

Oklahoma Wind Rush: A Collaborative Approach to Sustainable Energy Development

by

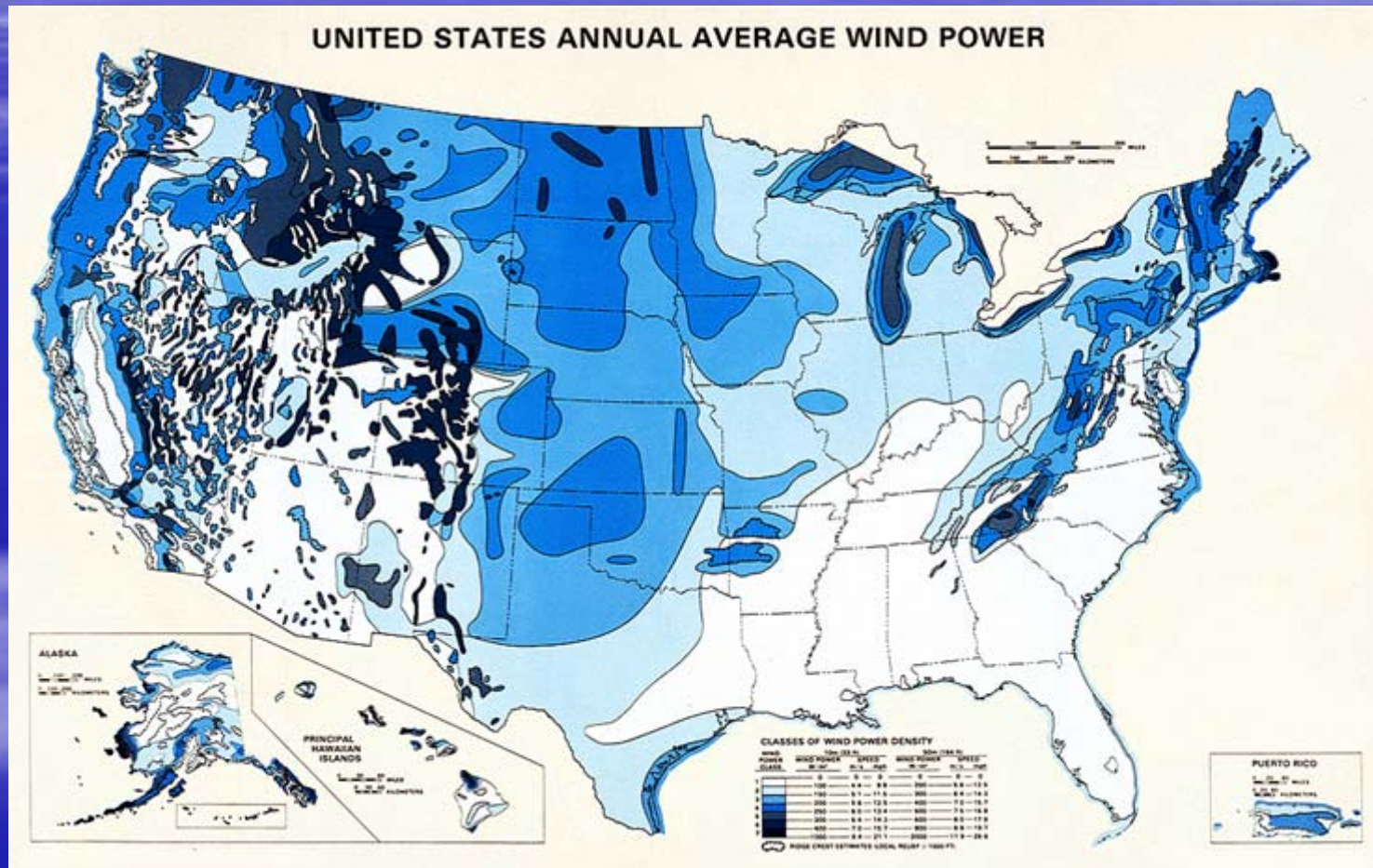
Mark Meo
University of Oklahoma

Workshop on Energy, Environmental Impacts, and Sustainability
Kansas State University

January 4, 2006
Manhattan, Kansas

National Wind Power Atlas

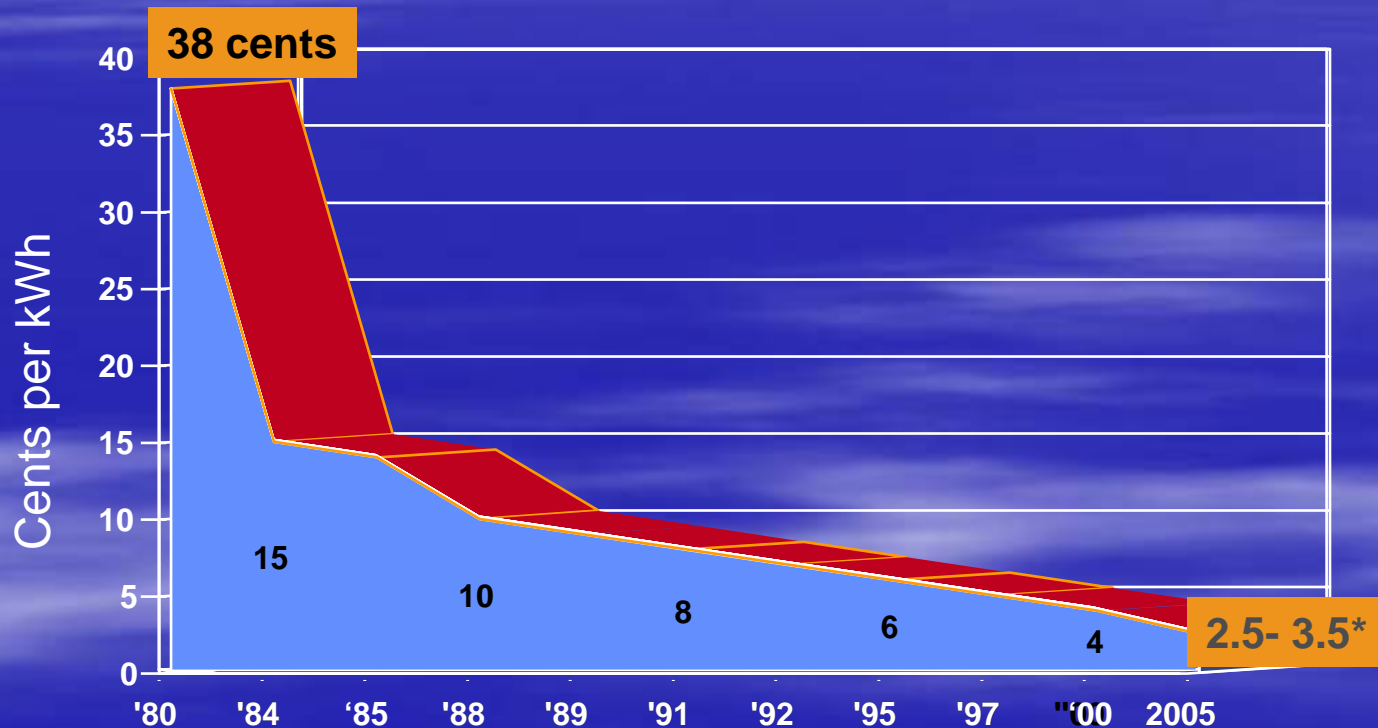
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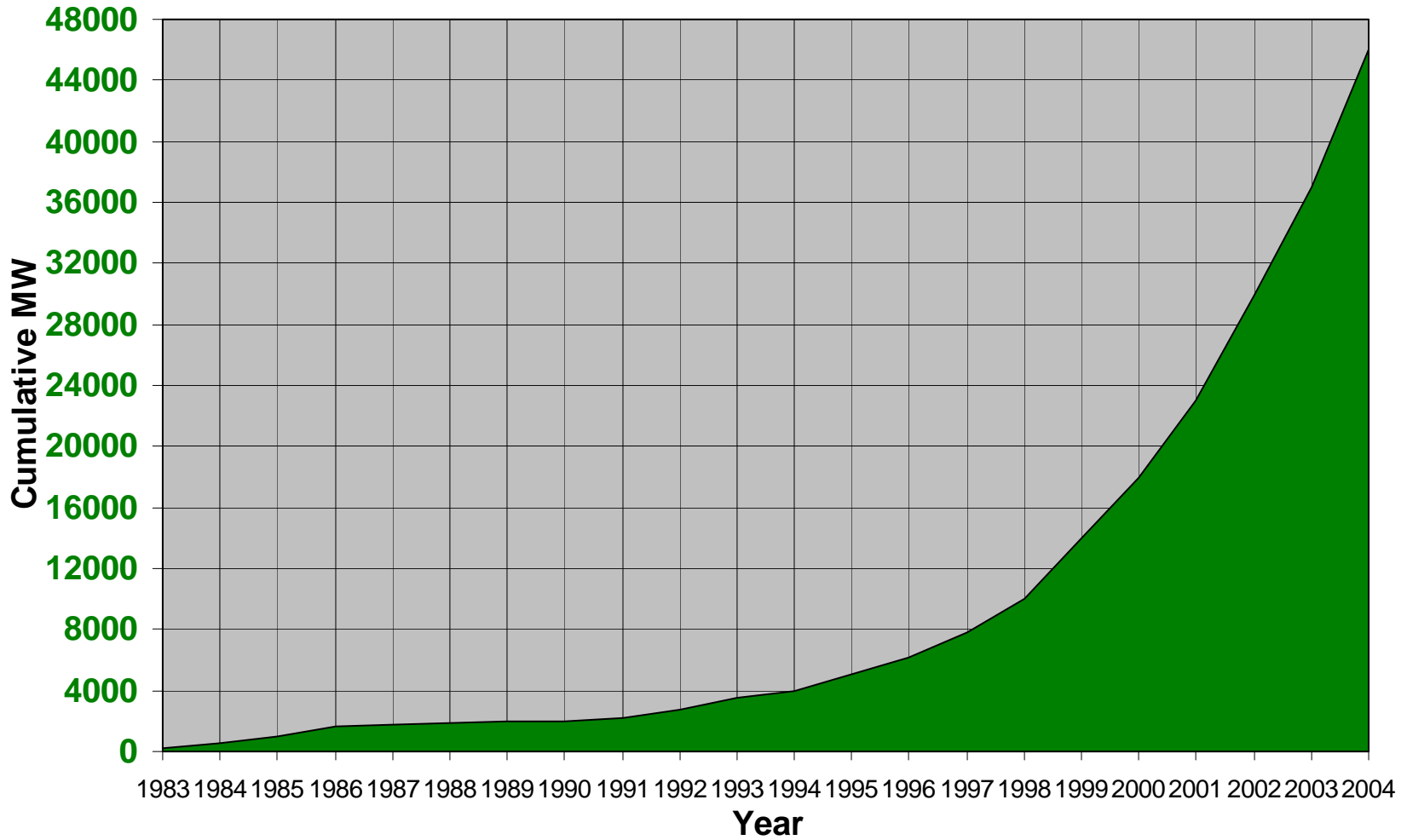
Wind Energy:

*Cost of Wind-Generated Electricity
1980 to 2005 Levelized Cents/kWh*



* Assumptions: Levelized cost at excellent wind sites, large project size, not including PTC (post 1994)

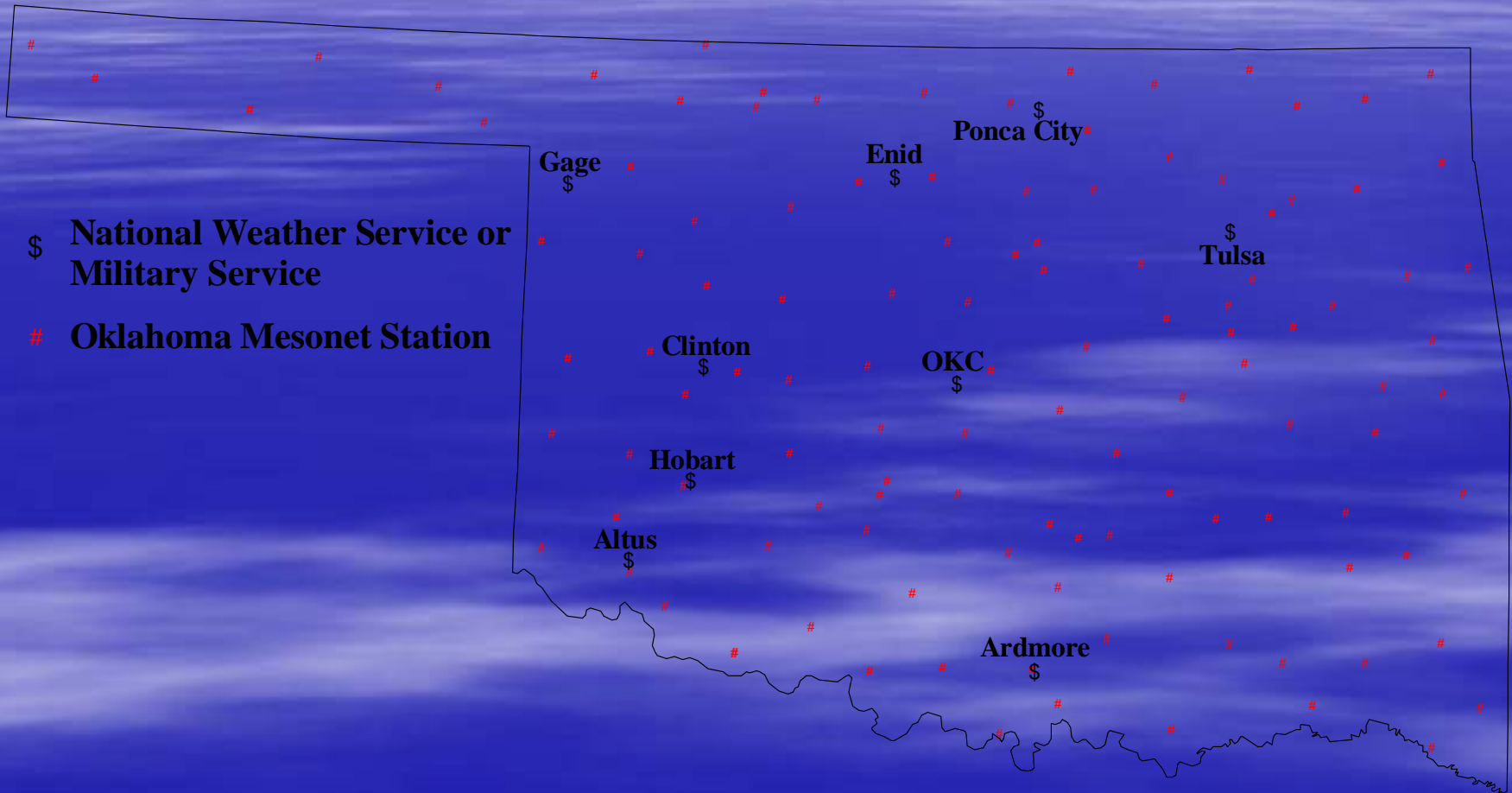
Installed Wind Power in the World



Elements of Policy Change

- Problem (Opportunity) Stream
- Politics Stream
- Policy Stream
- Window of Opportunity
 - Policy entrepreneurs can:
 - 1) Create conditions to open a window and then act; or
 - 2) Propose new initiatives when a window is opened.
- Initial Strategy:
 - Recognize that Oklahoma is a developer-driven economy
 - Characterize the wind power development opportunity and stimulate political interest
 - Identify and recruit policy champions
 - Use the above actions to open a policy window

The Oklahoma Mesonet

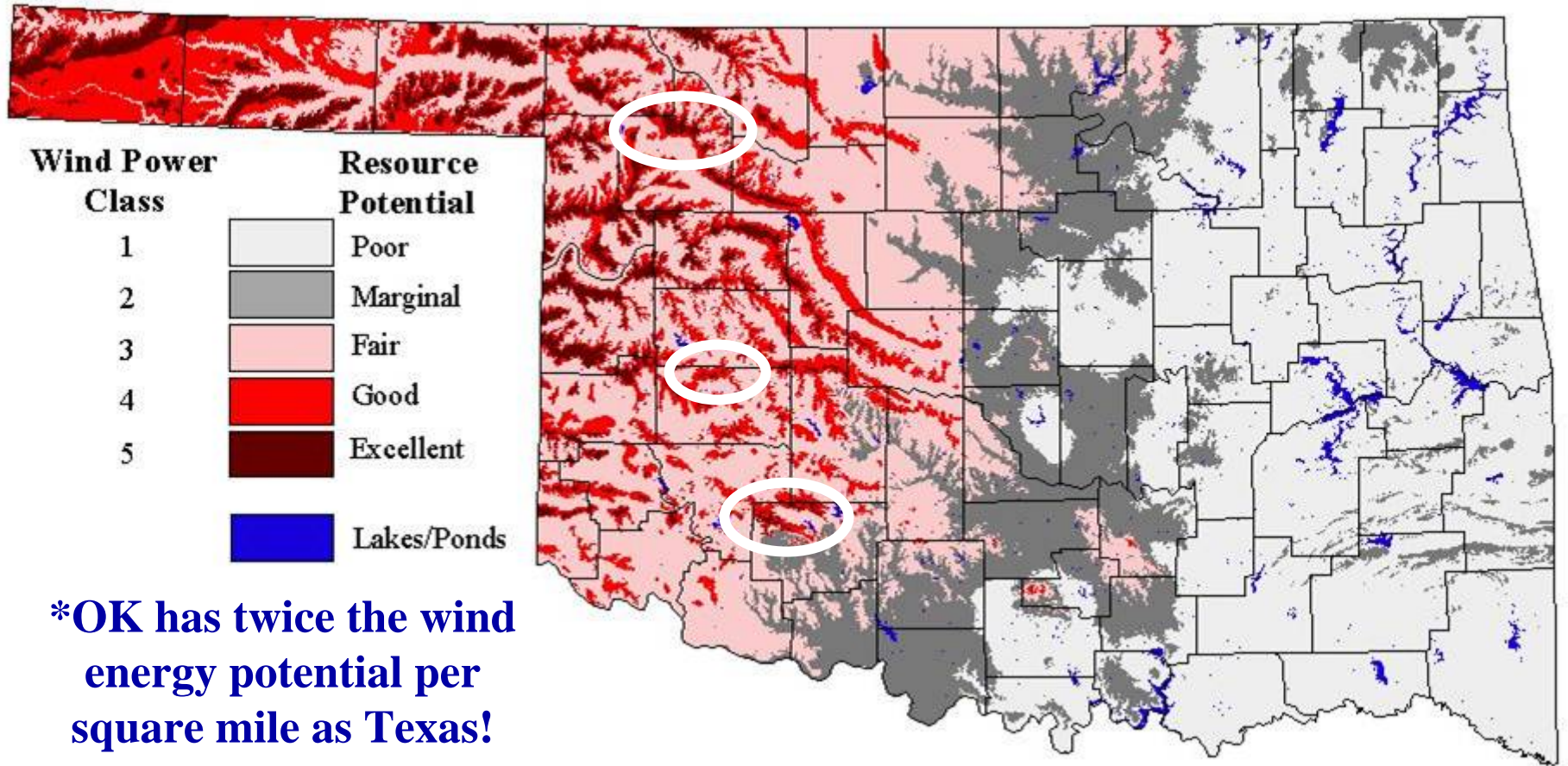


Oklahoma Wind Power Initiative

- Began in Summer 2000 with OK Commerce Dept. and DOE support (Wind Powering America)
- Focused attention on Texas wind development
 - Texas utility deregulation in 1999 mandated 2,880 MW by January 1, 2009
 - Instated a Renewable Portfolio Standard (3%)
- Proposed development of wind power map of OK using Mesonet data
- DOE requested wind power workshop in Spring 2001 (Also held in '02 and '03)

Wind Power Map for Oklahoma

(Empirical Model using Neural Networks)



Results thought to be conservative: continued work will improve model

OWPI's Wind Resource Map Online

Oklahoma Wind Resource Map - Microsoft Internet Explorer

File Edit View Favorites Tools Help

Back Forward Stop Home Search Favorites Media Print W

Address <http://www.ocgi.okstate.edu/website/owpi2/viewer.htm> Go Links

owpi OKLAHOMA WIND RESOURCE MAP

Zoom In Zoom Out Pan Info Zoom To Full Extent Zoom To Active layer Back To Last Extent Layer / Legend

Visible Active

- Transmission Lines (see Help)
- State Senate Districts
- State House Districts
- Wind Resource at 164 ft - Model 1
- Wind Resource at 164 ft - Model 2

OSU

Help Email Print Map

Copyright (C) 2003 Oklahoma Wind Power Initiative

Map: -252531.02, 1407911.41 -- Image: 416, 129 -- ScaleFactor: 140.49329932962698

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Wind Power Development Strategy

- Ignored environmental benefits
- Stressed economic benefits, e.g. Royalty payments of \$2,000 per turbine
- Highlighted competitive advantage of Texas wind power development
- Distributed state wind power density maps to elected officials and land owners
- Formed a non-profit advocacy group (OREC) and a lobbying group (OREF)

OK Renewable Energy Council

- Renewable energy stakeholders meet monthly
- www.ocgi.okstate.edu/OREC



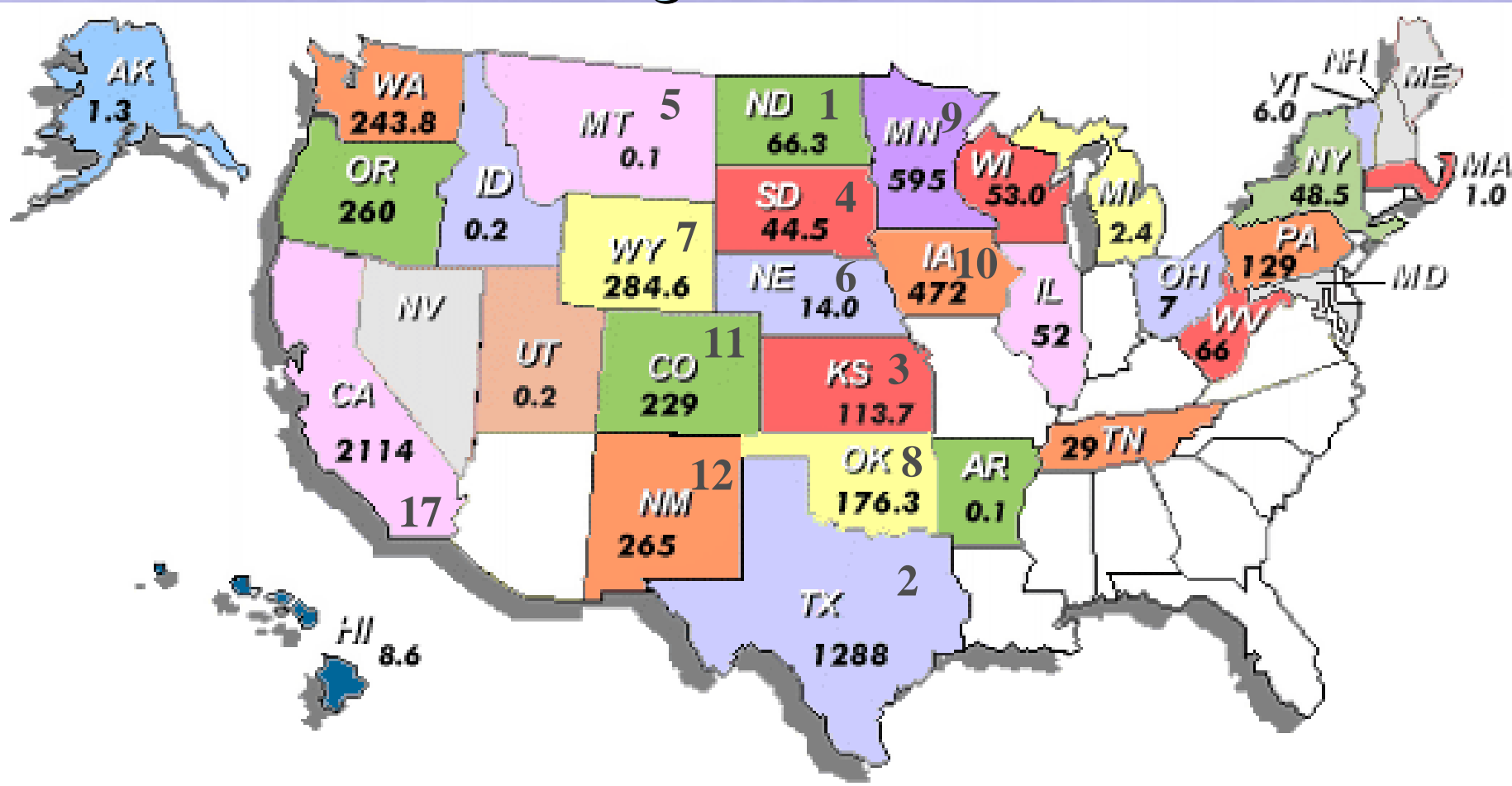
Wind Power Incentives

- Senate Bill 440 signed by Gov. Frank Keating in June 2001
- Oklahoma Zero-Emission Energy Production Tax Credit
 - Took effect January 1, 2002
 - .75 cents/kwh Jan. 1, '02 – Jan. 1, '04
 - .50 cents/kwh Jan. 1, '04 – Jan. 1, '07
 - .25 cents/kwh Jan. 1, '07 – Jan. 1, '12
- OK Renewable Portfolio Standard – Not Yet

Oklahoma Wind Farms

- Blue Canyon I and II (Northwest of Lawton, OK)
 - 74.25 MW 2003 (Western Farmers Electric Coop)
 - 151.2 MW 2005 (Public Service Co.)
- Woodward, OK Wind Energy Center
 - 51 MW 2003 (OK Municipal Power Authority)
 - 51 MW 2003 (Oklahoma Gas & Electric)
- Weatherford, OK Wind Energy Center
 - 106.5 MW 2005 (Public Service Co.)
 - 40.5 MW 2005 (Public Service Co.)
- Total at end of 2005: 474.45 MW

States With Active Large Wind Power & Ranking for Potential



Oklahoma is ranked #8 in US for potential wind energy production. Oklahoma has over twice the estimated wind energy production, per square mile, of Texas.

Current Wind Policy

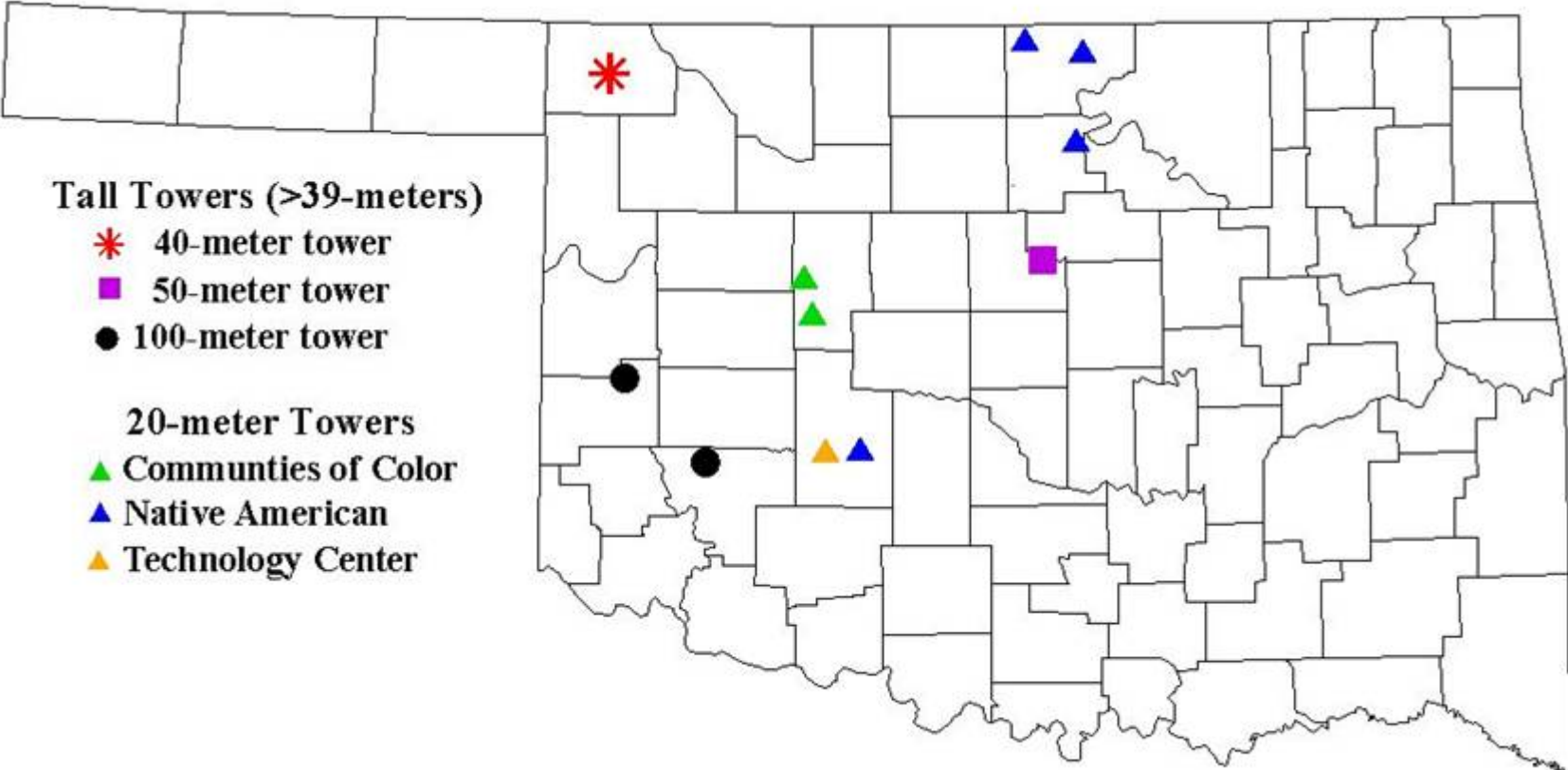
- **Policy Champions**
 - Rep. James Covey
 - Sen. Kevin Easley
 - Sen. James Maddox
 - OK Corporation Commissioner Denise Bode (President of SW Power Pool's Regional State Committee)
 - OREC, Electric Power Utilities and Wind Power Developers
- **Legislature's Wind Power Advisory Committee Report**
 - Emphasis on Public Education and Accessible Information
 - Focus on Oklahoma's Most Promising Renewable Resources
- **OK Department of Commerce (State Energy Office)**
 - Added Renewable Energy Staff
 - Convene Annual *Emerging Energy Technology* Conference

Current Wind Policy

- OWPI
 - Continue and strengthen collaborative partnerships
 - Research, Outreach, Education
 - Expanding renewable energy portfolio
 - Produce more detailed GIS maps

Accessible at
<http://www.seic.okstate.edu/owpi>

Current Tall Tower Locations



oklahoma's

EDGE

economic development generating excellence

Summary of Expert
Team Recommendations

