



# Commercial Wind Energy Development in South Western South Dakota

By:

Fall River Conservation District  
NRCS, Black Hills RC&D and  
SD Wind Association

# Expectations

- Discuss how to determine wind energy potential
- Discuss why a Wind Energy Association, LLC is important
- Discuss the steps of forming an Association
- Discuss the Benefits
- Discuss some of the concerns
- Discuss the role of Partners in the process

# Evaluating Wind Energy Development Potential in South Dakota

- **Five Major Components**
  1. Wind Energy Resources
  2. Transmission access and capacity
  3. Market for wind energy
  4. Environmental Impacts and Other Location Factors
  5. Landowner and Community Support

# 1. Wind Energy Resources

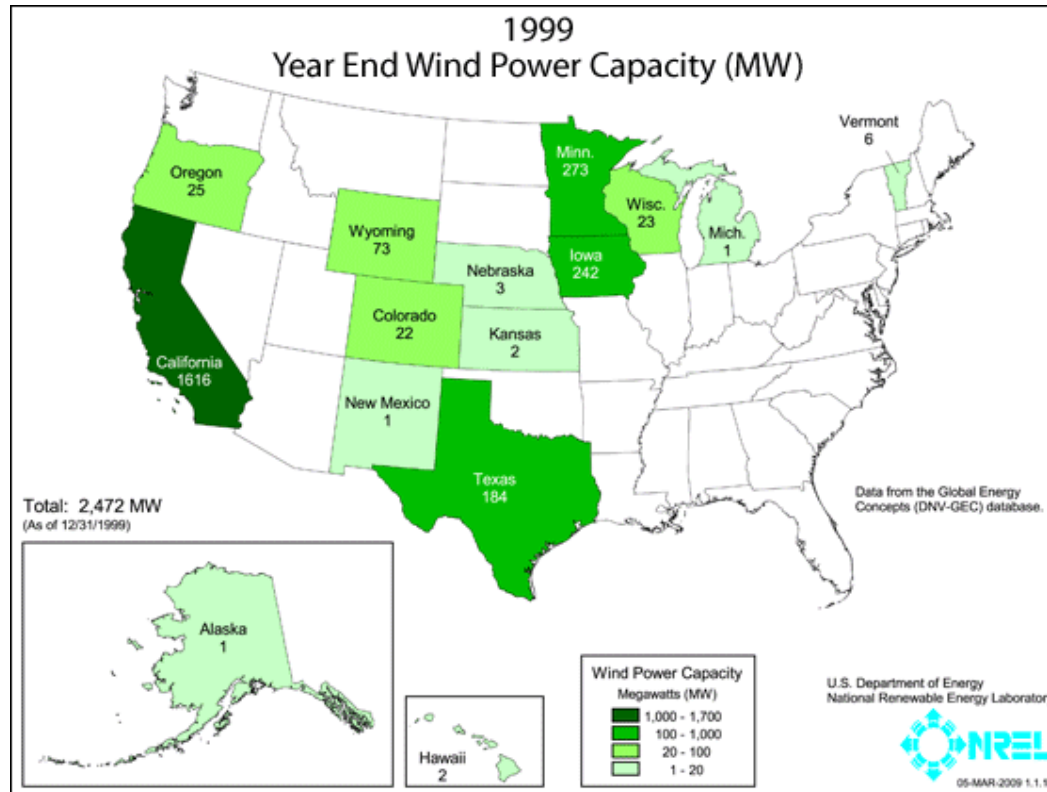
- South Western SD has some of the good wind energy – NREL
- 35% to 40% wind capacity factor
- 15 to 20 MPH average wind speed
- Capable of producing 3,500 MW in the next 10 years
- Collect as much wind data as possible--Additional anemometers and met towers
- In some areas the wind is “too good” – Class 7
- Developers have identified this area as prime for wind energy development

## Developable Nameplate Wind Power Production Potential by Class (MW) (Source: NREL Data)

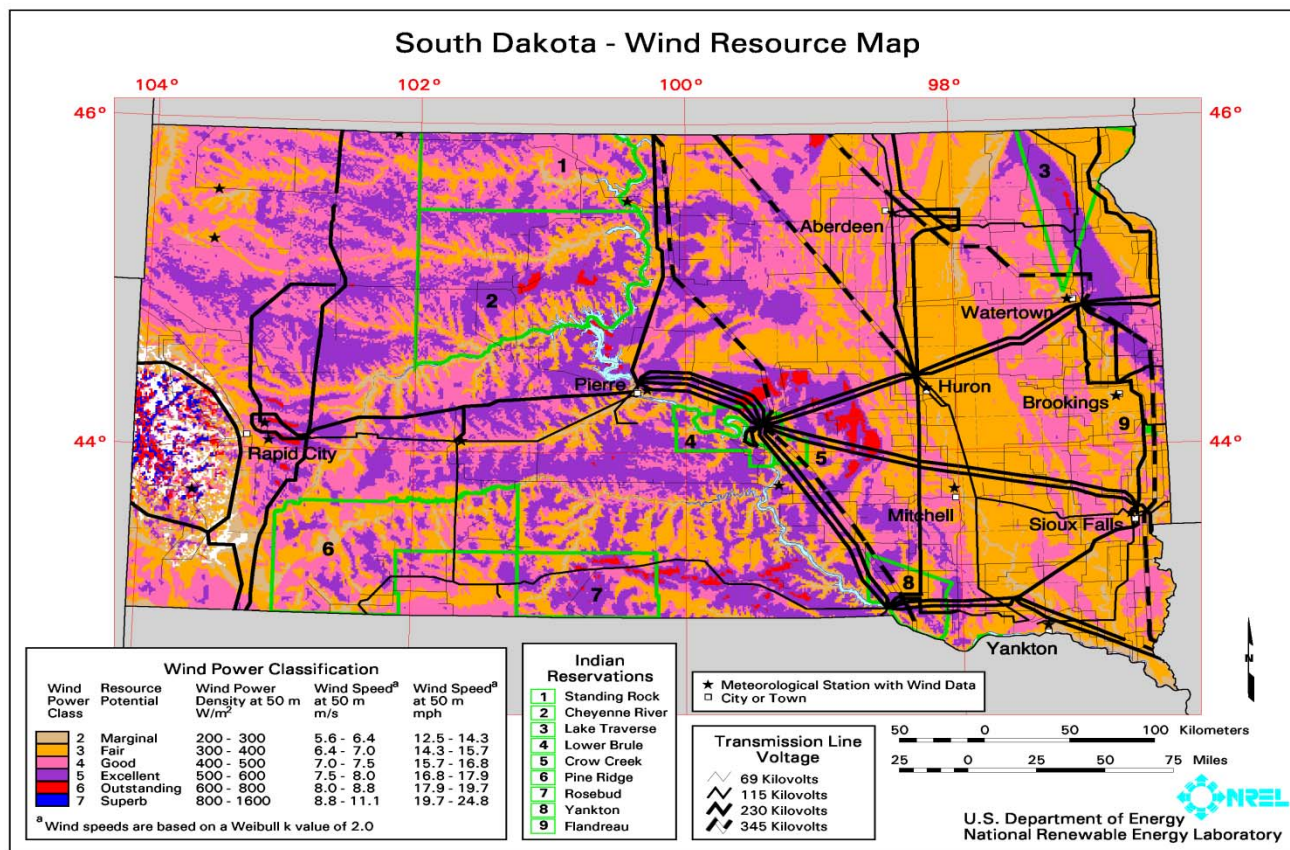
State	Class 5	Class 6&7	Total Power Potential Class 5 -7	% of Total	Ranking
Arizona	460	200	660	0.32%	#11
California	4,830	4,300	9,130	4.39%	#4
Colorado	3,510	4,060	7,570	3.64%	#5
Idaho	635	395	1,030	0.49%	#10
Montana	38,860	15,620	54,480	26.18%	#2
Nevada	1,140	720	1,860	0.89%	#8
New Mexico	8,980	1,800	10,780	5.18%	#3
Oregon	1,540	850	2,390	1.15%	#6
Utah	770	410	1,180	0.57%	#9
Washington	1,590	790	2,380	1.14%	#7
Wyoming	59,630	57,040	116,670	56.06%	#1
TOTAL	121,945	86,185	208,130	100%	

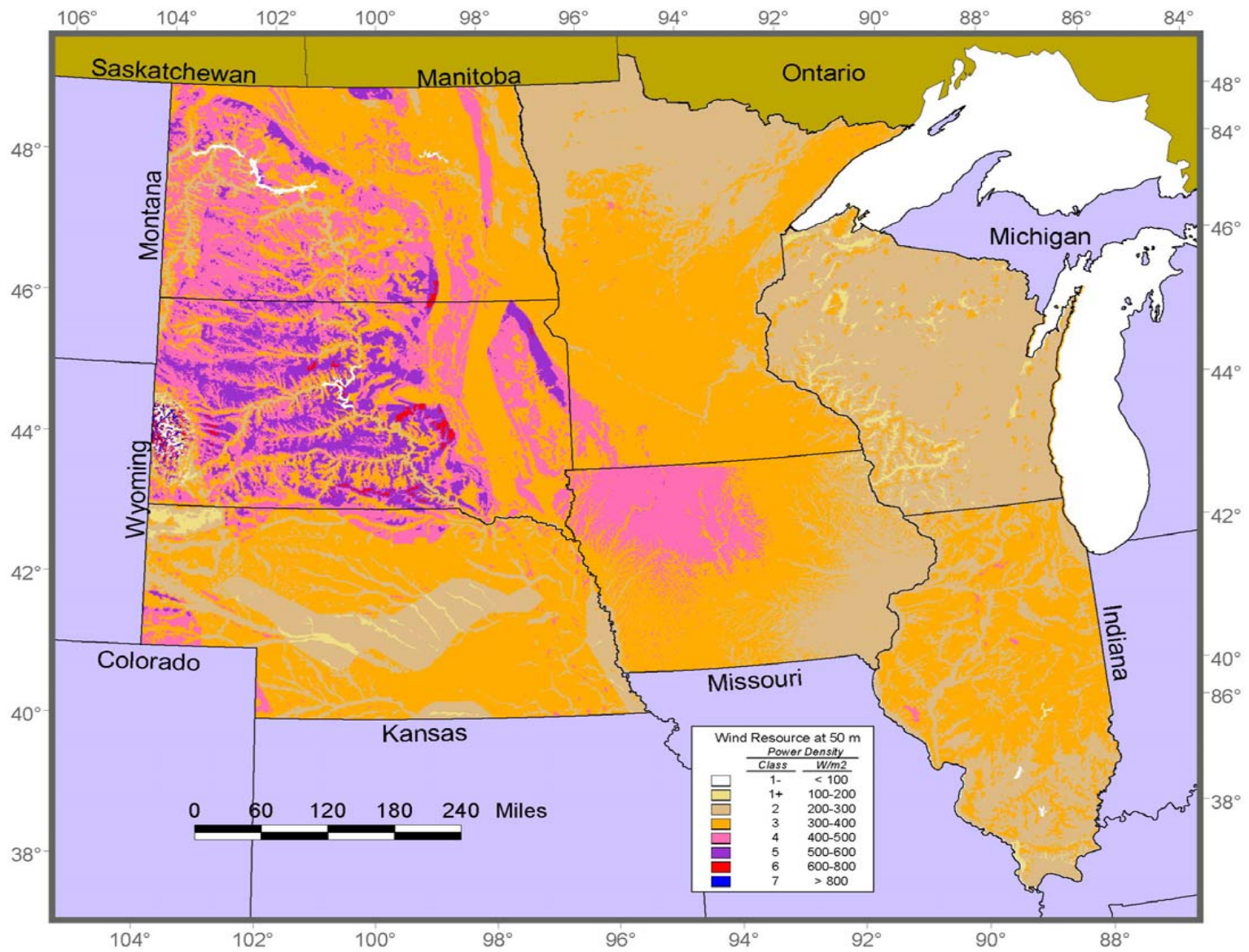
# Installed Wind Power Capacity Animation

561 pixels wide



## South Dakota - Wind Resource Map





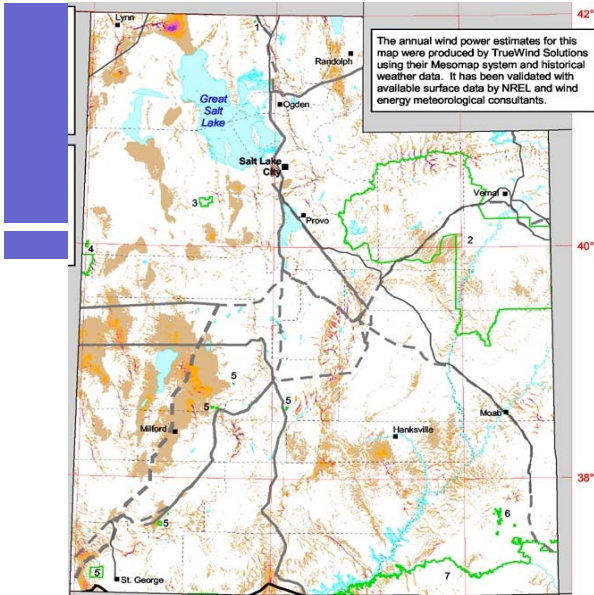
# Developable Wind in Wyoming

- **Over 2/3 of Class 7 wind in the Western U.S. is located in Wyoming \***
- **Over 1/2 of Class 6 wind in the Western U.S. is located in Wyoming \***
- **Wyoming has over 100,000 MW's of developable Class 5, 6 & 7 wind (more than all the western states combined) \***
- **Wyoming has over 500,000 MW's of developable Class 3 through 7 wind \***
- **The Wyoming Infrastructure Authority (WIA) can plan, finance, site, own, operate and otherwise promote transmission projects**
- ***Wyoming has a sales tax exemption for the purchase of equipment for renewable energy development. No state income taxes***



**SOURCE: NREL DATA (\*)**

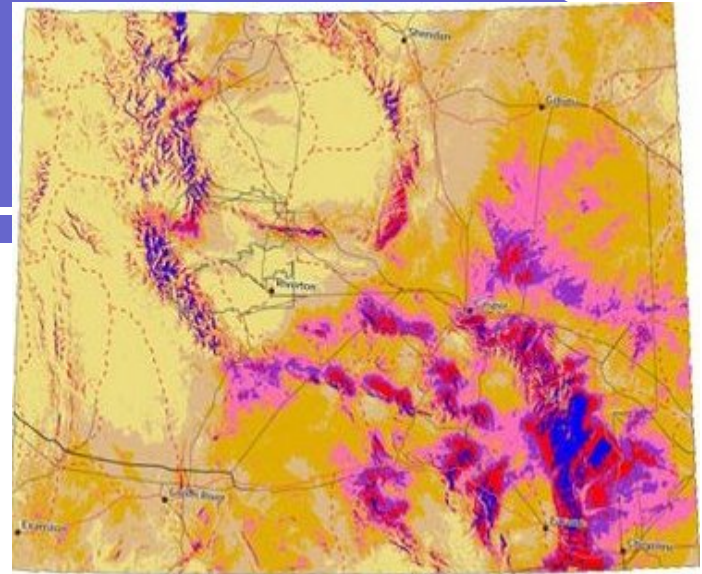




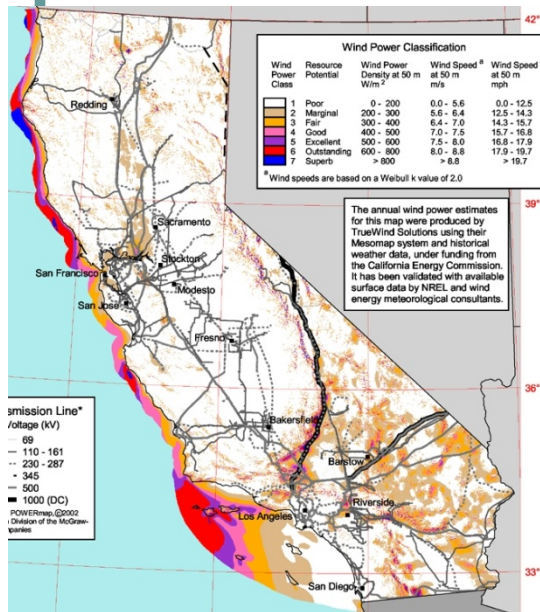
Utah—26<sup>th</sup>

# Comparison of States

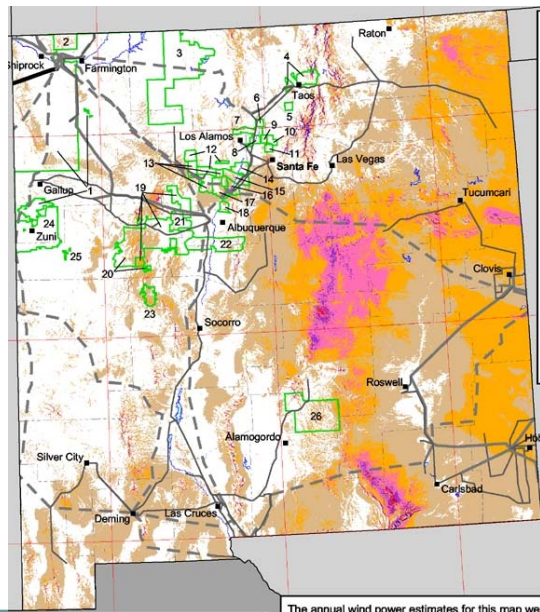
Nevada and Arizona are minimal



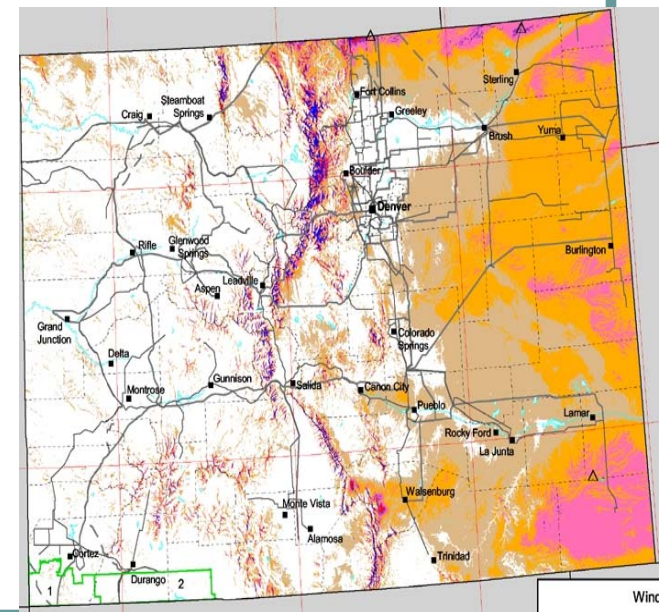
Wyoming—7<sup>th</sup>



California—17<sup>th</sup>



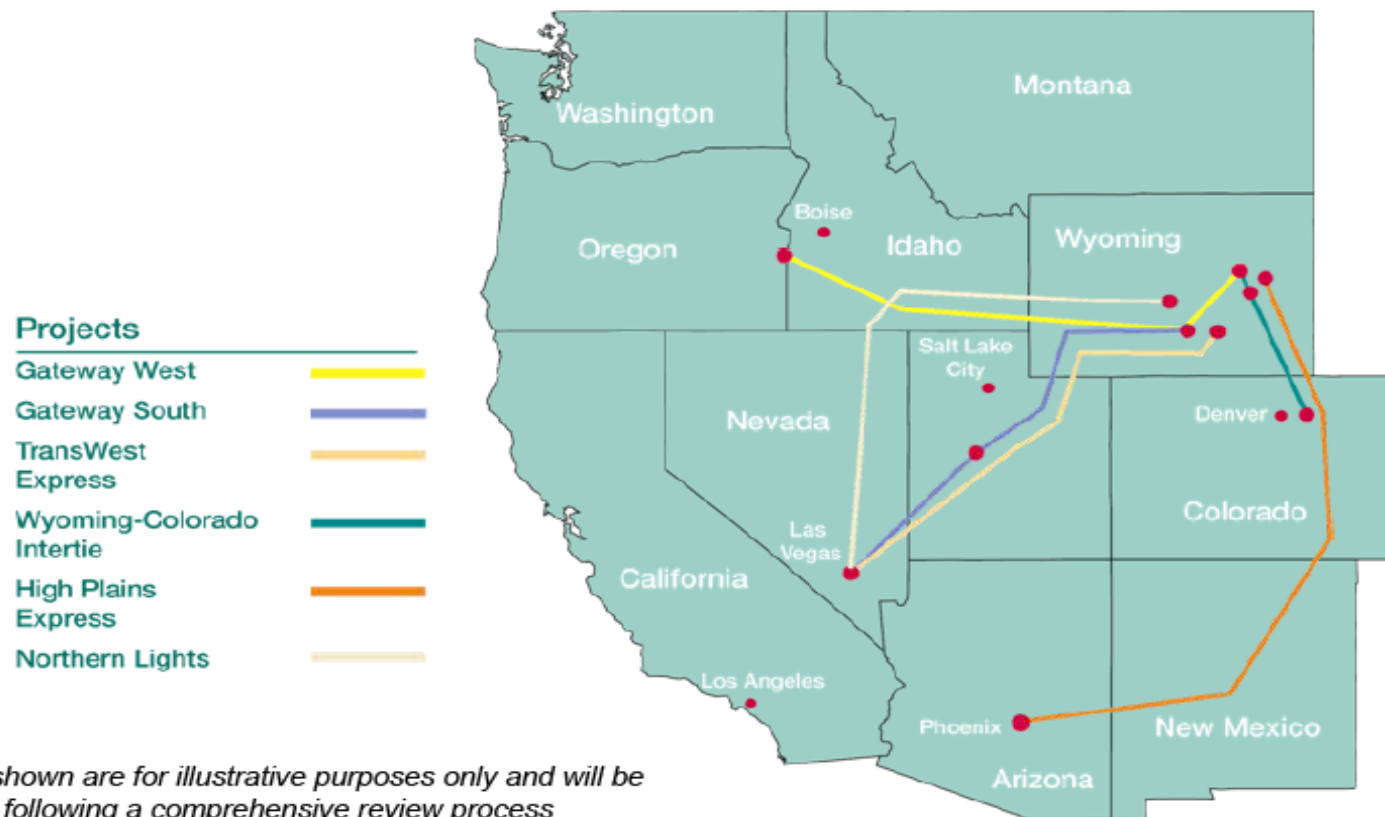
New Mexico—12<sup>th</sup>



Colorado—11<sup>th</sup>

## 2. Transmission Access and capacity

### Transmission Projects under Development in Wyoming



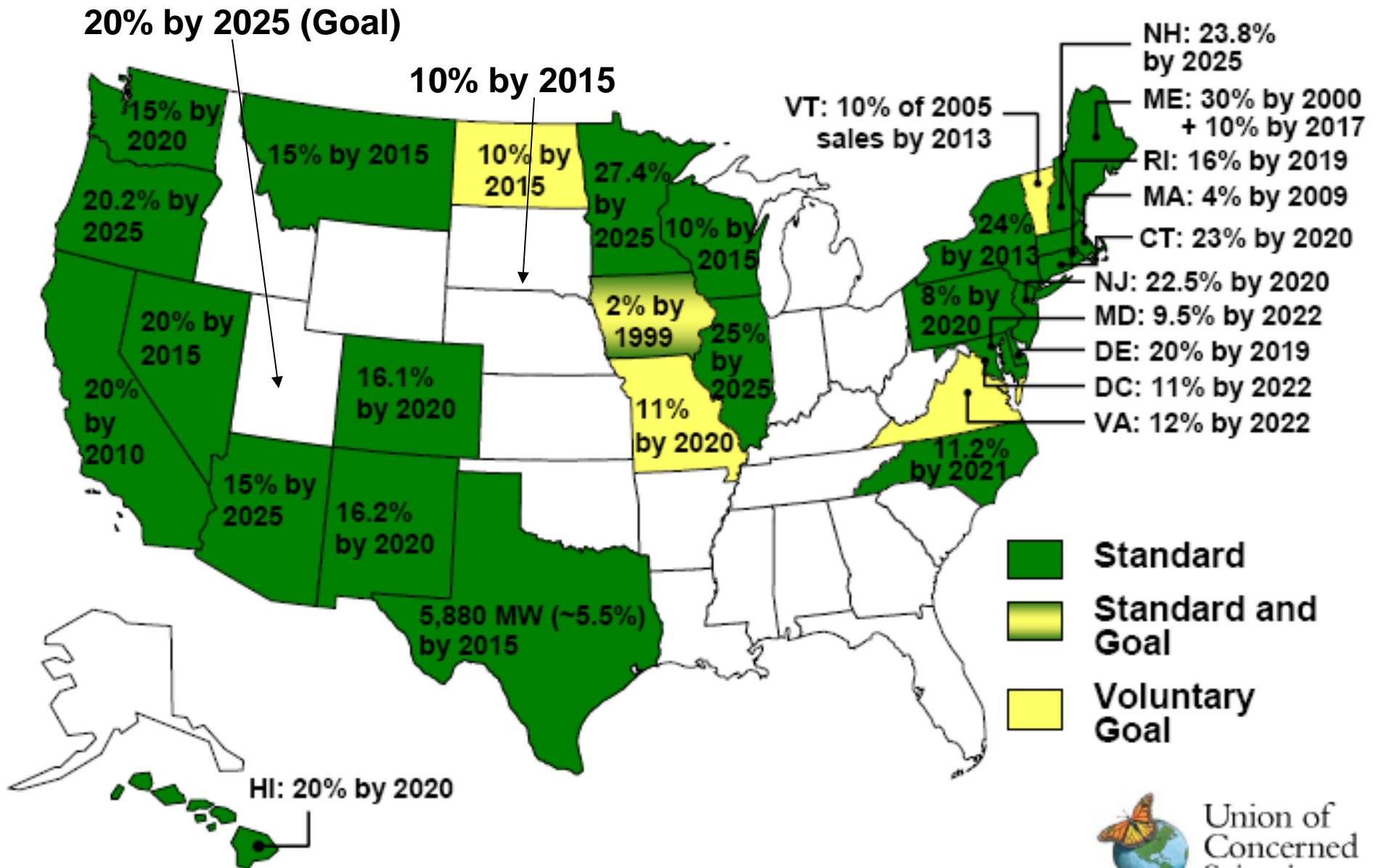
## 2. Transmission (con't)

- **How to get Transmission Built (*a 5-10 year process*)**
  - Utility transmission Line (utility companies)
    - Upgrade existing lines or add new lines
    - Queuing process for incremental expansion
  - Merchant transmission Line (independents)
    - New transmission lines
    - Open season process to auction capacity
    - State transmission authorities to share risk
  - Nothing gets built until commitments are made by:
    - Buyers: Costumers/Utilities
    - Producers: Wind Developers

# 3. Market for Wind Energy

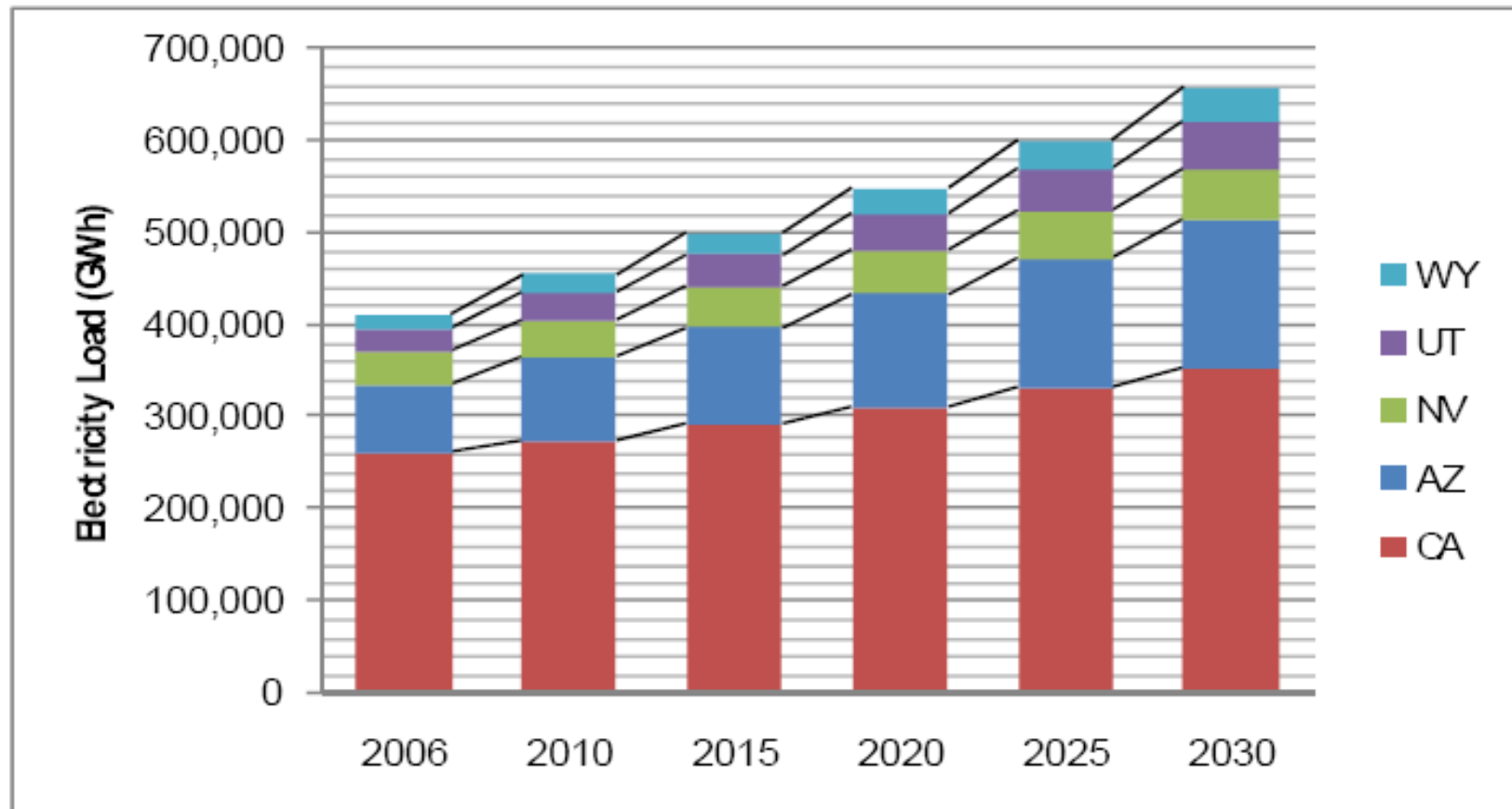
- Numerous states (28) have passed Renewable Portfolio (RPSs) Standard Legislation
  - Example - Colorado – 16.1% of energy must come from renewable sources by 2020
- Production Tax Credits - 1.9 cents per Kwh
- Carbon Credits
- Green Tags
- Fuel Price Uncertainty
- Declining Wind Energy Costs.....compared to coal power
- Energy Security
- Has created interest among developers, investors, and utility companies!
- Average 5 year world-wide growth rate = 25%
- Backlog of requests for large turbines

# Effective Renewable Electricity Standards



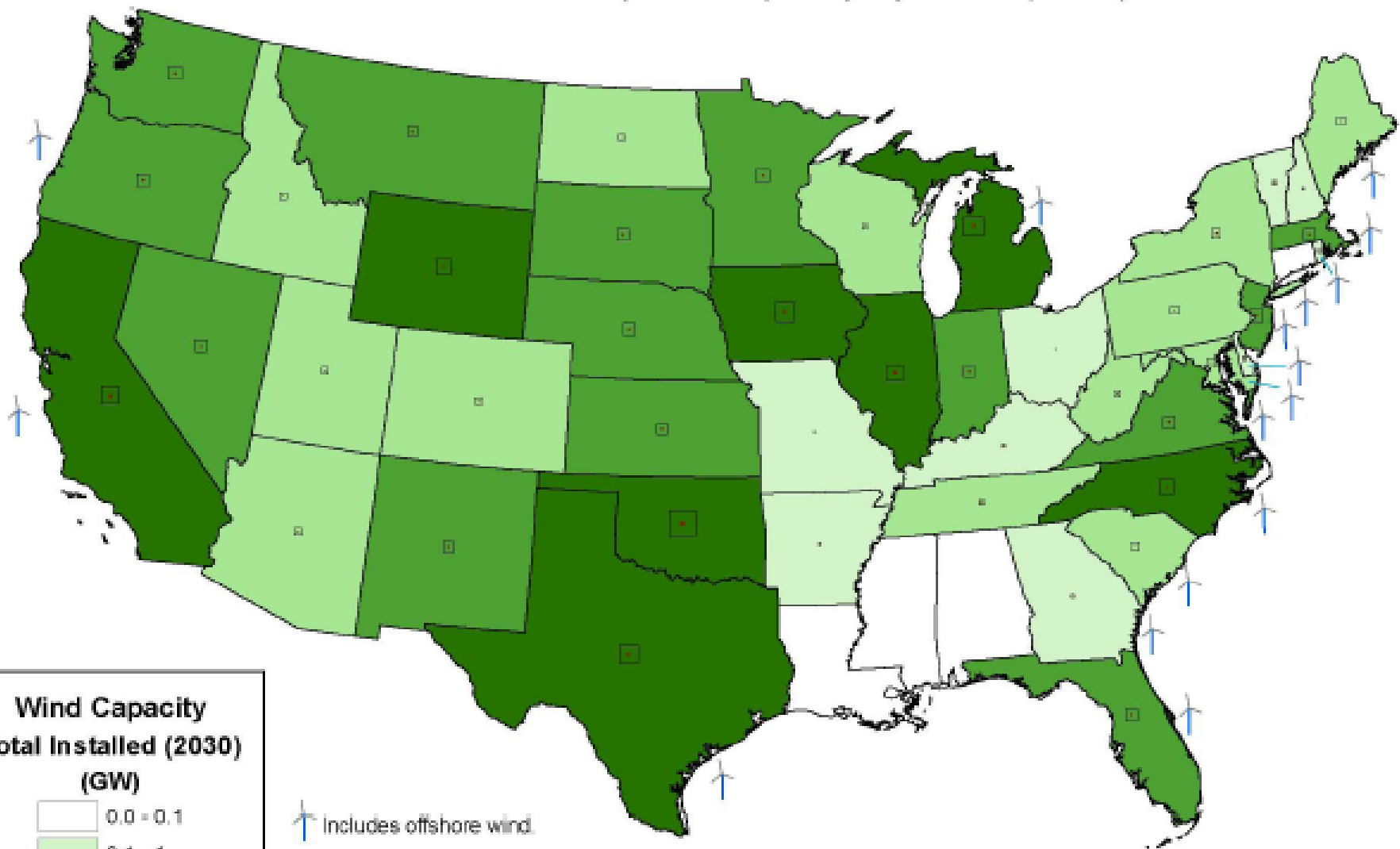
# Total Load Growth in the West

- ◆ As the fastest growing region in the country the west is expected to grow more than 45 percent between 2000 and 2030 (35% of expected total U.S. population growth)
- ◆ The five state region of Arizona, California, Nevada, Utah and Wyoming will grow from 412,000 GWh in 2006 to nearly 660,000 GWh in 2030 (load growth of 60%)



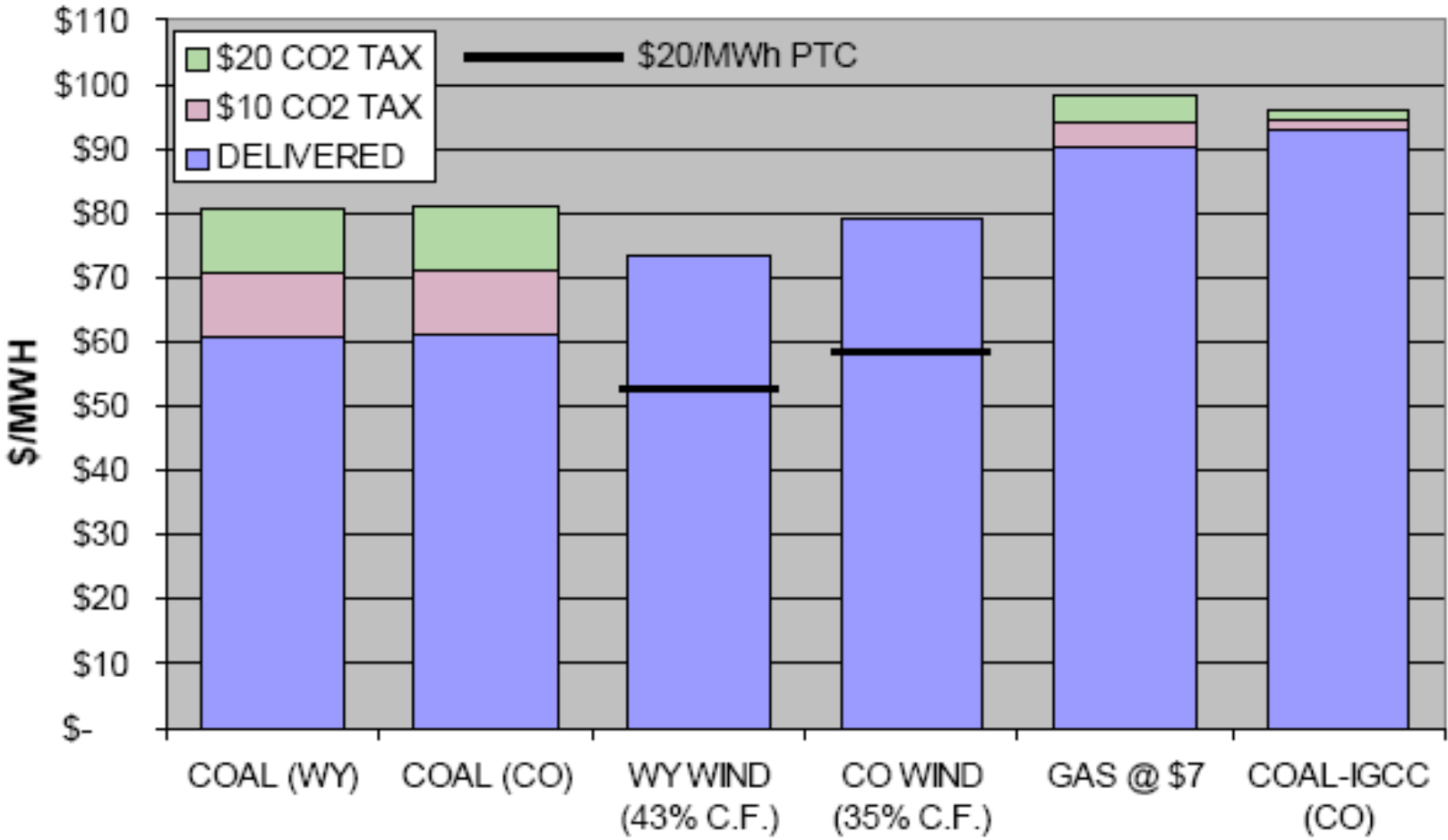
# 46 States Would Have Substantial Wind Development by 2030

## Installed Wind Nameplate Capacity by State (2030)



The black open square in the center of a state represents the land area needed for a single wind farm to produce the projected installed capacity in that state. The brown square represents the actual land area that would be dedicated to the wind turbines (2% of the black open square).

# Delivered Power Costs to Colorado Front Range



## 4. Environmental Impacts and Other Location Factors

- Avoid Migratory Bird Corridors
- Must consider the Endangered Species Act
- Archeological studies or EISs may have to be conducted on public lands
- County wind energy siting regulations
  - Anemometer and siting permits required
  - Set backs required from roads and subdivisions
  - Bonding required for reclamation and decommissioning
  - Mitigation plan for damaged roads
- Topography
- Roads
- Microwave towers
- Airports and flight paths
- Geological conditions
- State tax structures – Sales tax exemption

# Environmental Conflicts

**Legend**

- Wind Development Likely Prohibited
- Significant Environmental Conflicts Identified
- No Significant Environmental Conflicts Identified
- Roads
- Wind River Reservation

**Caution Using This Map**

This map only indicates Class 4+ winds in Wyoming as modeled by the National Renewable Energy Laboratory (NREL). Potential conflicts in areas not identified by NREL as Class 4 or higher have not been evaluated and may or may not be produced from development to generate equivalent environmental conflicts.

It is not possible to identify every potential conflict. For instance, indirect effects occur throughout Wyoming's deep water or many areas a traditional watershed basin but negatively may represent significant environmental conflicts or produce wind development in those areas. It also does not take into account a possible signaling from big game wildlife ranges and regional or vital development. Some species may be significantly affected while wind development may be compatible with other species. Active use of big game areas will be largely not considered as significant environmental conflicts. There are also all state parks are not included on this map. There may be some overlap between the Significant Environmental Conflicts where sources locate the conflict.

**Environmental Conflict Definitions**

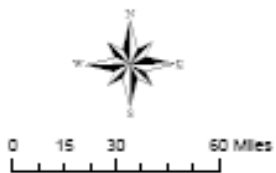
**Wind Development Likely Prohibited:** Class 4+ wind areas where state, federal, or national management plan may prohibit development in areas. Included in this category are:

- State parks
- National Park Service lands
- National Forest System lands (including National Grasslands)
- National Wildlife Refuges
- BLM Wilderness Study or Visual Resource Management Class I areas
- BLM lands with a no-motorized equipment regulation for large game
- State wildlife habitat management areas

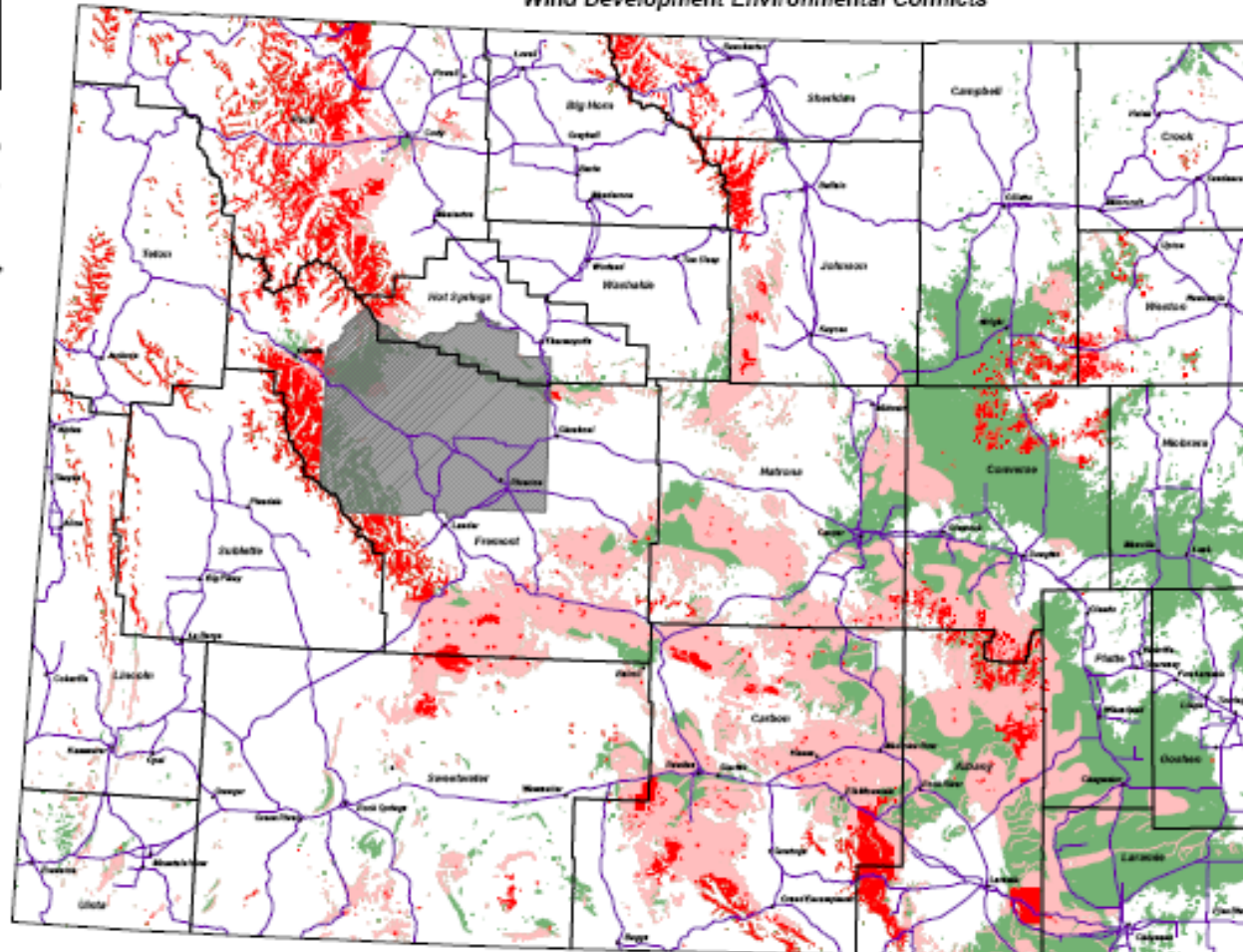
**Significant Environmental Conflicts:** Class 4+ wind areas where consideration of natural resource values is prohibited about developments. Wind development in these areas will be allowed only if developments can occur without significant adverse impact to natural resource values. Included in this category are:

- BLM Riparian Corridor areas
- BLM Wetland Determination Class I areas
- BLM National Cultural Resources Conservation
- BLM Electric Resource Management Potential avoidance areas
- Big game wildlife winter ranges

**No Significant Environmental Conflicts Identified:** Class 4+ wind areas where significant environmental conflicts have not been identified.



Wyoming Class 4+ Winds  
Wind Development Environmental Conflicts



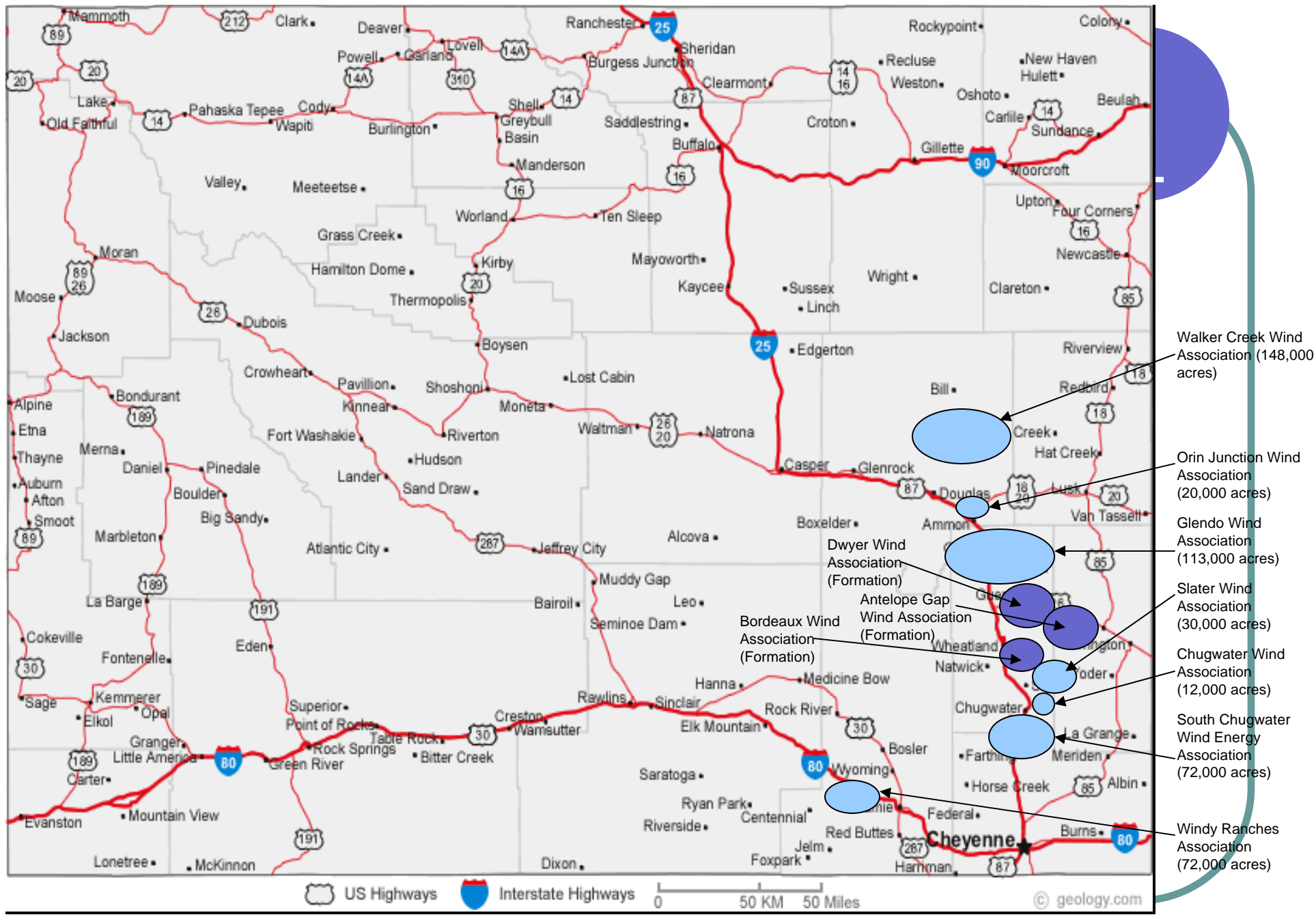
Version 1.0  
February 1, 2008

# 5. Landowner and Community Support

- Concerns:
  - Change in Landscapes
  - Impact on view sheds
  - Noise?
  - Surface damage
  - Production loss
  - Loss of Wildlife habitat
  - Increased traffic, additional housing, more schools, increased sewage, etc.
  - Wind energy is not a “firm” power - unreliable
- Positives
  - 100 MW will contribute \$500K to \$1 million per year in county revenues
  - 100-200 jobs per 100 MW during construction
  - 2-6 permanent O&M jobs per 50-100 MW
  - WIND TURBINES NEED NO WATER TO GENERATE ELECTRICITY
  - Farming and ranching operation can continue
  - Ag diversification
  - Good for the environment

# Working Together is Important

- Have formed eight (8) wind energy associations
  - Slater Wind Energy Assn. LLC – 30,000 acres/45 Landowners
  - Chugwater Wind Energy Assn. LLC – 12,000 acres/12 Landowners
  - South Chugwater Wind Energy Assn. LLC – 72,000 acres/48 Landowners
  - Windy Ranches LLC – 71,000 acres/10 Landowners
  - Glendo Wind Energy Association, LLC – 113,000 acres/over 40 landowners
  - Walker Creek Wind Energy Association, LLC – 148,000 acres/50 Landowners
  - Orin Junction Wind Energy Association, LLC – 25,000 acres/8 landowners
  - Southwest of Casper – 100,000 acres/4 Landowners
- The Dwyer, Bordeaux, and Antelope Gap Wind Energy Associations are in the Formation Stages (total acres are to be decided)
- Wind Energy Associations have at least 3,000 MW planned for development
- Associations versus Cooperatives



**NOTE: The Wind Energy Association boundaries are approximations and are intended for illustration purposes only.**

# Land Owner Concerns with Wind Energy Development (Commercial)

- Some wind energy developers are “wind speculators”
- These Wind Speculators will sell or “flip” land leases for a profit
- Usually results in checkerboard land lease patterns that are too small to develop wind farms
- Many landowners are required to sign non disclosure clauses
- Unable to discuss with your neighbors
- Divide and conquer
- Landowners feel they are being picked off one at a time
- Landowners may not know the value of their wind resources
- Difficulty in marketing wind resources
- Concerned about private property rights
- Bottom line:
  - Lack of information and knowledge
  - Lack of control
  - UNLEVEL PLAYING FIELD
- **Wind Energy Associations can address many of these concerns!!!!**

# Step 1: Determine Interest in Forming an Association

- Landowners request assistance to form an Association
- They must demonstrate:
  - Interest
  - Leadership
  - Commitment
- Realize the Benefits of forming an Association:
  - Block up lands to enhance their ability to market wind resources
  - Opportunity to become informed about wind energy
  - Strength in numbers- work with your neighbors
  - Collective bargaining – share information with your neighbors
  - Everybody gets a “piece of the pie”
  - Avoid divided communities
  - Force the Wind developers to compete – RFP Process
  - Determine what the wind resource is worth
  - Landowners are able to “drive” the process – Work together to protect private property rights

## Step 2: Delineate Potential Boundaries

- Landowners designate boundaries on a map
  - Must be “developable”
  - 30,000 to 100,000 acres is a good size
  - Develop a contact list
  - One on one visits
  - Call absentee landowners
  - Begin fostering landowner interest within those boundaries

## Step 3: Hold First Meeting

- Invite all potential Association members
- Invite technical and legal expertise
- Provide ample opportunity for landowners to ask questions and provide input
  - Facilitator is important
- Vote on whether to move forward with the Association concept
- Form a Steering Committee
  - Provide guidance in determining next steps
    - Develop Operating Agreement and RFP

## Step 4: Form an Association, LLC

- Schedule meeting with landowners
- Review operating agreement (developed from a template):
  - GOAL=Utilize collective bargaining strategies to solicit and market wind energy resources
  - Short and simple
  - Provides for a 3-5 member Board of Managers
  - Duration is for 2 years
  - Assesses a \$.10 per acre membership fee
  - Limited liability
  - Upon completion of negotiations, landowners then have the option to sign individual lease agreements
- Vote to officially form a wind energy association
- Landowners sign agreement
- File with the Secretary of State's Office

## Step 5: Keep Landowners Informed

- Meet with transmission builders (TransElect)
- Meet with the Wyoming Infrastructure Authority
- Meet with the County Planner
- Meet with the Wyoming Game and Fish Department
- Host tours of nearby wind farms
- Meet with numerous wind developers and conduct tours
- Work with the Wyoming Business Council, Rural Development and others
- Attend SE RC&D Council meetings
- Included the Conservation District and NRCS

# Step 6: Develop a Request For Proposal (RFP)

- Positions the landowners to be “price makers” and not “price takers”
- Forces the wind developers to compete
  - Requests the developers to submit a bid
  - Weeds out the “land grabbers”
- **OBJECTIVE** of the RFP is to create a:
  - Marketing plan
    - Wind data, WCI info, sales tax exemption, etc.
  - Feasibility Study
    - Wildlife assessment, road network, excellent topography, etc.
  - Business Plan – Type of payments expected by landowners
    - Signing bonuses

# For more information

- [www.sdwind.org](http://www.sdwind.org)
- [www.windustry.org](http://www.windustry.org)
- [www.sdwind.com](http://www.sdwind.com)
- <http://www.grants.gov/>