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The Department of Energy's (DOE) Federal Energy Management Program (FEMP) provides agencies with information, guidance, and assistance in using renewable energy. This directly supports FEMP's mission 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.

RENEWABLE ENERGY PROGRAM OVERVIEW

Federal agencies meet regulatory requirements and goals, increase national security, conserve natural resources, and create jobs by using renewable energy to deliver electricity, heating, cooling, and other energy applications.

Federal Goals and Requirements

Energy Policy Act (EPAct) of 2005: Defines renewable energy as:

“electric energy generated from solar, wind, biomass, landfill gas, ocean (including tidal, wave, current, and thermal), geothermal, municipal solid waste, or new hydroelectric generation capacity achieved from increased efficiency or additions of new capacity at an existing hydroelectric project.”

Using this definition, EPAct 2005 requires the following percentages of total electricity consumed by the Federal Government to come from renewable energy:

- Not less than 3 percent in fiscal year (FY) 2007-2009
- Not less than 5 percent in FY 2010-2012
- Not less than 7.5 percent in FY 2013 and thereafter

EPAct 2005 allows Federal agencies to double count renewable energy if it is produced on-site and used at a Federal facility, produced on Federal lands and used at a Federal facility, or produced on Native American land and used at a Federal facility.

Executive Order 13423: Mandates that at least half of renewable energy used by the Federal Government must come from new renewable sources in service after January 1, 1999. The order also encourages agencies to implement on-site renewable energy generation projects for agency electricity use.

Energy Independence and Security Act (EISA) of 2007: Requires 30 percent of hot water demand in new Federal buildings (and major renovations) be met with solar hot water equipment provided it is life-cycle cost-effective. EISA also requires renewable energy assessments in all new construction, major renovations, and new leases. Under EISA, new Federal buildings must use zero fossil fuels by 2030 with significant reductions starting in 2010.

Executive Order 13514: Calls for Federal agencies to reduce greenhouse gas emissions through a variety of measures,

including increasing agency use of renewable energy and implementing on-site renewable energy generation projects.

Federal Application

Federal agencies can benefit from renewable energy through on-site projects or renewable energy purchases:

On-Site Projects: On-site renewable electricity projects benefit from the bonus credit applied toward the EPAct 2005 renewable energy requirement if the electricity is produced on Federal lands and consumed by the agency.

Renewable Energy Basics

Biomass: Energy from organic materials such as plants, agriculture residues, forestry residues, urban wood and waste, and other byproducts. Used to produce fuel, heat, or electricity.

Landfill Gas: Energy from methane and other landfill gases created during waste decomposition. Used to generate heat and electricity.

Municipal or Industrial Waste: Energy from processing waste products found in municipal areas or industrial processes. Used to generate electricity.

Geothermal: Energy from heat and hot water found within the earth. Used to provide heat or electricity.

Solar: Energy from the sun processed by multiple technology options. Used directly for heating or for electricity generation.

Wind: Energy from the wind harnessed through turbines and windmills. Used for mechanical power and electricity.

Ocean Energy: Energy from marine and tidal currents as well as temperature differences between ocean depths. Used for mechanical, thermal, or electrical energy.

Hydropower: Energy from water harnessed through the use of dams and hydrokinetic technology. Used for electricity.



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Solar and wind research efforts, such as these installations at the National Renewable Energy Laboratory, help the Federal Government evaluate and deploy renewable energy projects.

With these on-site projects, a photovoltaic (PV), wind turbine, or other renewable energy system is installed where the energy will be consumed. Projects can feature one or more systems and are effective both as retrofits to existing buildings or as planned options in new facilities. Agencies should consider greenhouse gas attributes and reporting when planning on-site renewable projects.

Renewable Energy Purchases: Federal goals and requirements can be met by purchasing renewable energy. This helps Federal agencies that do not have adequate on-site renewable resources or cannot obtain financing for on-site projects. Three different renewable energy purchase options exist, including:

1. Competitive electricity procurement (available if the facility is in a state with a competitive market).
2. Renewable energy certificates (RECs). RECs represent the environmental attributes of renewable energy generation and can be bought or sold separately from the electricity.
3. Utility green pricing programs.

Project Financing

Alternative financing mechanisms are available to help Federal agencies fund renewable energy projects. These mechanisms include:

Energy Savings Performance Contracts (ESPCs): ESPCs are a partnership between a Federal agency and an energy service company (ESCO). The ESCO conducts a comprehensive energy audit for the Federal facility, designs and constructs a project that meets the agency's needs, and arranges the necessary financing. Funding is repaid through energy cost savings generated by the project over the life of the contract.

Utility Energy Service Contracts (UESCs): UESCs help Federal agencies implement renewable energy projects through partnerships with serving utilities. The utility arranges financing to cover capital costs and is then repaid over the contract term from the energy cost savings generated by the project.

Power Purchase Agreements (PPAs): PPAs are long-term agreements between a Federal agency and a private developer partner. The agency leases a portion of its facility or land to a partner, which uses that space to develop renewable energy systems. The agency then purchases energy generated from the system, which is owned, operated, and maintained by the partner.

Renewable Energy Working Group

The Renewable Energy Working Group provides a forum for Federal agencies and the renewable energy industry to exchange information on existing and planned projects, lessons learned, project funding sources, available technologies, and guidance surrounding renewable energy regulatory requirements.

FEMP Assistance and Services

FEMP provides information and training, renewable energy screenings, assessments, and other technical and financing assistance for Federal renewable energy projects. FEMP also develops renewable energy resource maps and screening tools for Federal sites, both of which take economic considerations into account.

Resources and Contacts

Additional information on FEMP and renewable energy within the Federal sector is available online at:

FEMP Web Site:

www.femp.energy.gov/technologies/renewable_energy.html

Green Power Network:

<http://apps3.eere.energy.gov/greenpower>

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