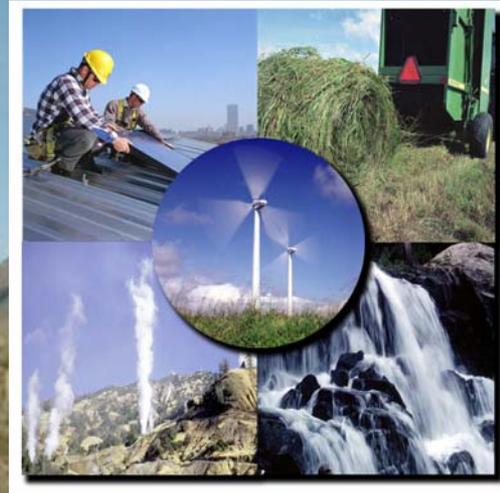


# Meet your Federal Renewable Goals



August 4, 2008  
Anne S. Crawley  
U.S. Department of Energy  
Federal Energy Management Program

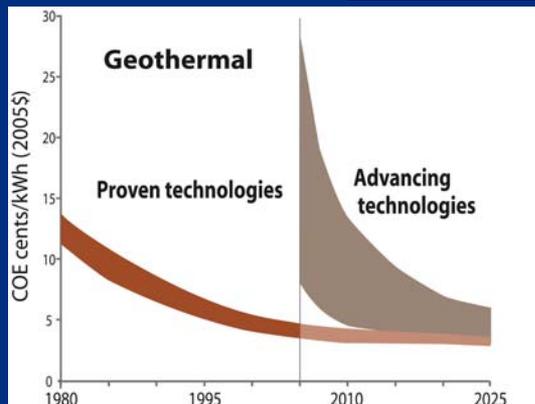
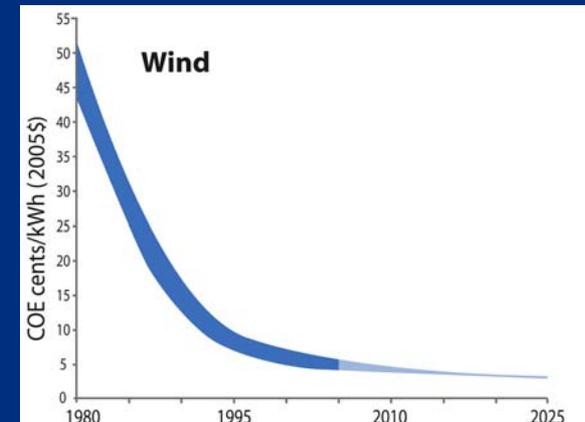
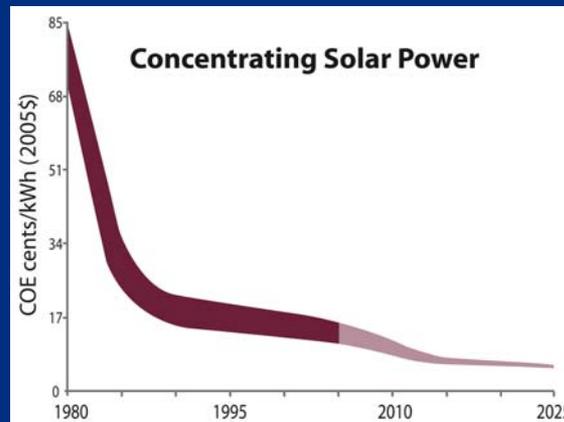
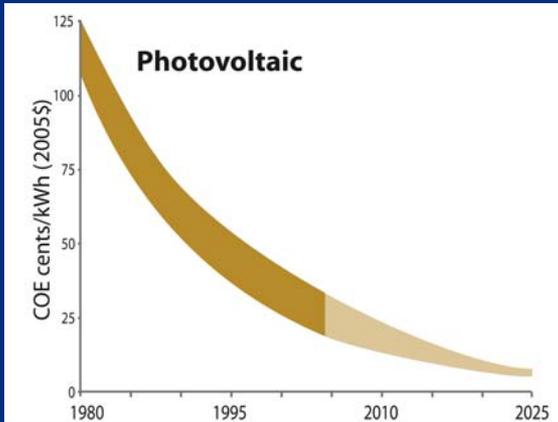


# Renewable Energy Goals

- Rules for Federal renewable energy goals
  - EPACT and EO 13423
  - Related EISA items
  - EO Instructions
  - FEMP Guidance
- Agency strategies to meet the goals
- DOE's Actions to meet the goals



# Renewable Energy Cost Trends



Levelized cost of energy in constant 2005\$

Subsidies not included

Source:  
NREL Energy  
Analysis Office



# Key RE Requirements

- Statutory renewable energy goals under EPACT 2005 Section 203 are:
  - 3% of electric energy by 2007
  - 5% of electric energy by 2010
  - 7.5% of electric energy by 2013
- Bonus Provision
  - Doubled if produced on Federal or Indian land and used by Federal agency
- Under EO 13423:
  - At least half of the statutorily required renewable energy consumed comes from new renewable sources
  - New means renewable sources placed into service after January 1, 1999
  - Encourages on-site projects
  - Information at: <http://www.ofee.gov/whats/e013423.pdf>



# EPACT 2005 Definitions

- Biomass – Summarized – Biomass is lignin waste segregated and non-hazardous or solid non-hazardous cellulosic material derived from forest resources, wood waste, agricultural waste, or plants grown exclusively as electric fuel. (Revised per EPACT )
- Geothermal
- Solar
- Wind
- Landfill Gas- **New as separate category**
- Municipal Solid Waste – **New as separate category**
- **Ocean - New**
- **Incremental Hydropower - New**



# Renewable Energy Basics



**Wind**



**Ocean**



**Geothermal**



**Solar**

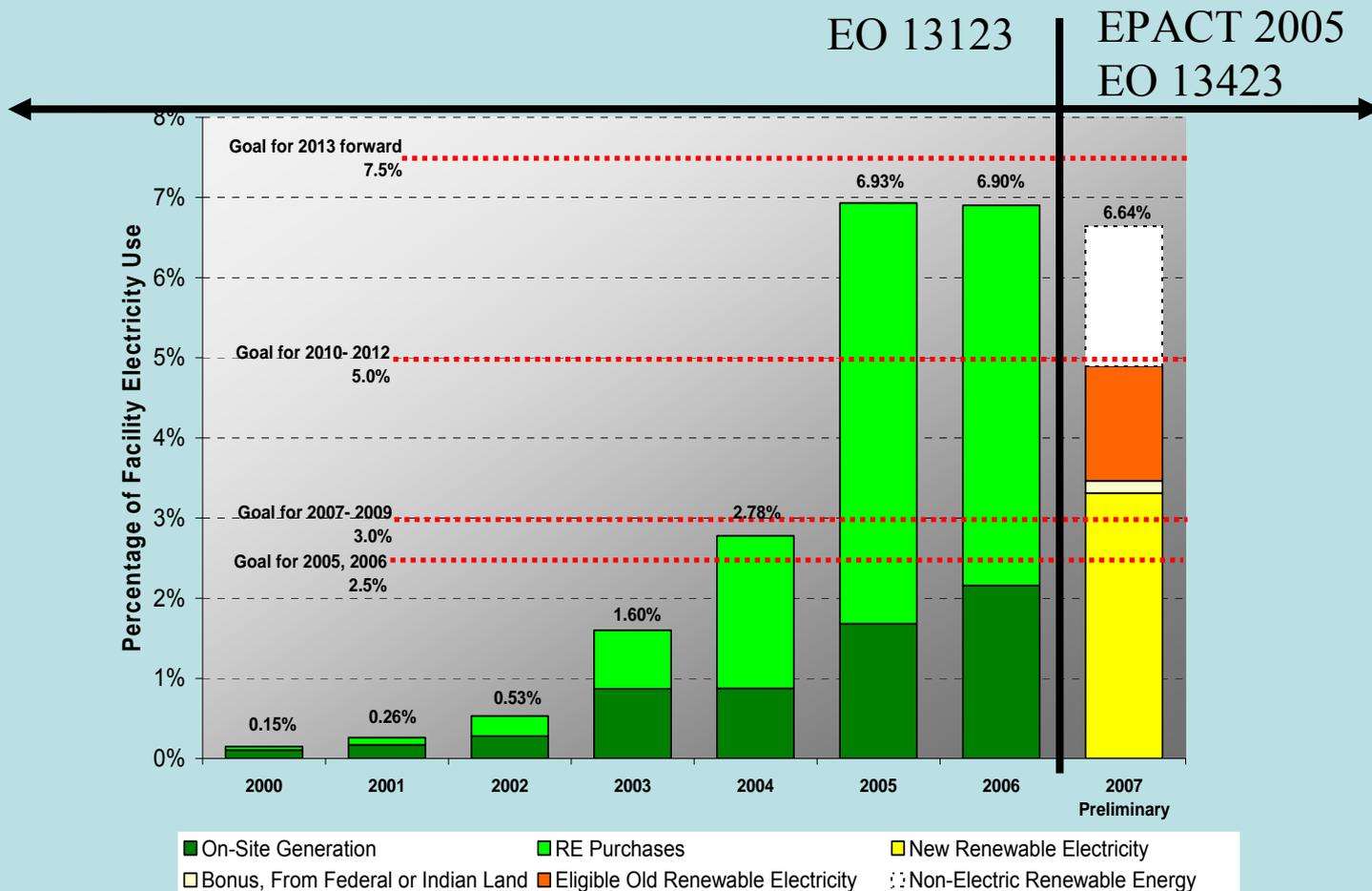


**Incremental  
Hydropower**



**Biomass**

# Legal and Policy Changes and Federal Renewable Energy Use





# EO Instructions

- Funding –
  - Bundle long and short term payback projects
  - Include renewable projects
  - Each project proposal shall consider Renewable Energy
- Distributed Generation-
  - Agencies shall implement life cycle cost-effective distributed generation including renewables
    - Solar electric, solar lighting, geothermal (including ground coupled), small wind.



# EISA: ESPC Provisions

- Title V, Energy Savings in Government and Public Institutions, Subtitle B, Energy Savings Performance Contracting:
  - Permanently authorizes ESPCs
  - **Increases ESPC funding flexibility by allowing a combination of appropriated funds and private financing**
  - **Restricts Federal agencies from limiting the duration of ESPCs to less than 25 years or limiting the total amount of obligations.**
  - Extends definition of energy savings to include cogeneration, **use of excess electrical or thermal energy generated from onsite renewable sources**, and energy-efficient use of water resources.
  - DOD and DOE to study potential use of ESPCs in non-building applications, which includes equipment to **generate electricity**



# EISA: Renewable Energy Provisions

- **Section 523** requires 30 percent of the hot water demand in new Federal buildings (and renovations) to be met with **solar hot water equipment**, if life-cycle cost-effective.
- **Section 433**, Federal Building Energy Efficiency Performance Standards, directs **DOE** to issue revised Federal building standards that:
  - require that the fossil fuel-generated energy use of the new buildings is reduced 100% by 2030, starting at 55% in 2010
- **Section 441** Public Building Life Cycle Costs changes the lifecycle cost methodology for Federal buildings, from 25 years to 40 years.



# FEMP Renewable Guidance

## Renewable Guidance Contents –

1. EPACT emphasis on USE is a change from old EO.
  - For on-site projects, agency must retain or replace RECs to show use and get credit
2. New non-electric projects can count toward EO goal, but not EPACT.
3. Existing purchases and projects which met old EO 13123 guidelines are Grand Fathered through 2011 .
4. Excludes system mix energy and energy used to meet state RPS requirements



# “New” Renewable Energy

Comparison of EO13423 and EPACT 2005 Renewable Energy Goals

|   | 2007-2009 | 2009-2012 | 2013 onward | Can include new non-electrical? | New or old source?  |
|---|-----------|-----------|-------------|---------------------------------|---------------------|
| EO13423 <i>new</i> renewable energy sources <i>minimum</i> requirements | 1.5%      | 2.5%      | 3.75%       | Yes                             | No, exclusively new |
| EPACT 2005 total minimum renewable energy requirements                  | 3%        | 5%        | 7.5%        | No                              | Yes                 |

- New Renewable Energy Requirement of EO13423: electric or non-electric energy from qualified renewable energy sources placed in service after January 1, 1999.
- Per guidance, new non-electric can count toward EO and Scorecard Goals, but NOT EPACT
- EO and EPACT Counting – agencies can report up to half of goal regardless of how much, or how little, new renewable energy they use.
- To report more than half, agencies must meet the 50% new requirement.
- Renewable energy must be “consumed” not just “produced” – EPACT limitation.



# Guidance on RECs

- Renewable Energy Certificates (RECs) -- also known as green tags, green energy certificates, renewable energy credits, or tradable renewable certificates, -- represent the technology and environmental attributes of electricity generated from renewable sources.
- RECs are pieces of paper defining the ownership of the renewable energy attributes of the renewable energy project. Like a stock or bond, their value is in the ownership/property rights they represent.
- A certificate can be sold separately from the mega-watt hour of generic electricity with which it is associated. This flexibility enables the renewable power market to operate much more efficiently than it could.
- To meet Federal goals, RECs must come from sources that meet all requirements of the guidance.



# RECs for On-Site Projects

- If a site does not own/retain or swap the REC for its project, it has no property ownership rights in the renewable energy attribute of the project – the energy is just energy, not renewable energy.
- 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.
- Green claims, particularly involving carbon offsets, are becoming a serious business and the FTC has held hearings and is investigating them – we don't want the REC market or Federal use of it to become suspect.



# Guidance on RECs

- DOE requires on-site projects to have RECs .
- Agencies may trade expensive RECs (like solar) for cheap RECs to count against the Federal goal to improve project cost-effectiveness.
- These trades can be made at the agency level, but must be documented.
- When trading RECs be careful that claims about the project are consistent with the RECS you have.



# RECs and Bonus

## Case 1: Site Retains RECs from On-Site Project



Federal Site

10 GWh  
of Electricity

10 GWh  
of RECs

10 GWh of  
Renewable  
Electricity

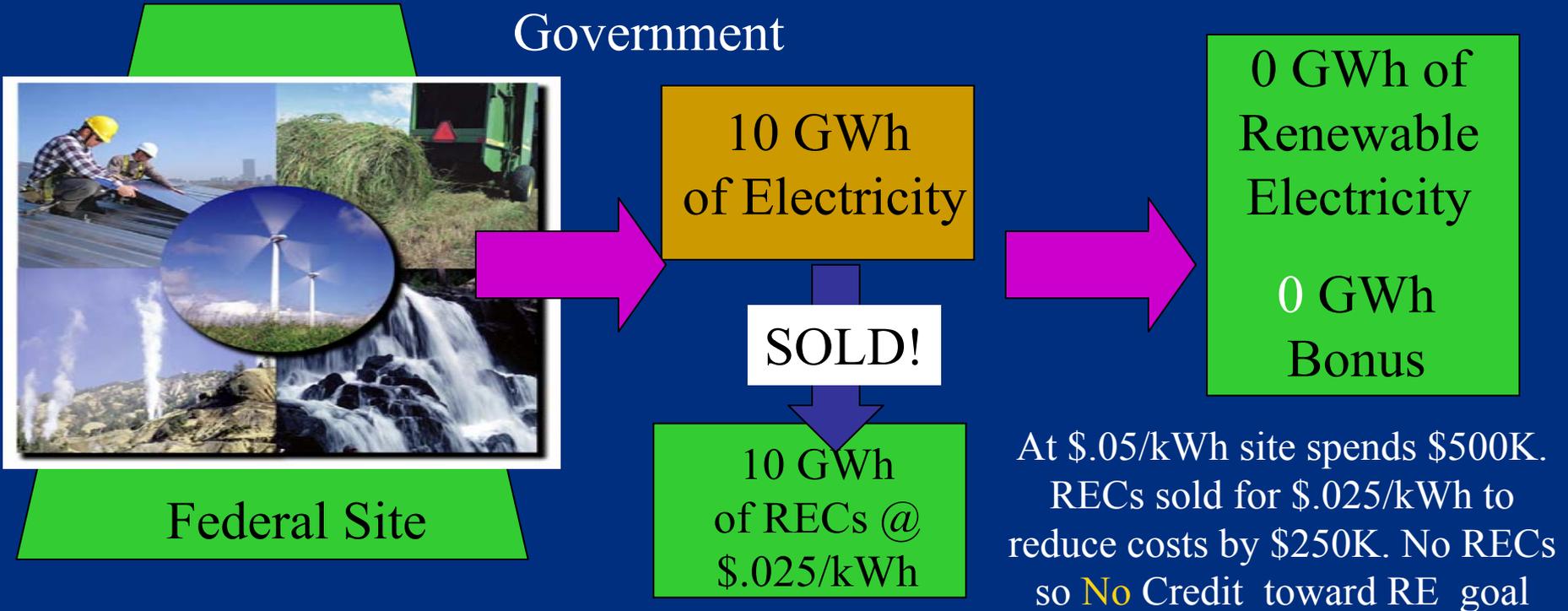
10 GWh  
Bonus

At \$.05/kWh site spends \$500K, for 10 GWh of electricity and 10 GWh bonus, total of 20 GWh of credit toward renewable energy (RE) goal



# RECs and Bonus

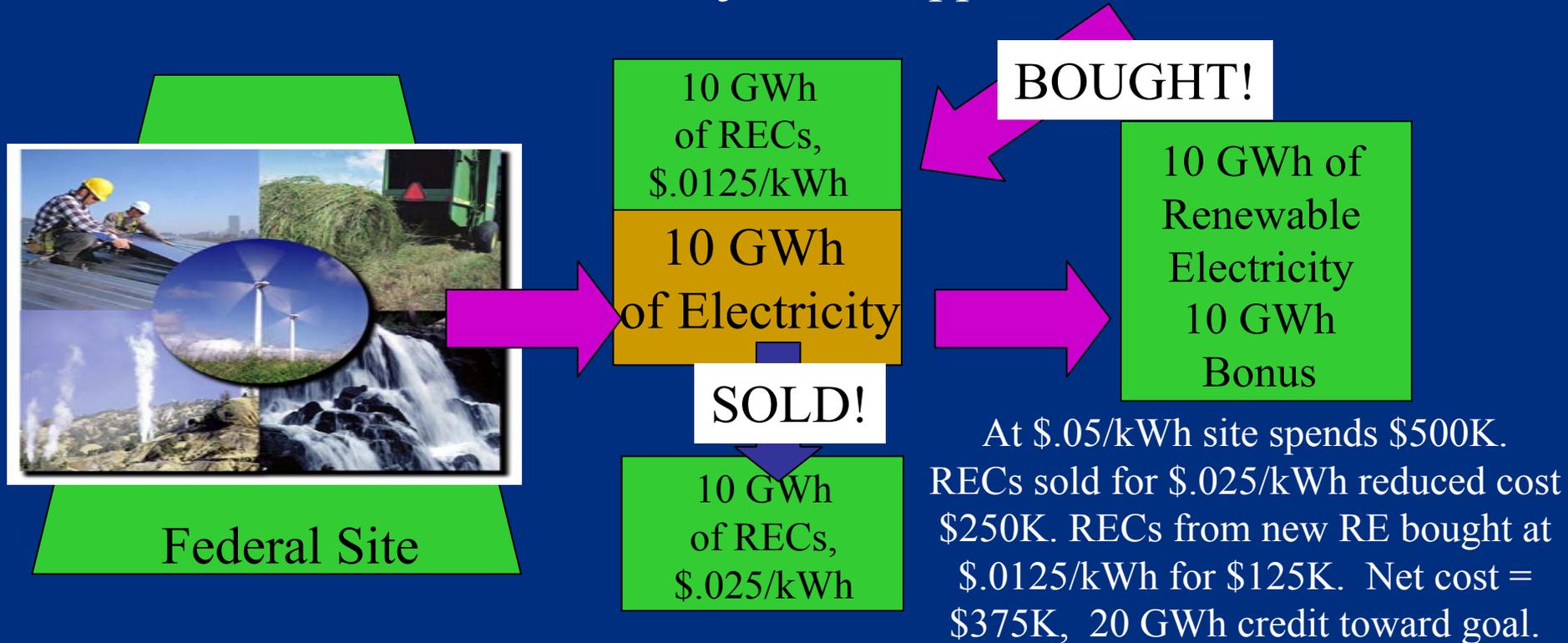
## Case 2: RECs from On-Site Project Sold Outside Government





# RECs and Bonus

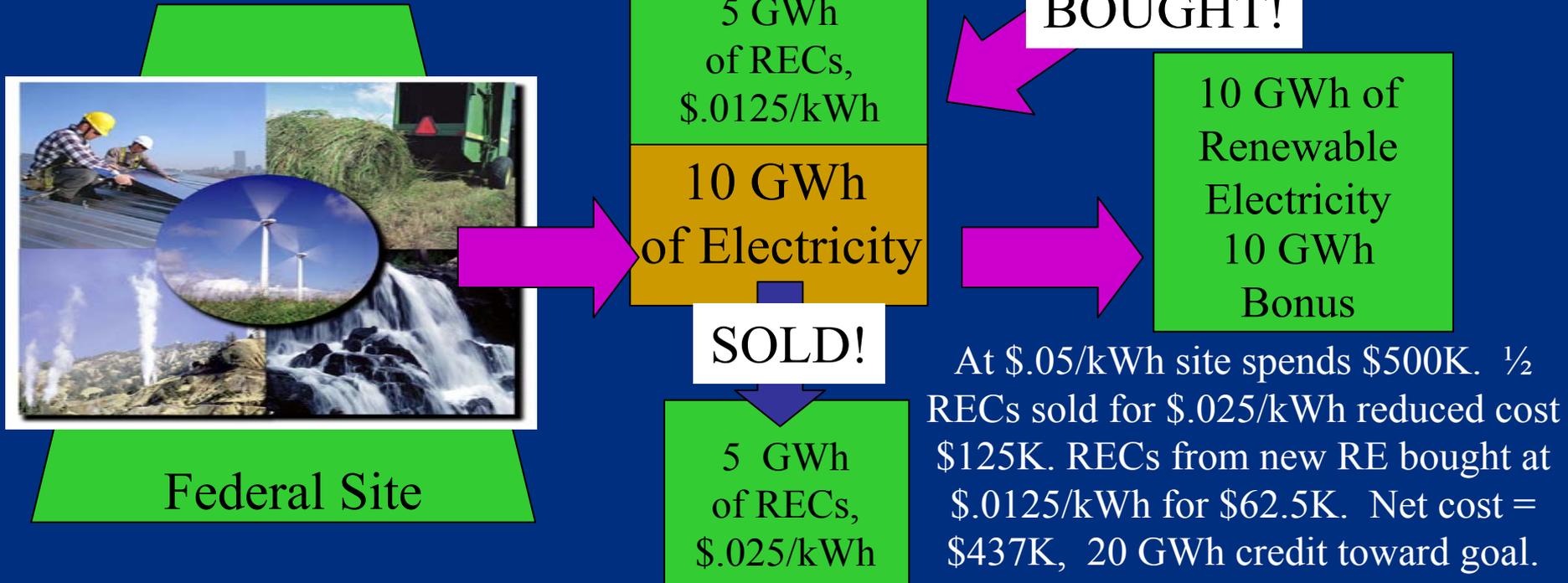
## Case 3: RECs from On-Site Project “Swapped” to Reduce Costs





# RECs and Bonus

## Case 3a: RECs from On-Site Project “Swapped 1/2” to Reduce Costs





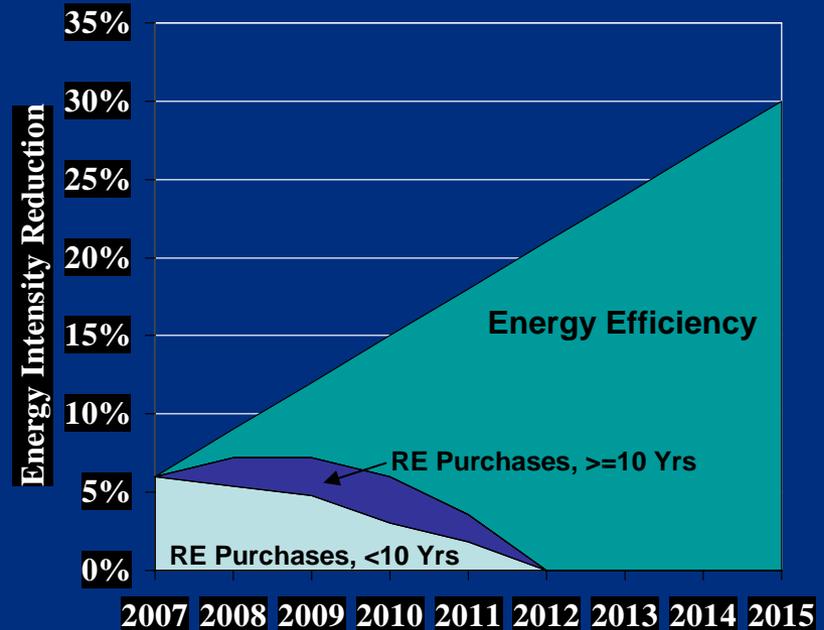
# Making Environmental Claims

- When selling or swapping RECs, be very careful about what you claim for the project. You cannot claim that you use the renewable energy you sell RECs for. You may be able to describe the project in other ways.
- Green claims, particularly involving carbon offsets, are becoming a serious business and the FTC has held hearings and is investigating them – we don't want the REC market or Federal use of it to become suspect.



# RE Phase Out for Efficiency Goals

- Renewable Purchases and Renewable Energy Credits (RECs) were replacing Efficiency
- Renewable Energy Purchases can cover 5.4% towards energy goal in 2008
- RE Purchases will be Phased Out by 2012
- Long term contracts over 10 years can cover 7.2% towards energy goal until 2009 but still phase out to 0% by 2012



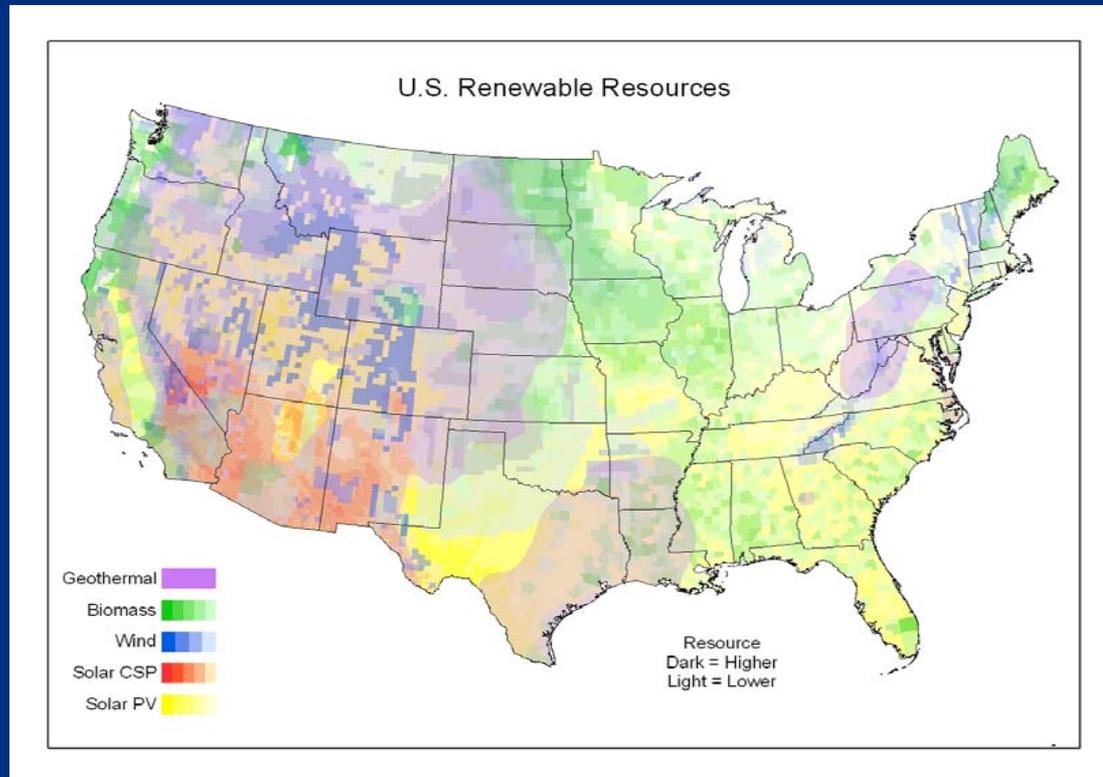


# Agency Strategies

- Agency or Regional level –
- Assess where you are
  - Current RE use
- **Where** to do projects -
  - Geographic location of large facilities
    - Economics vary by location:
      - Renewable resource
      - State incentives, tax credits, markets target specific states
    - Economies of scale: a few large on-site projects in good locations
    - Purchases: Competitive in deregulated states
    - On-site champions
- Specific facility level
  - What is available to you where you are
  - On site counts twice



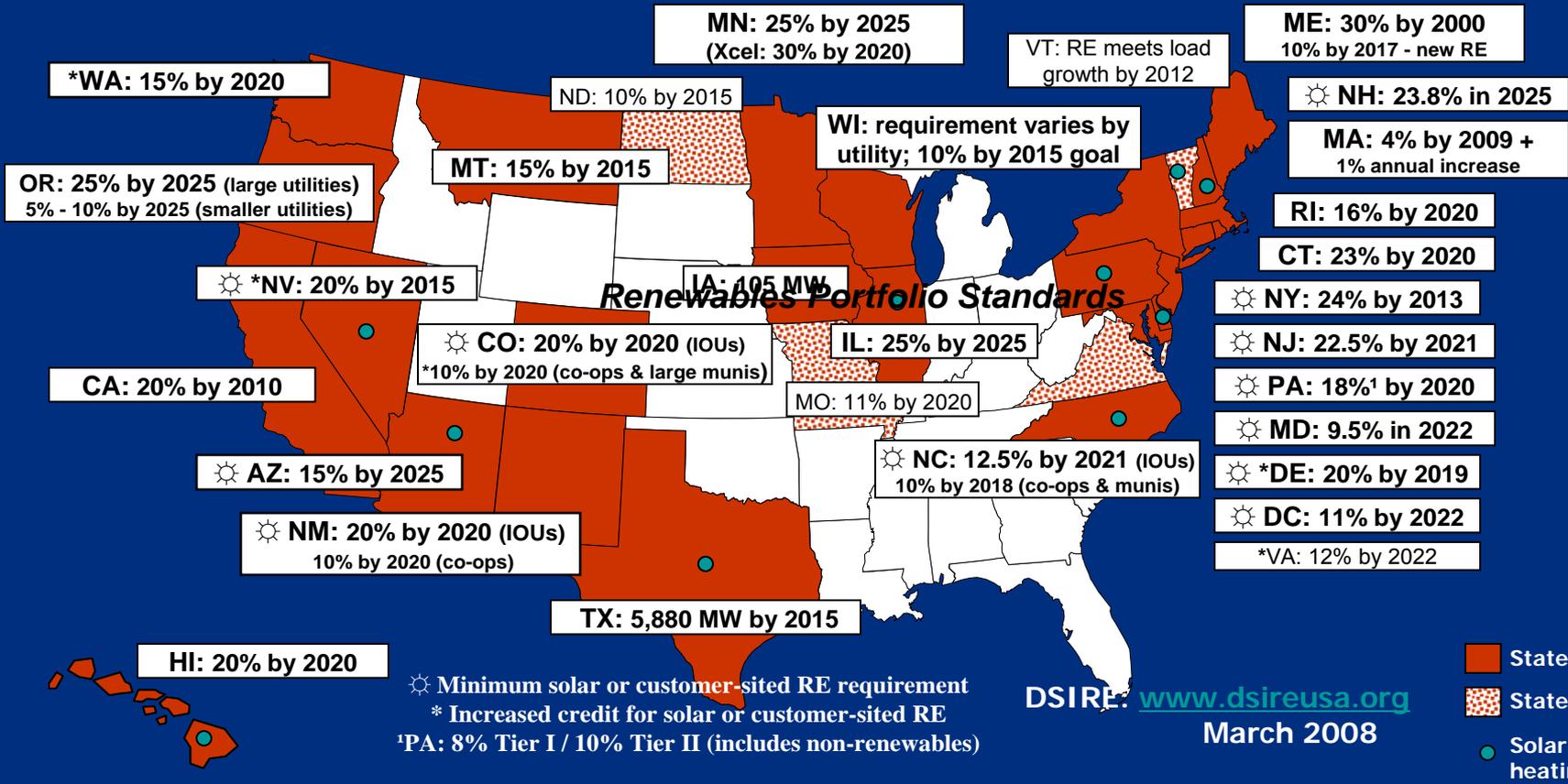
# Renewable Energy Major Resources



...and Wave Energy resources = 2,100 TWH ( $\frac{1}{2}$  of total U.S. electricity consumption)



# Renewable Portfolio Standards



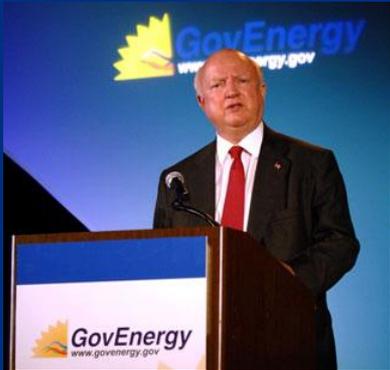


# Strategies to Meet the Goals

- Develop more on-site (including Federal lands) generation from renewables (counts twice toward goal)
- Use private financing to take advantage of tax credits
  - Energy Savings Performance Contract -ESPC,
  - Utility Energy Savings Contracts - UESC
  - Power Purchase Agreement - PPA
- Increase the amount of long-term renewable energy contracts

# Goal – DOE TEAM: Renewable Energy

- Public Statement at GovEnergy – August 2007
  - Signed renewable energy agreements by end of FY 2008 for on-site renewable energy to meet and exceed Executive Order goal of 7.5%





# DOE TEAM Process

- Secretary Bodman's Goal
  - Public Statement – Leadership from the top
  - DOE Order
    - Maximize installation of secure, on-site renewable energy projects **at all DOE sites**
    - Meet 7.5% electricity and **thermal** goal by 2010
  - Signed Agreements and Executable Plans
- Process –
  - Screening for opportunity
    - Distributed and Utility Scale
  - Prioritize, site visits and reports
  - Project support
  - Improve Process



# DOE TEAM Projects – Aug 08

- Signed or beyond – On site renewable energy production will be 5 times electric and 800 times thermal more than last year (2007)
- NREL – Photovoltaic PPA for 750 KW
  - In progress on 1.1 MW PPA
  - ESPC for biomass heating fuel plant – testing operations
- Oak Ridge ESPC – 407 Billion Btu – 3% DOE Biomass Thermal



## DOE TEAM Projects – cont'd

- National Energy Tech Lab – ESPC includes 9 MWh Electric from PV and other, 15 Billion Btu from Biomass Steam Boiler
- Tuba City Solar Parabolic Trough- 1700 Sq Feet – 540 MBtu from appropriations
- Idaho National Lab – Transpired Solar Collectors in ESPC – 500 MBtu



# DOE/FEMP Support

- Provide technical and purchase support for long term renewable energy purchases such as PPAs, others
- Provide planning, development and implementation support for renewable elements in ESPC and UESC projects
- Provide technical support for large renewable energy projects or those deploying advanced technologies
- State Efficiency/Renewable Funds/Incentives
  - <http://www.dsireusa.org/>



# Sources of Information

- Anne Crawley, U.S. DOE Federal Energy Management Program
  - 202-586-1505, [anne.crawley@ee.doe.gov](mailto:anne.crawley@ee.doe.gov)
- DOE FEMP Web Site - Renewables
  - [http://www1.eere.energy.gov/femp/renewable\\_energy](http://www1.eere.energy.gov/femp/renewable_energy)
- EPA Green Power Partnership
  - <http://www.epa.gov/greenpower/index.htm>
- DSIRE – State Incentives
  - <http://www.dsireusa.org/>