

# Delivering Central Solar to Market: A FERC Perspective



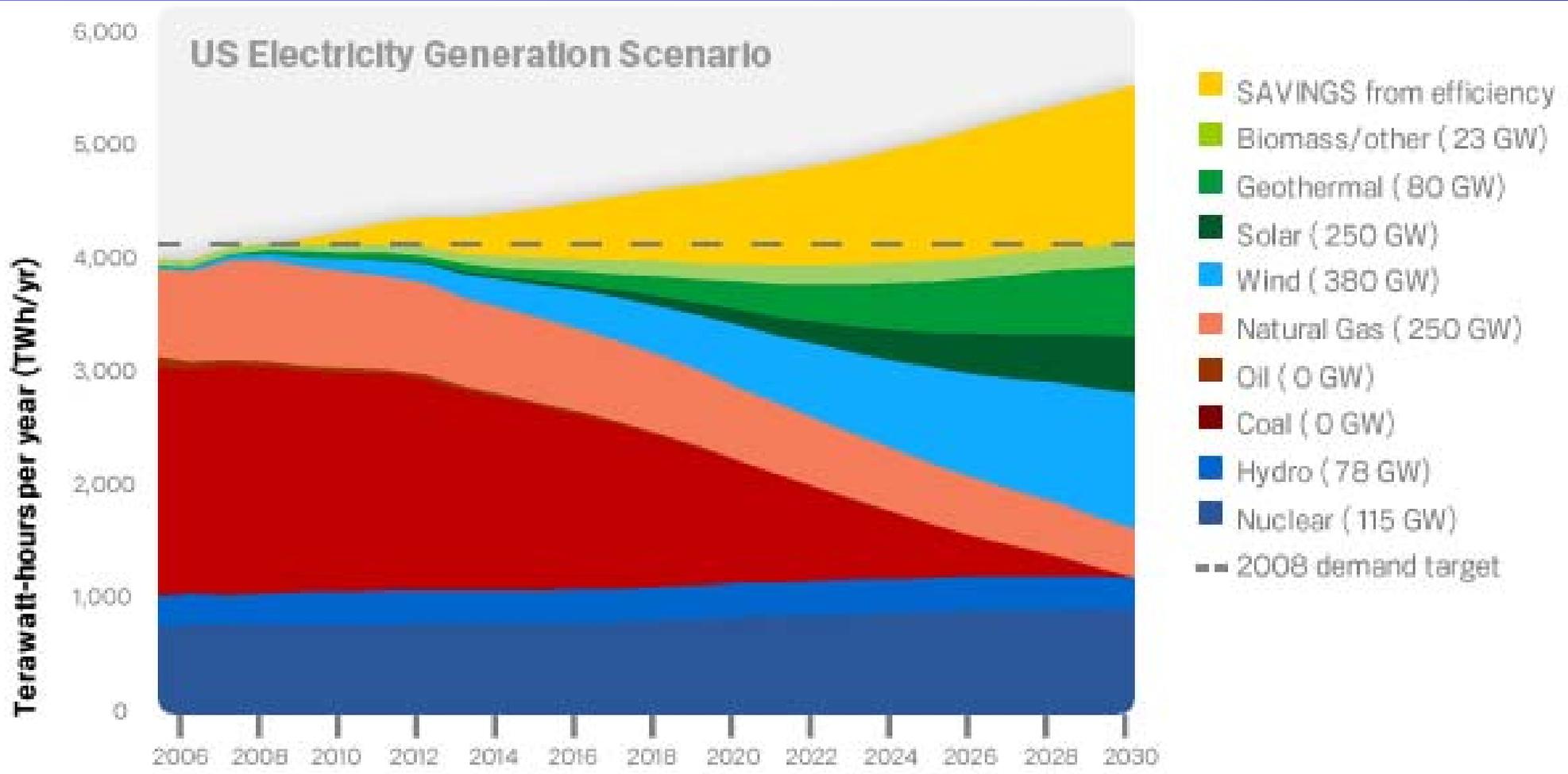
**SOLAR  
POWER** 08  
INTERNATIONAL

October 14, 2008  
San Diego, California

Jon Wellin  
Commissioner  
FERC

# Solar Resource Development

## Google Energy Plan



# FERC Transmission Authority (Interstate)

- ★ **Planning**
- ★ **Siting**
- ★ **Interconnection**
- ★ **Reliability**
- ★ **Cost Allocation & Pricing**

# FERC Transmission Planning

- ★ **Order 890 Transmission Planning (Order 888 OATT Reform)**
- ★ **Applies to All Jurisdictional Transmission Providers**
  - ★ **Open, Transparent, Coordinated, Regional**
  - ★ **All Supply and Demand Treated on “Comparable Basis and Can Participate**

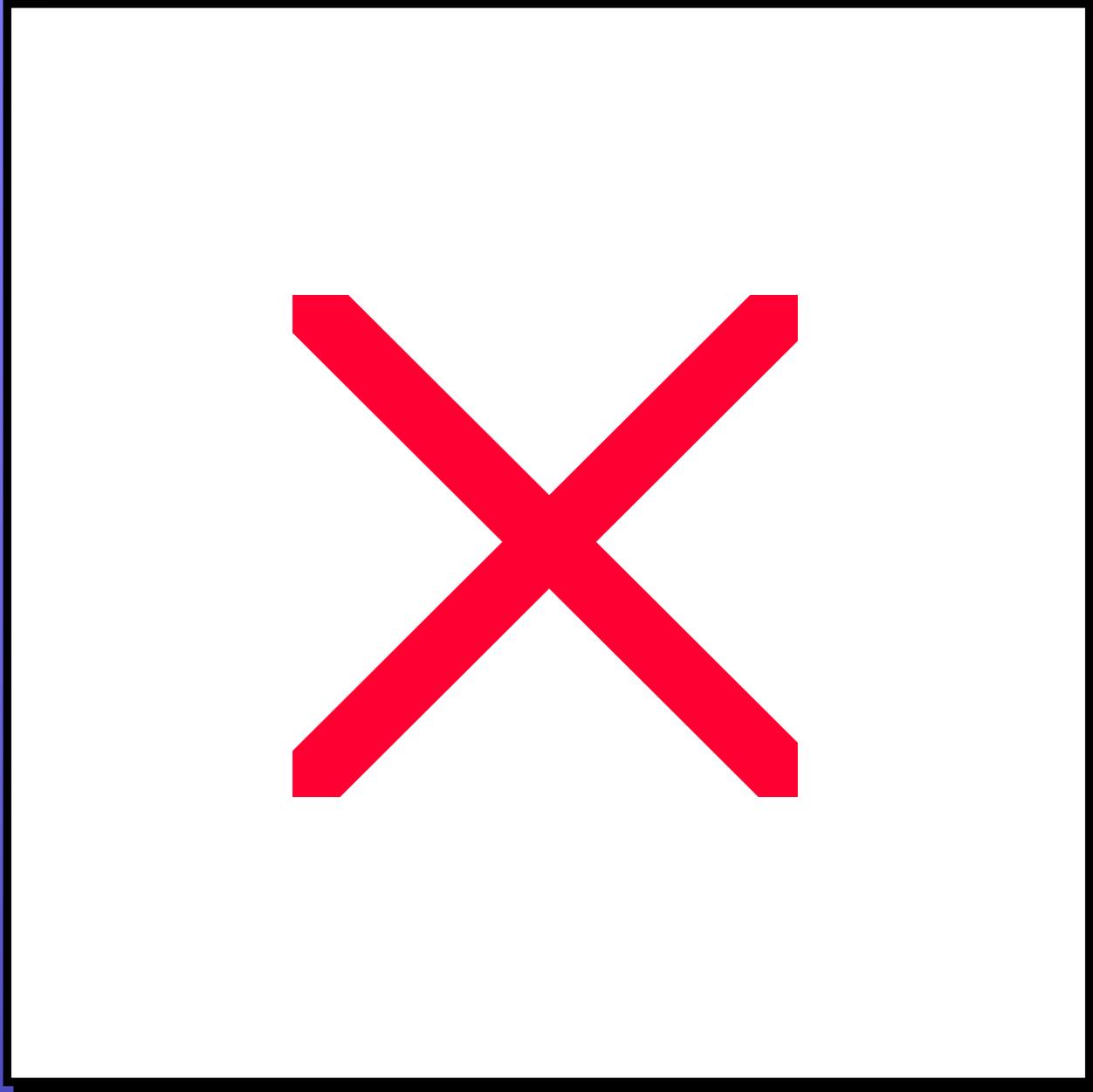
# Renewable Transmission Proposals



**Major Proposed Transmission Projects**  
(many other smaller proposed smaller projects)

- Sea Breeze Projects
- TransCanada Projects
- Gateway Projects (NTTG)
- TransWest Express
- LS Power & Great Basin Projects
- WY-CO Intertie Project
- Eastern Plains Project
- High Plains Express
- Sun-ZIA
- Mountain States Transmission Intertie
- Canada-Northern California
- West of McNary
- Southern Crossing
- Navajo Transmission Project
- Robinson Summit-Harry Allen
- Sunrise Powerlink
- Lethbridge (AB) – Great Falls
- Palo Verde – Devers
- Green Path
- Tehachapi

# Renewable Transmission Proposals

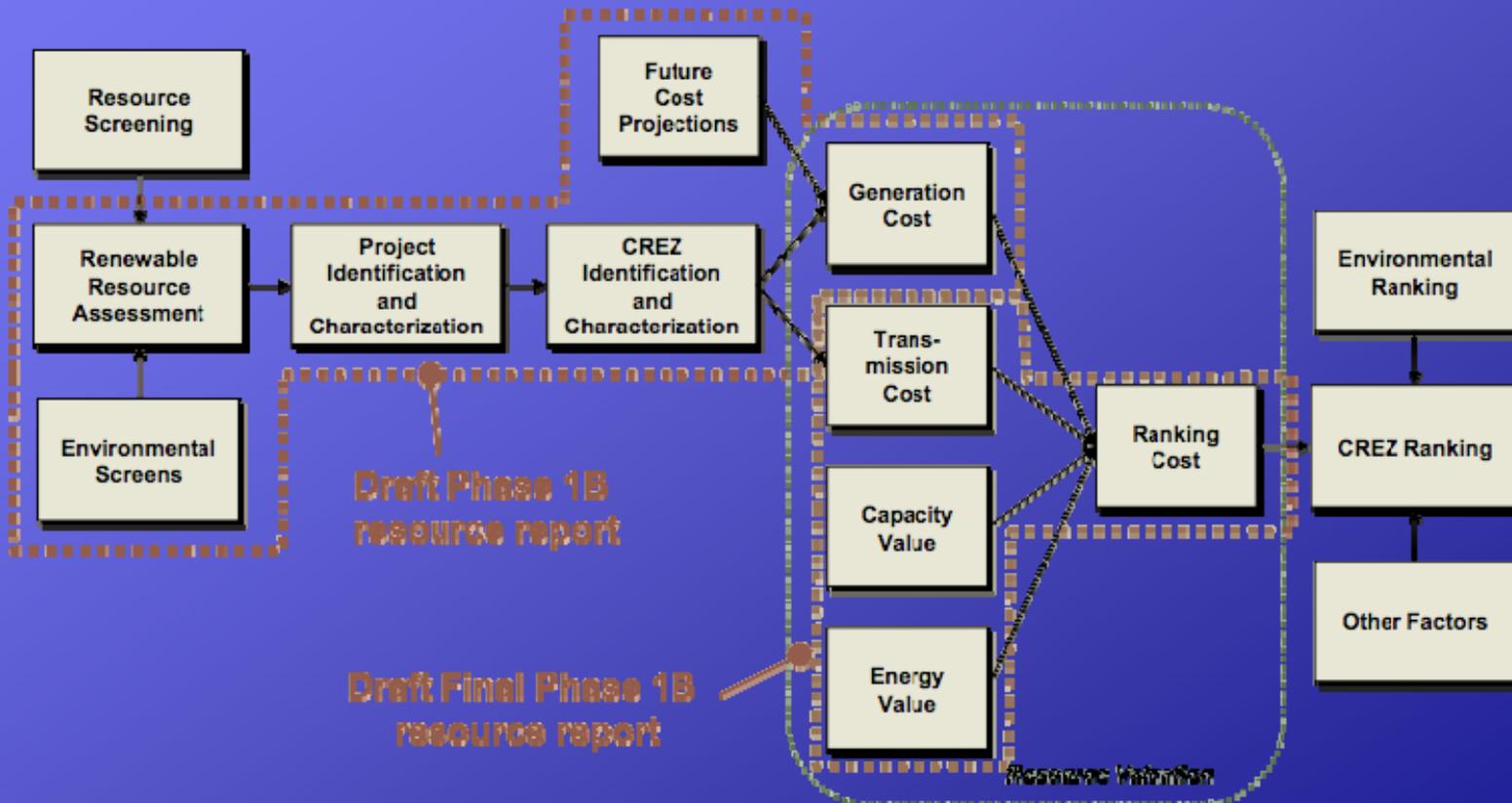


# California RETI Process

BUILDING A WORLD OF DIFFERENCE®

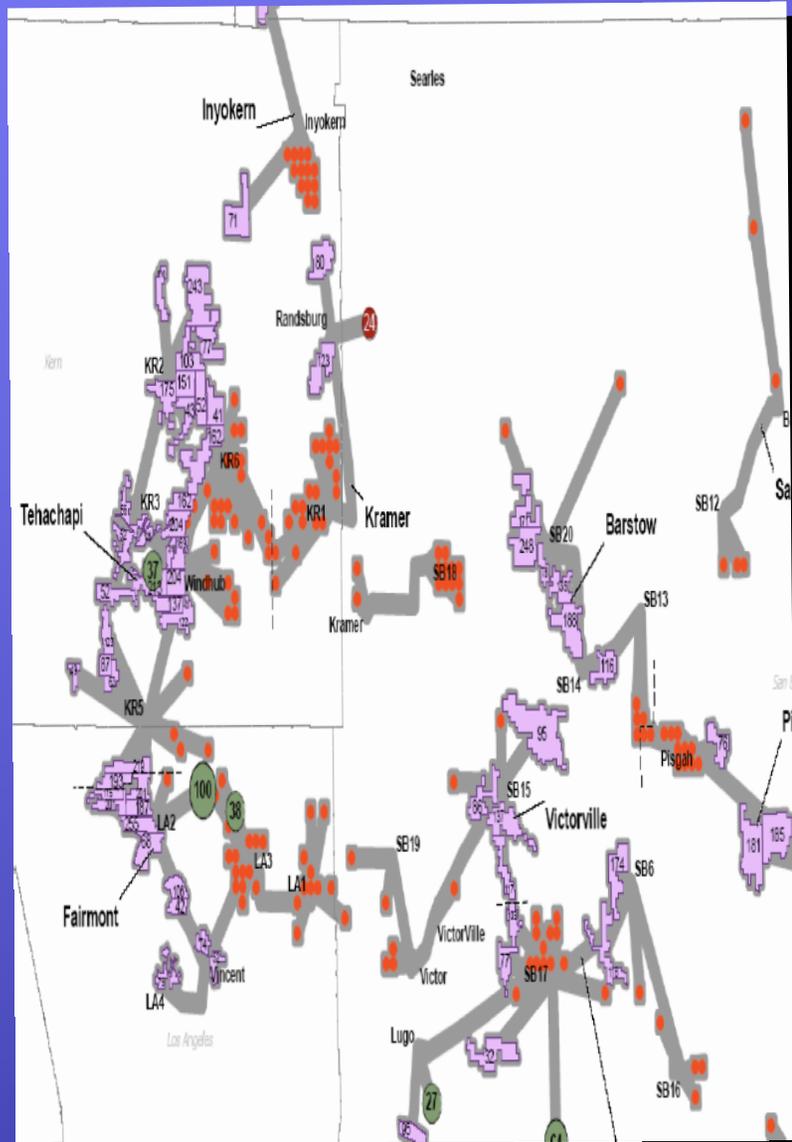


## Overview of RETI Phase 1B Process



# California RETI Process

Post-Cut -325 Solar Thermal Projects (65,000 MW)  
Initial Project Screening Process -Example



# FERC Transmission Siting

- ★ **NIETC Authority (2005 EPACT)**
  - ★ DOE Corridor Designations
  - ★ FERC Backstop Siting Authority
- ★ **FPC Hydro Authority**
  - ★ Section 21
- ★ **Natural Gas Act Authority**
  - ★ Section 7(c)

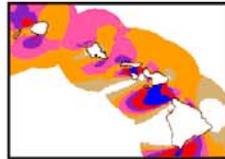
# Transmission Siting- Existing HV Lines



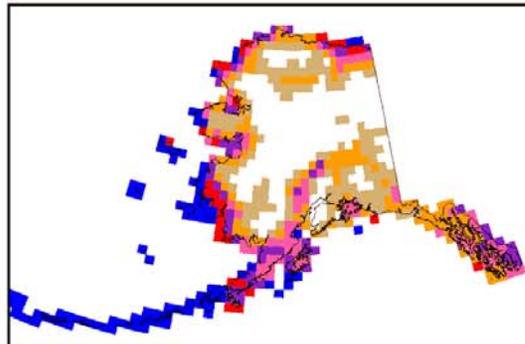
# Transmission Siting- National Renewable HV Backbone Transmission Line

NREL Updated Maps:

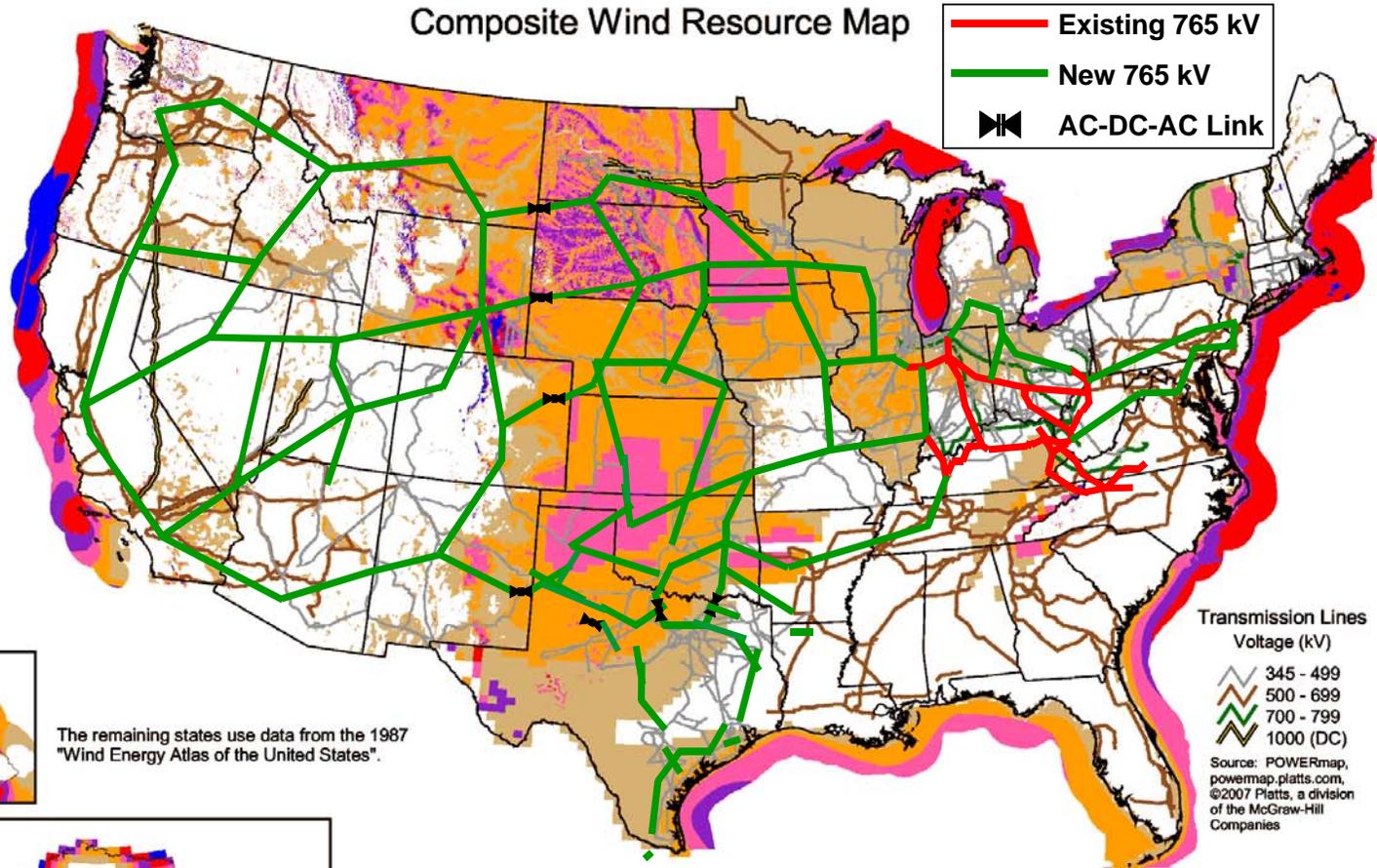
Arizona (2003)  
 California (2002)  
 Colorado (2004)  
 Connecticut (2001)  
 Delaware (2002)  
 Hawaii (2004)  
 Idaho (2002)  
 Illinois (2001)  
 Indiana (2004)  
 Maine (2001)  
 Maryland (2002)  
 Massachusetts (2001)  
 Michigan (2004)  
 Missouri (2005)  
 Montana (2002)  
 Nebraska (2005)  
 Nevada (2003)  
 New Jersey (2002)  
 New Hampshire (2001)  
 New Mexico (2003)  
 North Carolina (2002)  
 North Dakota (2000)  
 Ohio (2004)  
 Oregon (2002)  
 Pennsylvania (2002)  
 Rhode Island (2001)  
 South Dakota (2001)  
 Texas mesas (2000)  
 Utah (2003)  
 Vermont (2001)  
 Virginia (2002)  
 Washington (2002)  
 West Virginia (2002)  
 Wyoming (2002)



The remaining states use data from the 1987 "Wind Energy Atlas of the United States".



Composite Wind Resource Map



Existing 765 kV  
 New 765 kV  
 AC-DC-AC Link

Transmission Lines  
 Voltage (kV)

345 - 499  
 500 - 699  
 700 - 799  
 1000 (DC)

Source: POWERmap, powermap.platts.com, ©2007 Platts, a division of the McGraw-Hill Companies

Wind Power Classification

Wind Power Class	Resource Potential	Wind Power Density at 50 m W/m <sup>2</sup>	Wind Speed at 50 m m/s	Wind Speed at 50 m mph
2	Marginal	200 - 300	5.6 - 6.4	12.5 - 14.3
3	Fair	300 - 400	6.4 - 7.0	14.3 - 15.7
4	Good	400 - 500	7.0 - 7.5	15.7 - 16.8
5	Excellent	500 - 600	7.5 - 8.0	16.8 - 17.9
6	Outstanding	600 - 800	8.0 - 8.8	17.9 - 19.7
7	Superb	800 - 1600	8.8 - 11.1	19.7 - 24.8

<sup>a</sup> Wind speeds are based on a Weibull k value of 2.0

U.S. Department of Energy  
 National Renewable Energy Laboratory



# Transmission Interconnection

## ★ Traditional Interconnection Rules

- ★ First Come First Served

- ★ Individual Interconnect Studies

## ★ Que Reform

- ★ ISO/RTO Que Reform Filing

  - ★ First Ready First Served

  - ★ Clustering Studies

# Transmission Reliability

- ★ **EPAct Section 215**
  - ★ **Bulk Power System**
    - ★ **Enforceable Rules**
      - ★ **NRO/NERC**
        - ★ **Regional Entities**

# Transmission Cost Allocation & Pricing

- ★ **Beneficiary Pays**
- ★ **Location Constrained Resources**
  - ★ **Tehachapi Decision**
- ★ **Pipeline Analogy**
  - ★ **Open Season/Anchor Shipper**
- ★ **Experimental Transmission Pricing Plan**
  - ★ **WestConnect Proposal- (Az,Nv,NM,Co)**
    - ★ **Hourly Non-Firm Point-to-Point at Single Rate**
    - ★ **Alternative to Pancaked Point-to-Point**
    - ★ **Two Year Experiment**
    - ★ **Approved September 18, 2008**

# Conclusions

## FERC Has:

### ★ Authority Over

- ★ Interconnection

- ★ Cost Allocation & Pricing

- ★ Reliability

- Limited Siting Authority

- Regional Only Planning Authority

- No Authority to Order Construction

- Multiple Proposals for Renewables- Primarily Wind

- No National Transmission Plan to Coordinate Many Renewable Proposals and Integrate Solar

*Thank  
You*