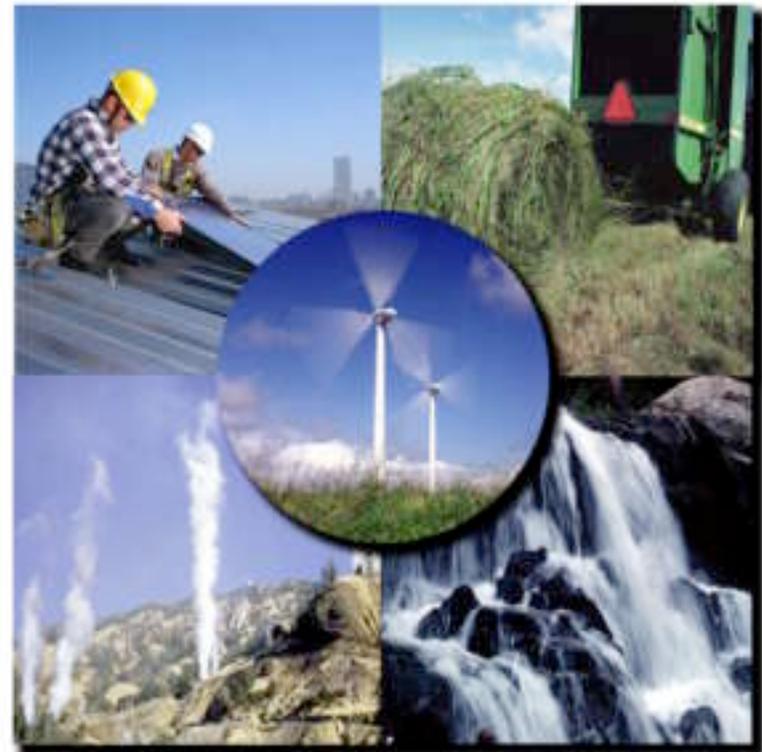




**Behind the
Wheel:
Management
Focus**

Directions for the Federal Renewable Energy Superhighway





Renewable Energy Overview

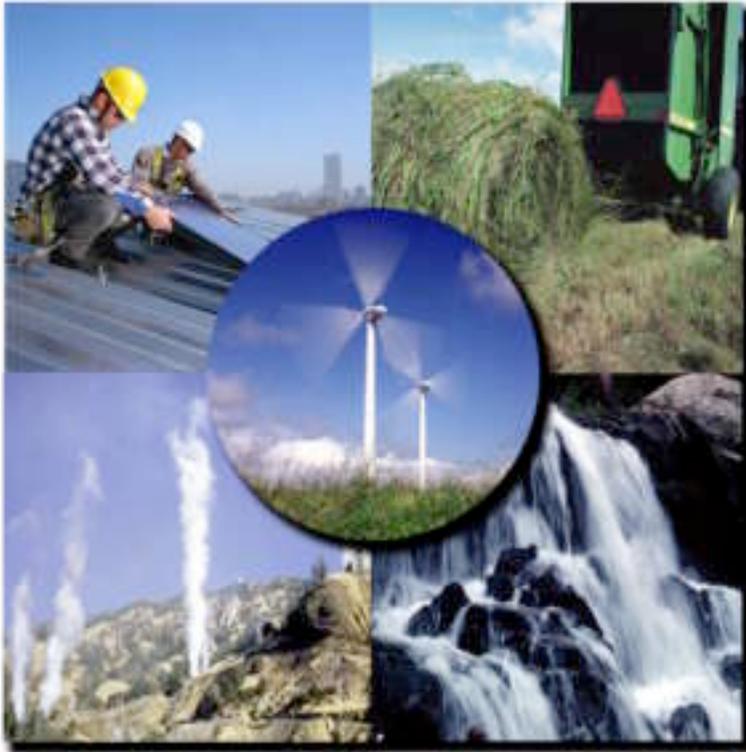
Directions for the Federal Renewable Energy Superhighway Energy 2006 - Chicago, IL

Anne Sprunt Crawley

DOE Federal Energy Management Program

August 8, 2006

- **Renewable Energy Overview**
- **Policy Key Points**
- **Renewable Resource Overview**
- **Policy Details**
- **Planning and Achieving Your Agency Renewable Energy Goals**



By using renewable energy, Federal agencies can:

- Meet Federal renewable energy goals
- Get stable prices for your energy supply
- Conserve natural resources
- Increase the nation's energy security
- Provide energy security for agency facilities
- Provide environmental benefits such as reduced greenhouse gases and air pollution



Energy Policy Act of 2005 (EPACT 2005)

Section 203 (a) Requirement - The President, acting through the Secretary, shall seek to ensure that, to the extent economically feasible and technically practicable, of the total amount of electric energy the Federal Government consumes during any fiscal year, the following amounts shall be renewable energy:

- (1) Not less than 3% in FY07-09
- (2) Not less than 5% in FY10-FY12
- (3) Not less than 7.5% in FY13 & each fiscal year thereafter.

Renewable energy amount shall be doubled if: Renewable energy is produced at a Federal facility, on Federal lands or on Native American lands and used at a Federal facility.



Federal Requirements: Renewable Energy Goal

Executive Order 13123

The Secretary of Energy recommends that the Federal Government strive to have the equivalent of 2.5% of facilities electricity consumption come from new renewable energy sources by 2005. This is equivalent to 1,395 gigawatt-hours (or approximately 500 MW of wind energy capacity).

“New” means in place in 1990 or after.





EPACT 2005 – Section 203 Definition of Renewable Energy Resources

- **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**

- **Note – This definition is different than others:**
 - EPA Green Power Partnership
 - Green E – Currently can vary by state.
 - Executive Order 13123 – Differences for Federal agencies.

Renewable Energy Basics



Wind



**Ocean
Thermal**



Geothermal



Solar

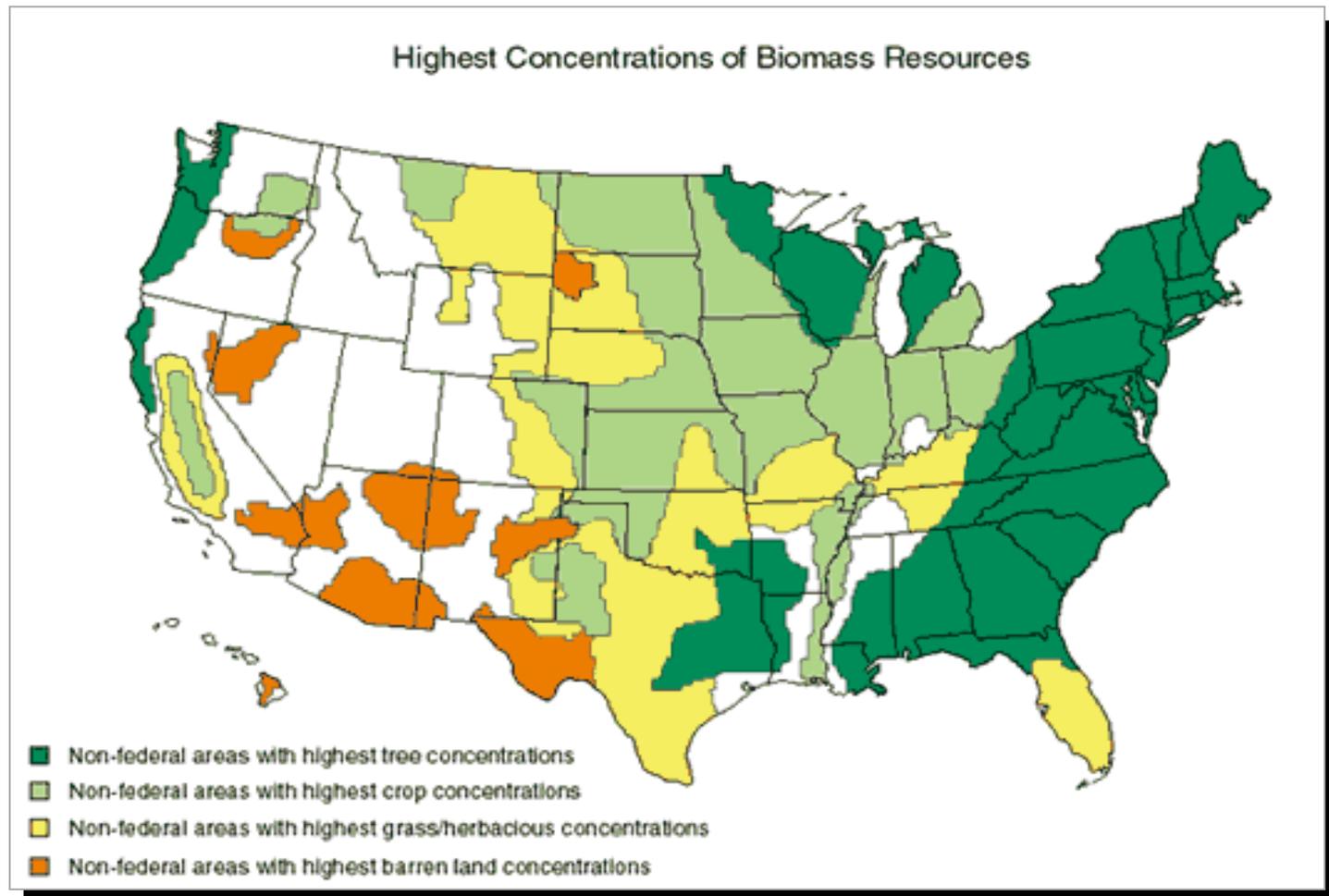


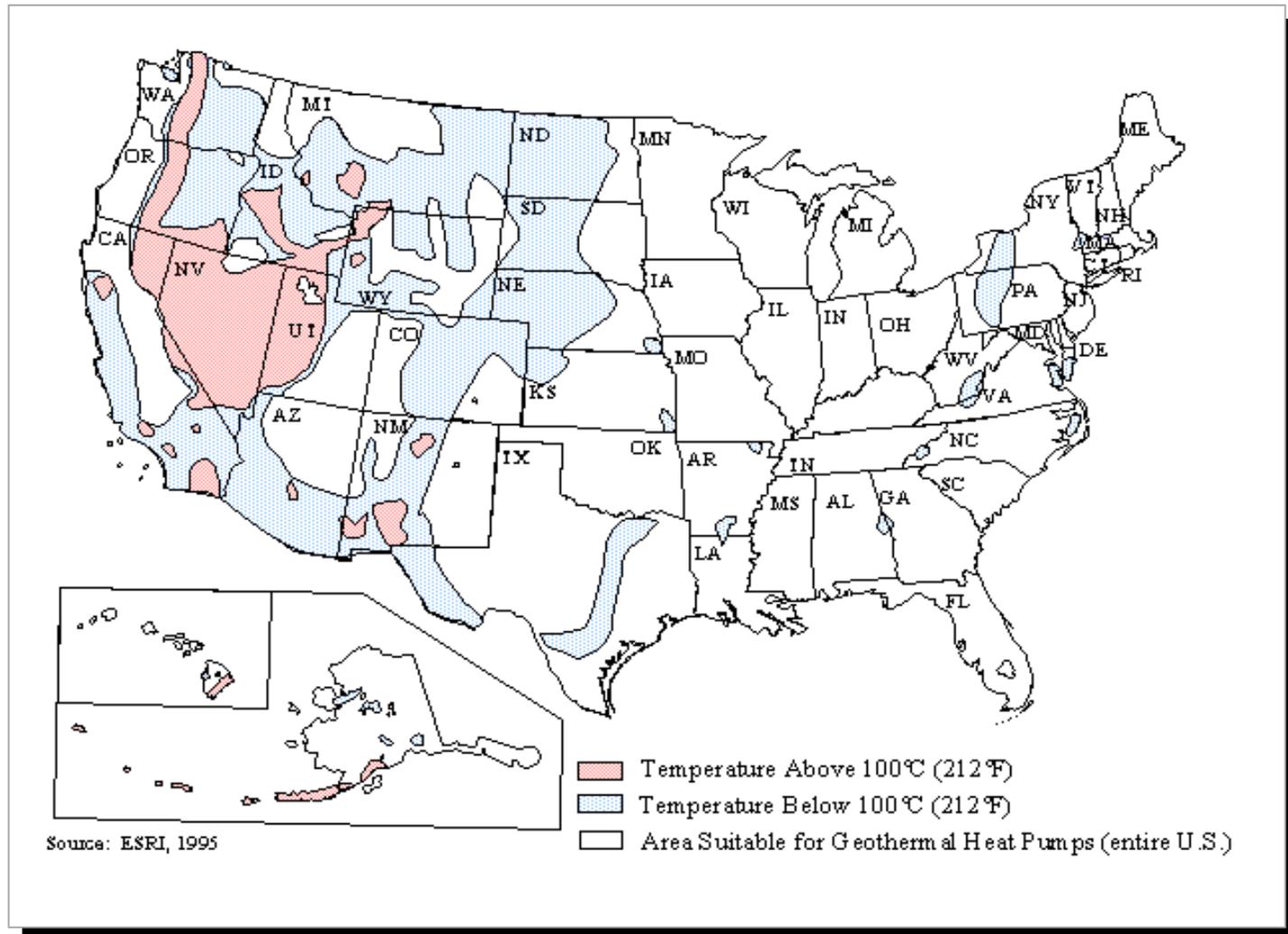
**Incremental
Hydropower**



Biomass

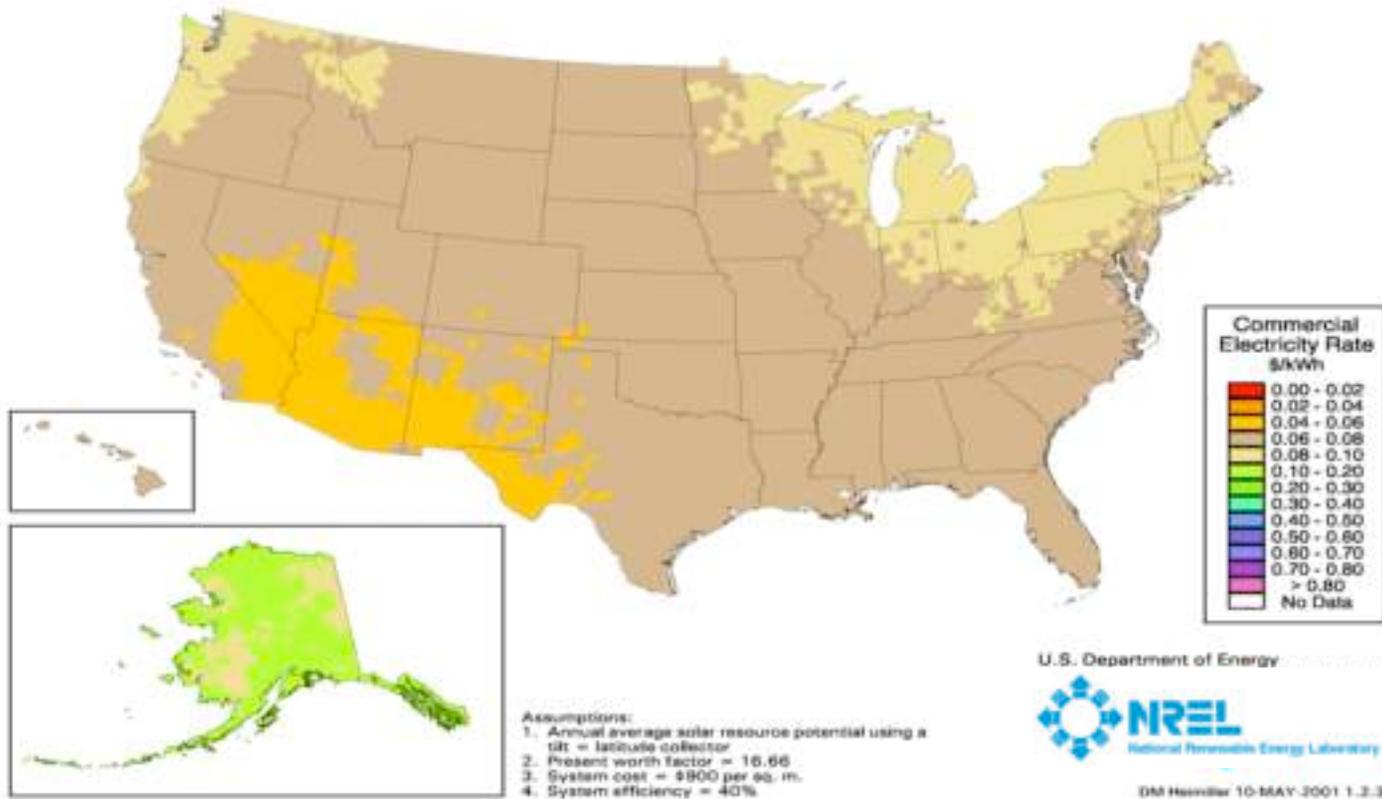
Biomass Resource in the United States



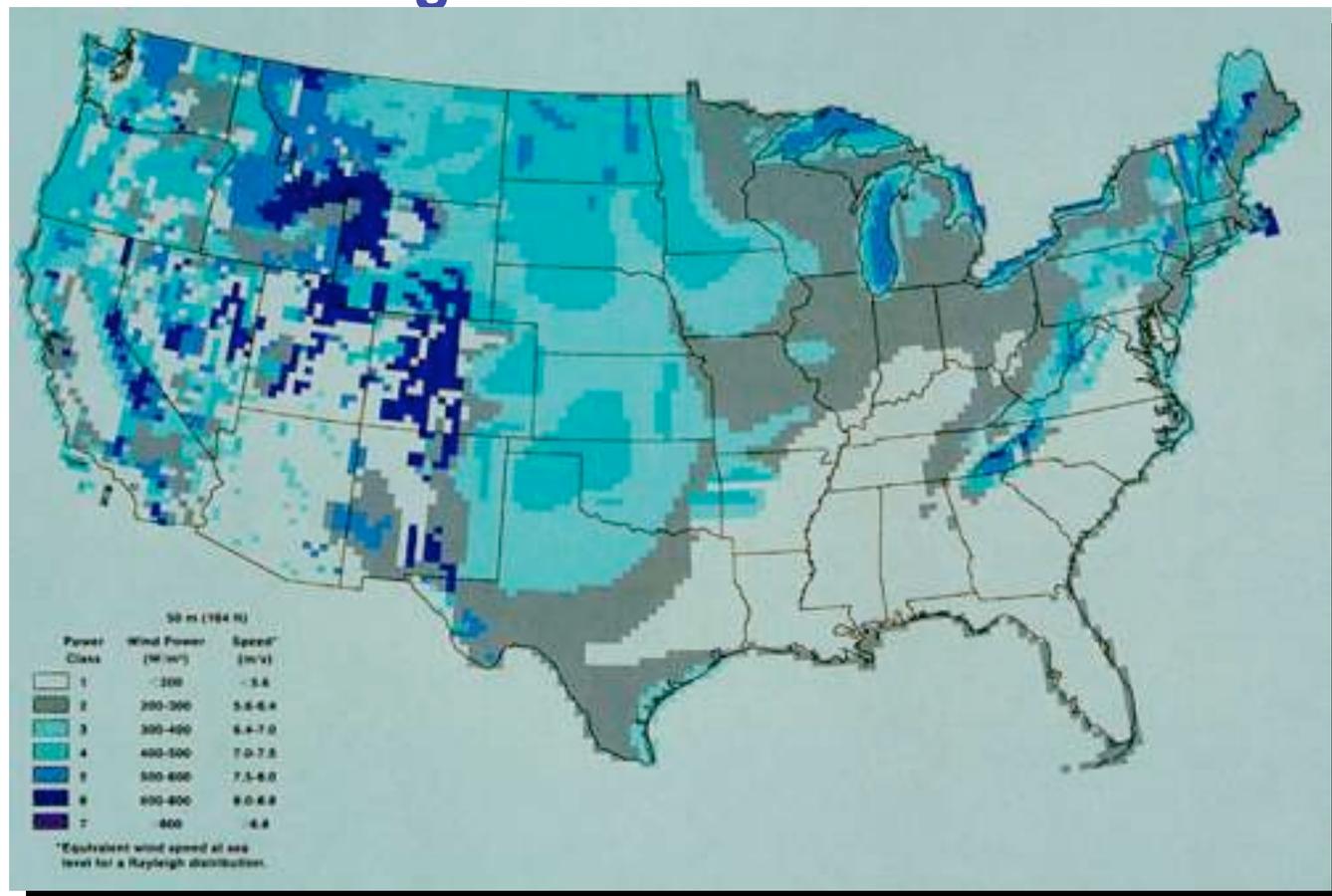


Solar Thermal Energy – Cost-Effective Opportunities

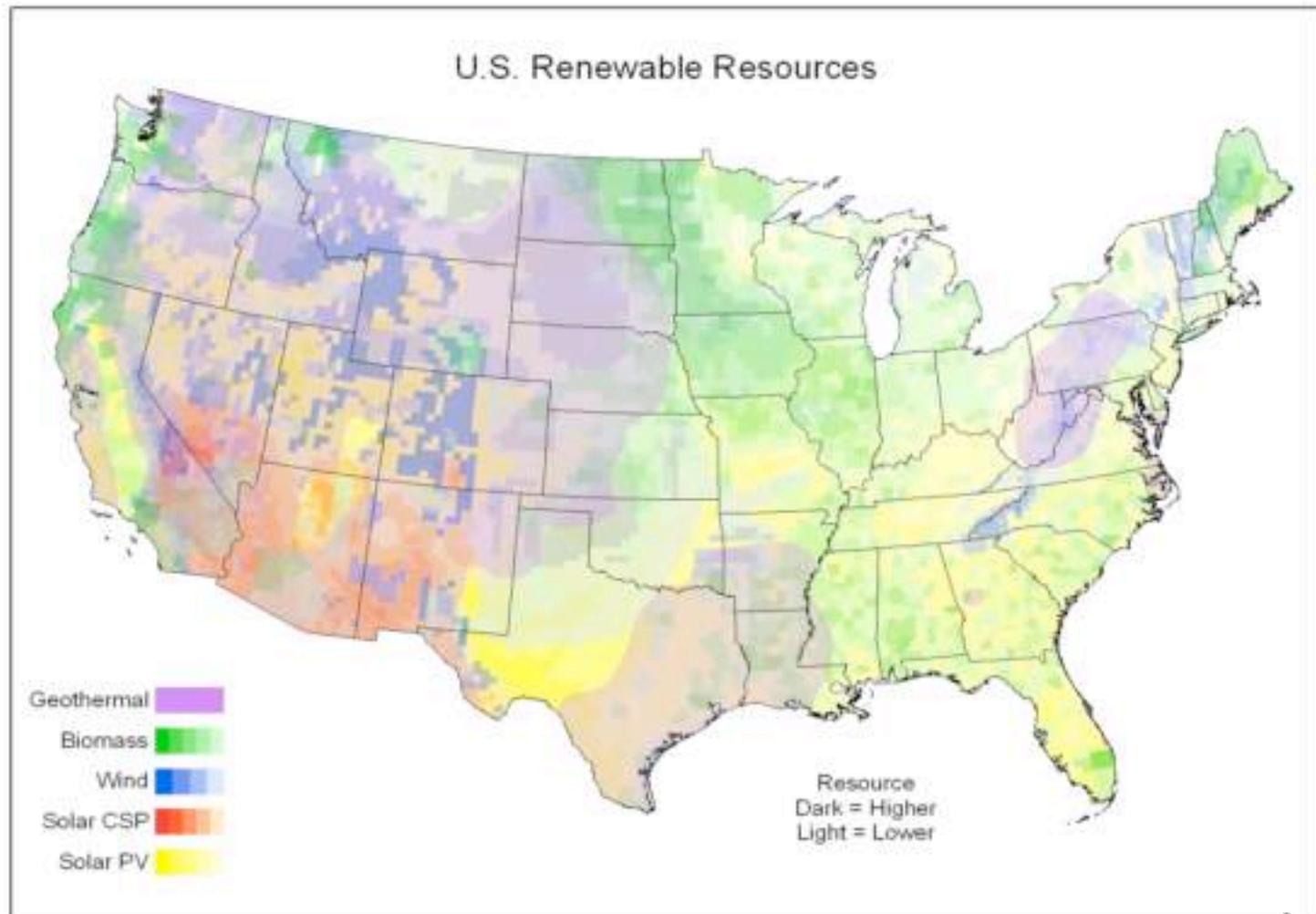
Solar Hot Water: Electricity Rate Corresponding to Savings to Investment Ratio = 1



Annual Average Wind Resource Estimates in the Contiguous United States



Renewable Energy Major Resources





EPACT 2005 – Section 203 Guidance

- Guidance on Federal Government Renewable Energy Goal
 - Definitions
 - New or not
 - **Use** of renewable energy – EPACT
- http://www.eere.energy.gov/femp/technologies/renewable_workinggroup.cfm



Executive Order 13123 Guidance

- Guidance on Federal Government Renewable Energy Goal.
- Guidance for counting Renewable Energy and Green Energy Purchases toward progress in reaching Greenhouse Gas and Energy Reduction Goals.
 - Renewable Energy Purchases are subtracted from overall energy usage for Energy Reduction Goals.
- <http://www.eere.energy.gov/femp/pdfs/eoguidancedoc.pdf>



Energy Bill – Changes from Executive Order

- Different RE Definition
 - Electricity specifically, silent on thermal
 - Includes incremental hydro (large potential opportunity), and ocean energy
 - Defines Municipal Solid Waste (MSW) separately from Biomass
 - Production language tied to use of Renewable Energy

Recent Policy Issues

- Markets for Renewable Energy Certificates (RECs) are developing and changing quickly.
- Important to count RECs only once to avoid double counting:
 - So RECs can't count toward State RPS and Federal goal.
 - Challenge to balance consistent RECs and most advantageous financial benefits.
- Definitions of New Vary – Important to support new Renewable Energy Projects where possible.

Revised Renewable Guidance Contents –

- 1- Revised Guidance establishes a new date of after January 1, 2005 for 50% of renewable power purchases phased in by 2009
- 2- Existing purchases which met EO guidelines are Grand Fathered
- 3- Thermal is included
- 4– Revised guidance deletes agency option to restrict type of purchase

Revised Renewable Guidance Contents –

- 5 – Lack of restriction limits agency ability to plan to participate in EPA Green Power Partnership
- 6 - EPACT emphasis on USE is a change from EO.
 - For on-site projects, agency must retain or replace RECs to show use and get credit
- 7 - Provides double credit to all on-site renewable projects
 - regardless of on-line date if used

Agency or Regional level – Different for different folks

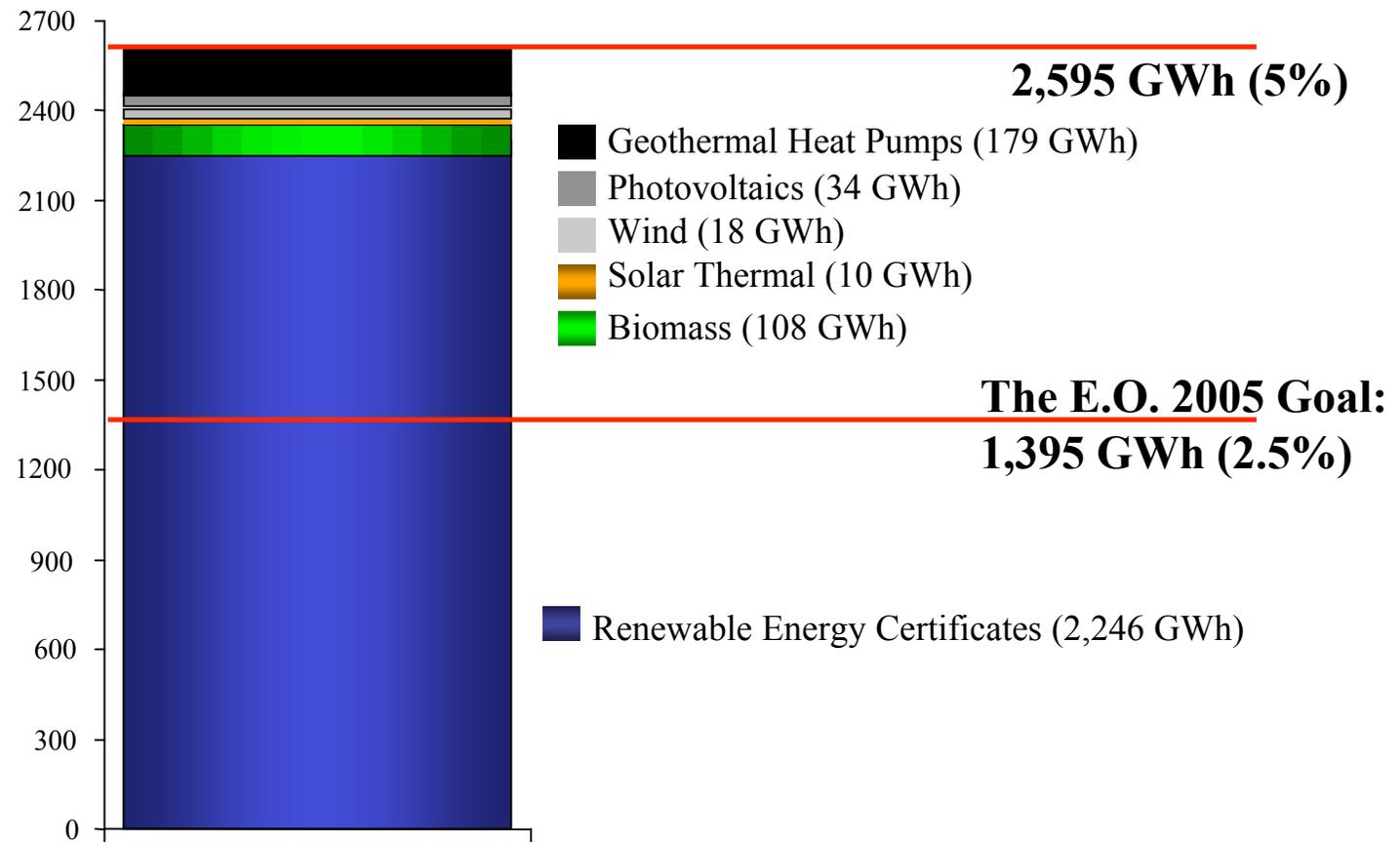
- Assess where you are
 - Current RE use
 - Geographic location of large facilities
 - Economies of scale
 - Economics vary by location:
 - » Renewable resource
 - » State incentives, tax credits, markets

Specific facility level

- What is most easily available to you where you are

Agencies Exceed Goal

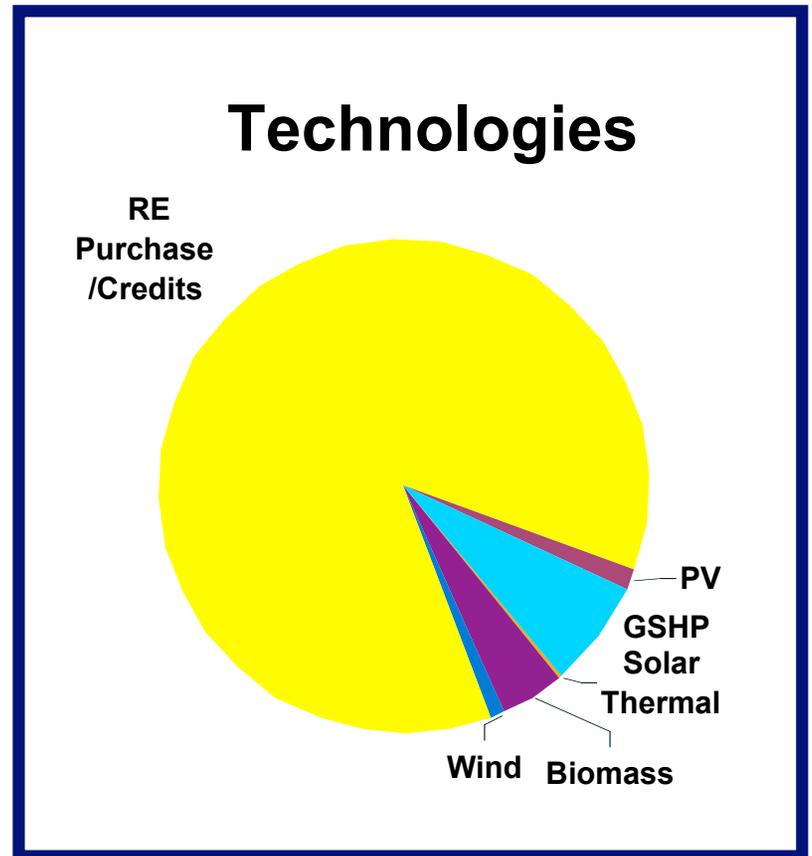
Federal Agencies Exceed the EO Goal for 2005





Where We Are: Federal Renewable Technologies and Purchases, Dec 2005

Solar Thermal	10 GWh
Biomass Thermal	108 GWh
Wind	18 GWh
RE Purchase/Credits	2246 GWh
Photovoltaics (PV)	34 GWh
Ground Source Heat Pumps (GSHP)	179 GWh
TOTAL	2595 GWh



Data as of 12/31/05

Options for Meeting the Federal Renewable Energy Goals



On-site Projects

*Low-energy
design
or on-site
power generation*



Renewable Energy Purchases

*Green power or
green tags*



Third Party Financed Projects

*RE energy
production on
Federal lands*

Renewable Technologies for Projects



Low-energy design in buildings

Wind



Biomass

Photovoltaics



Solar hot water

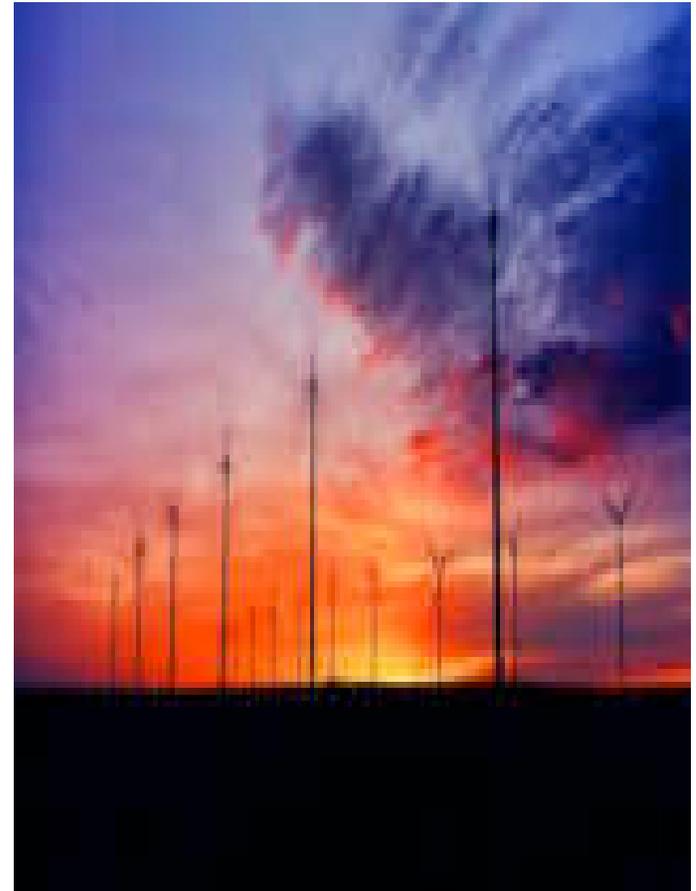


Geothermal energy



Renewable Purchases Approach

- Renewable energy purchases usually include renewable power or renewable energy certificates (RECs).
- Wind energy has been the most common form of renewable energy purchased.
- Good option when on-site renewable energy is not possible or cost effective.
- DESC, GSA, and WAPA are experienced buyers ready to help agencies.



RE Purchases for the Future

- Purchases of renewable energy certificates (RECs) have dominated to date
 - Simpler to buy
 - Market has expanded very quickly
- FEMP and other agencies are trying to put long-term Renewable Power Purchases in place
 - Provide financing for developer
 - Provide energy price stability for Feds
 - Long contracts have been hard to put in place

Third Party Owned and Financed Projects

- These projects offer opportunities for developers to take advantage of Federal and state tax benefits.
- They provide project dollars upfront, paid for out of savings
- They are complicated.

Agency level - It Depends

- A few large on-site projects
- Possible use of state benefits
 - Target specific states
- Purchases
 - Competitive in deregulated states

Specific facility level

- What is available to you where you are

Near Term opportunity –

Renewable Energy Purchases – (RECs)

ESPCs

Longer Term –

Long-term Renewable Power purchases

ESPCs

Wherever it makes sense –

On-site Generation

DOD Renewables

- Major Assessment started in 2002 with funds from Congress.
- 4 Military Services and 4 DOE National Labs looked at
 - Wind, Solar, and Geothermal.
- Phase 2 report sent to Congress March 31, 2005.
- Early activity is renewable energy purchases.
- FEMP supporting pilot solar ESPC at Western bases.
- New DOD goal of 25% by 2025 – Supporting Congressional proposals.



DOE/FEMP Support

Technical Assistance

- Ad Hoc Assistance

– **Financing Options**

- **ESPCs** and **UESCs**

State Efficiency/Renewable Funds

- <http://www.dsireusa.org/>

Workshops/Training

- Implementing Renewable Energy Projects Course
- Sessions here at Energy 2006

– **Literature/Case Studies**

- Project Case Studies and FEMP Focus articles
- **Guide To Purchasing Green Power**

– **Web Information**

- http://www.eere.energy.gov/femp/technologies/renewable_energy.cfm



DOE/FEMP Support

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 - 202-586-7722
- **Web Information**
 - http://www.eere.energy.gov/femp/technologies/renewable_energy.cfm