



**Implementing
Renewable
Energy Projects**

Course Objectives

To assist Federal energy managers use cost-effective renewable energy at their facilities by:

- Creating awareness of opportunity for use of renewables in building construction, on-site generation and purchased power
- Describing the conditions that must exist for the technologies to be cost-effective for your facility
- Providing a balanced focus between technology info. And implementation process

Course Sponsors

- This course is sponsored by the DOE-Federal Energy Management Program in cooperation with the National Renewable Energy Laboratory.

The FEMP Mission

- To reduce the cost of government by helping agencies reduce energy and water use, manage utility costs and promote renewable energy use.
- FEMP advocates leveraging private sector funds through ESPCs/utility contracts as the primary means to achieve efficiency.
- We want to encourage you to evaluate **all** options for renewables (bundled with efficiency) for direct purchase or financing.

Course Instructors

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Definition

(From E.O. 13123)

- Sec 710. “*Renewable energy*” means energy produced by solar, wind, geothermal, and biomass power.
- Sec. 711. “*Renewable energy technology*” means technologies that use renewable energy to provide light, heat, cooling, or other activities. The term also means the use of integrated whole-building designs that rely upon renewable energy resources, including passive design.

Renewable Energy

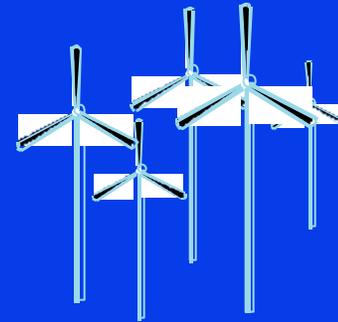
A clean, secure, stable, sustainable source of thermal and electrical energy and liquid fuel



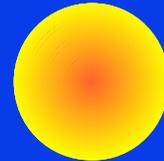
Alternative Fuels



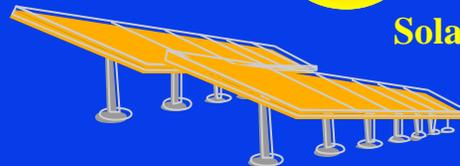
Passive Solar Building Design



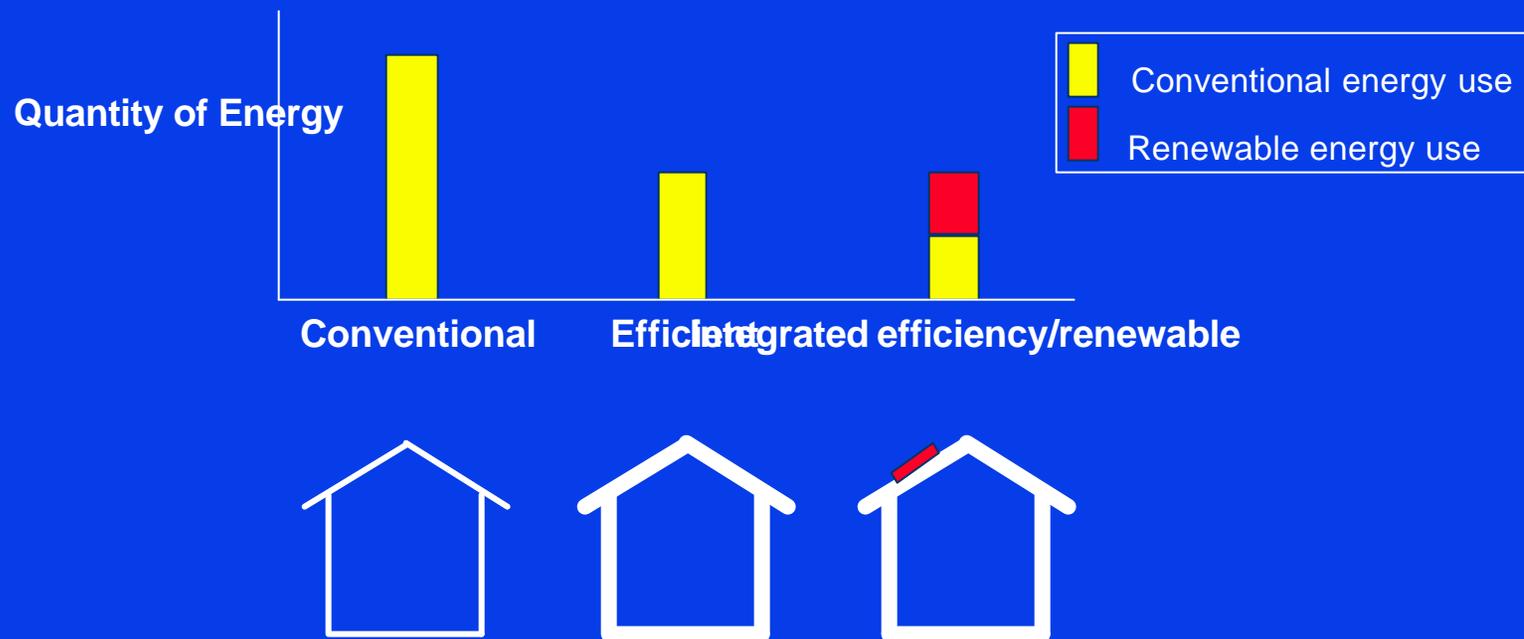
Wind



Solar/PV



Relationship between Efficiency/Renewables



Why consider renewables?

- President Clinton announced recently that Federal Energy Management is one of 24 Priority Management Objectives
- E.O. 13123 “Greening of the Government” (Sec.204) states that “ Each agency shall strive to expand the use of renewable energy within it’s facilities and in it’s activities by implementing renewable energy projects and by purchasing renewable energy from renewable energy sources.”
- DOE has set meet MSRI goals and WPA goals.

Why consider renewables



- **Environmental benefits:**
Power plants are responsible for
 - 72% of all Sox (acid rain)
 - 33% of Nox (smog)
 - 36% of CO₂ (dominant greenhouse gas)
 - 32% of all particle emissions
 - 23% of mercury emissions

Federal Renewable Use



Navy housing at Moanoloa Terrace in Hawaii

- Installed systems supplying 173 gwh of Federal power
- 1745 Federal solar roofs
- Denver Federal agencies committed to buy 10 MW Windsorce power
- Thousands of off-grid applications

Course Overview

Module 1	<i>An integrated Renewables/Energy-efficient Approach to New Construction /Major Renovation</i>	<ul style="list-style-type: none">• Designing Low- energy Buildings:The Federal Challenge (Process and Passive Solar)• A case study
Day 2&3	<i>On-site and Purchased Renewables Applications for Existing Buildings</i>	<ul style="list-style-type: none">• Solar Air Heating• Solar Water Heating• Wind• Photovoltaics
Day 3	<i>Implementing Your Cost-Effective Projects</i>	<ul style="list-style-type: none">• Distributed Generation• Buying Green Power• Project screening• Project feasibility\LCC• Finance\Buying Options

Course materials

- Federal technology Alerts
- Case studies\fact sheets
- Source for More information

Seven Steps to Savings

1. Identify Opportunities
2. Develop an action plan
3. Conduct a feasibility study
4. Design a project
5. Implement the project
6. Evaluate and verify savings
7. Be recognized for your success!