Oklahoma Wind Rush:
A Collaborative Approach to Sustainable Energy Development

by

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National Wind Power Atlas
1987

UNITED STATES ANNUAL AVERAGE WIND POWER
Oklahoma Annual Average Windpower
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

Cumulative MW vs. Year

- Years: 1983 to 2004
- Cumulative MW: 0 to 48000
- The graph shows a significant increase in cumulative wind power over the years, indicating a steady growth in wind energy installations globally.
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

$ National Weather Service or Military Service

# Oklahoma Mesonet Station

OKC $
Ponca City $
Tulsa $

Ardmore $
Altus $
Hobart $
Clinton $
Gage $
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)

*OK has twice the wind energy potential per square mile as Texas!

Results thought to be conservative: continued work will improve model
OWPI’s Wind Resource Map Online

Oklahoma Wind Resource Map

Maps and layers can be interactively manipulated, including:

- Transmission Lines
- State Senate Districts
- State House Districts
- Wind Resource at 164 ft - Model 1
- Wind Resource at 164 ft - Model 2
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
- 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
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

Tall Towers (>39-meters)
- ★ 40-meter tower
- ▄ 50-meter tower
- ● 100-meter tower

20-meter Towers
- △ Communities of Color
- ▲ Native American
- ▼ Technology Center