organizational agencies within the U.S. DOE that market power at federal multipurpose water projects at lowest possible rates to consumers consistent with sound business principles. There are five PMA's: Alaska Power Administration, Bonneville Power Administration, Southeastern Power Administration, Southwestern Power Administration, Western Area Power Administration.

**FEMP Designated Product -**

Federal agencies are required by law to purchase FEMP-designated or ENERGY STAR-qualified products. These products are in the upper 25% of their class in energy efficiency. FEMP-designated products are not specific products. FEMP does not purchase, recognize, endorse, or otherwise identify specific products for Federal procurement. Instead, FEMP identifies required purchasing specifications and performance requirements for a category of products, which is typically an energy consumption level within the upper 25% of the product category.

**geothermal energy -**

energy produced by the internal heat of the earth; geothermal heat sources include: hydrothermal convective systems; pressurized water reservoirs; hot dry rocks; manual gradients; and magma. Geothermal energy can be used directly for heating or to produce electric power.

**greenhouse gases -**

those gases, such as water vapor, carbon dioxide, tropospheric ozone, methane, and low level ozone that are transparent to solar radiation, but opaque to long wave radiation, and which contribute to the greenhouse effect.

**power -**

energy that is capable or available for doing work; the time rate at which work is performed, measured in horsepower, Watts, or Btu per hour. Electric power is the product of electric current and electromotive force.

**Power Purchase Agreements -**

Power purchase agreements (PPAs) allow Federal agencies to finance on-site renewable energy projects with no up-front capital costs incurred. With a PPA, a developer installs a renewable energy system on agency property under an agreement that the agency will purchase the power generated by the system. The agency pays for the system through these power payments over the life of the contract. After installation, the developer owns, operates, and maintains the system for the life of the contract.

**recycled content product -**

Recycled content refers to the portion of materials used in a product that have been diverted from the solid waste stream. If those materials are diverted during the manufacturing process, they are referred to as pre-consumer recycled content (sometimes referred to as post-industrial). If they are diverted after consumer use, they are post-consumer. Post-consumer content is generally viewed as offering greater environmental benefit than pre-consumer content.

**renewable energy -**

energy derived from resources that are regenerative or for all practical purposes can not be depleted. Types of renewable energy resources include moving water (hydro, tidal and wave power), thermal gradients in ocean water, biomass, geothermal energy, solar energy, and wind energy. Municipal solid waste (MSW) is also considered to be a renewable energy resource.

**solar energy -**

electromagnetic energy transmitted from the sun (solar radiation). The amount that reaches the earth is equal to one billionth of total solar energy generated, or the equivalent of about 420 trillion kilowatt-hours.

**sustainable acquisition -**

refers to federal requirements to purchase environmental and energy saving attributes. Also referred to as "green purchasing" or "sustainable purchasing."

**sustainability, sustainable -**

to create and maintain conditions, under which humans and nature can exist in productive harmony, that permit fulfilling the social, economic, and other requirements of present and future generations.

**thermal energy -**

the energy developed through the use of heat energy.

# FEMP FIRST THURSDAY SEMIN@RS

---

## **Utility Energy Service Contracts (UESCs) -**

Utility energy service contracts offer Federal agencies an effective means to implement energy efficiency, renewable energy, and water efficiency projects. In a UESC, a utility arranges financing to cover the capital costs of the project, which are repaid over the contract term from cost savings generated by the energy efficiency measures. With this arrangement, agencies can implement energy improvements with no initial capital investment. The net cost to the Federal agency is minimal, and the agency saves time and resources by using the one-stop shopping provided by the utility.

## **water efficiency -**

the protection, development, and efficient management of water resources for beneficial purposes

## **wind energy -**

energy available from the movement of the wind across a landscape caused by the heating of the atmosphere, earth, and oceans by the sun.

## **Handouts**

You may also want to print a copy of the handouts for this seminar.

You can access the handouts at <http://www.femp.energy.gov/training>

For additional information please contact:  
EERE Information Center  
1-877-EERE-INF (1-877-337-3463)  
[www.eere.energy.gov/informationcenter](http://www.eere.energy.gov/informationcenter)



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