# What's New at FEMP & NREL?

USFS Sustainable Operations Summit

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*Chandra Shah, NREL*

*303-384-7557, chandra_shah@nrel.gov*

# Overview

- EPACT and EO Renewable Requirements & RE Guidance Status
- Options for Meeting the Renewable Goal & Project Examples
  - Innovative On-Site Project Implementation
- Utility Energy Service Contracts (UESC)
- FEMP Support & Information Sources
- NREL Research

# Key RE Requirements

- Statutory renewable energy goals under EPACT 2005 Section 203 are:
  - 3% by 2007, 5% by 2010, 7.5% of electric energy by 2013
- Bonus Provision
  - Renewable use counts double towards federal goal if produced on Federal or Native American land and used by Federal agency
- Under EO 13423:
  - At least half from new renewable sources
  - “New” is January 1, 1999
  - To the extent feasible, the agency implements renewable energy generation projects on agency property for agency use
  - Implementing Instructions and additional information at http://ofee.gov/eo/eo13423_main.asp

# EPACT 2005 RE Definition

- Renewable Definition - 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.

**There is a detailed biomass definition in the law*

# Guidance

- DOE-FEMP will issue Renewable Guidance soon

- Renewable Energy Certificates (RECs)
  - No double counting - RECs must be used only once
  - DOE does not want to damage the credibility of the general REC marketplace by double counting projects against the Federal goal and other goals like state Renewable Portfolio Standards.
  - DOE requires on-site projects to have RECs
    - Agencies may sell expensive RECs (like solar) and then purchase cheaper RECs – this “REC Swap” option allows site to improve project cost-effectiveness and still receive RE goal credit

# Renewable Projects & Purchases

- Reminder –energy efficiency first!

- Options for meeting the renewable goal:
  - Renewable energy certificate (REC) purchases
    - USDA national (76 GWh), USFS regional (1.3 GWh)
  - Renewable power purchases (utility green pricing, competitive electricity market)
  - On-Site renewable projects

- Potential Nevada project
  - Build a single RE facility to serve three agencies, 157 different sites, with five utilities, in S. NV
  - Exploring government owned 1.5MW PV system on federal land and sell the power to a 3rd party. Use the revenue to pay agency utility bills.
  - Contact: Steve Butterworth, NPS

# Innovative On-Site Renewable Projects

- Power Purchase Agreement Model
  - Private entity installs, owns, operates and maintains equipment (no agency up-front capital required)
  - Site purchases electricity through power purchase agreement (PPA)
  - Private entity eligible for tax and other incentives
  - Western Area Power Administration – potential contracting agent with long term contract authority

- Examples – NREL, Fort Carson, Nellis AFB, GSA Sacramento

- FEMP Focus article

  http://www1.eere.energy.gov/femp/newsevents/fempfocus_article.cfm/news_id=11218

# Innovative On-Site Renewable Projects

- Key Considerations
  - Contract length
  - Contracting agent
  - NEPA Requirements
  - Land use agreement – easement, lease, license
- Other Issues
  - REC and GHG emission ownership
  - Available incentives and REC market
  - Investment tax credit expiration (currently 12/31/08)
  - Available land or rooftop space – criteria for determining optimal PV type (thin film vs. crystalline) and configuration (fixed vs. single axis, spacing requirements, etc)

# Utility Energy Service Contracts (UESCs)

**Definition:** UESCs are contracts that allow utilities to provide their federal customer agencies with comprehensive energy and water efficiency improvements and demand reduction services

# Rural Cooperatives can offer UESC

- Permanent legislation authorizes rural co-ops to offer UESCs to Federal customers
- Co-ops can access low-cost financing, (as low as 0%)
- U.S. Department of the Interior (DOl)/National Rural Utilities Cooperative Finance Corporation (CFC) MOU
  - Promote energy and water efficiency, renewable energy projects at DOl facilities serviced by CFC's electric cooperative members.
  - CFC will act as program liaison/facilitator
- FEMP Can Help
  - UESC training, utility partnership meetings, direct project assistance
  - DOE FEMP - Utility Program Manager: David McAndrew (202.586.7722, david.mcandrew@ee.doe.gov)
  - Direct Project Support & Workshop Instructors: Karen Thomas (202.488.2223, karen_thomas@nrel.gov), Deb Beattie (303.384.7548, deb_beattie@nrel.gov)

Agency customers can influence a utility's decision to offer UESC services.

# Examples of Success

- Fort Knox has been partnering with Nolin Electric Cooperative for 10 years
  - Utility project investments have exceeded $150 million
- Fort Campbell partnered with Pennyrile Electric Cooperative
  - The initial project was $8 million
  - More Task Orders are underway

# FEMP Support & Information Sources

- Database of State Incentives for Renewables andEfficiency (DSIRE) - http://www.dsireusa.org/
- Technical Assistance
- Workshops/Training - http://www1.eere.energy.gov/femp/services/training.html
- FEMP Renewables Web Site
  - Case Studies http://www1.eere.energy.gov/femp/renewable_energy/renewable_casestudies.html
  - Publications such as “Guide to Purchasing Green Power” http://www1.eere.energy.gov/femp/renewable_energy/renewable_publications.html
- FEMP Focus Articles
  - http://www1.eere.energy.gov/femp/newsevents/ fempfocus.cfm

# Research Focus in Solar

- Higher efficiency cells
- Advanced manufacturing techniques & lower production costs
- Cheaper/less material
- New nanomaterials applications
- Concentrating PV

***Bottom line – reduce ¢/kWh***

# Research Focus in Wind

- Technology transfer to ocean-based systems
- Low-wind speed turbines (LWST)
- Better aerodynamic blades, new materials
- Advanced power electronics

# Biomass Issues/Research

- Feedstock issues
  - Crop production cycle
  - Drying and storage - potential degradation problems
  - Transportation
  - Varying feedstock characteristics

- New feedstocks - advanced energy crops, under-utilized waste

- “Biorefinery Concept”

# Other NREL Research

- Ethanol & biodiesel
- Transportation – plug-in hybrid vehicles
- Buildings
  - Zero Energy Buildings
  - Tools
  - Technologies such as “Coolerado”

# Questions?

Chandra Shah
National Renewable Energy Laboratory
303-384-7557, chandra_shah@nrel.gov