

# Windpower in Wisconsin

Ready for the Big Leagues?

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**Wisconsin Wind Working Group**

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**www.RENEWWISCONSIN.org**

# About RENEW Wisconsin

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Advocates for state-level sustainable energy policies since 1991

One of the architects of the state's Renewable Energy Standard and ratepayer-funded public benefits program

A Focus on Energy subcontractor promoting commercial solar thermal systems and reducing barriers to customer-sited renewable energy

A founding member of CRS's Green-e Board

***An organized voice for renewable energy producers and purchasers!***

# About the WI Wind Working Group

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- Founded in March 2007
- Participants include industry professionals (developers, manufacturers, contractors, installers, utilities), NGO's (e.g., RENEW), and Focus on Energy and state agency personnel involved with wind energy development.
- Operates list service for internal communications
- Provides technical support for state and local governments
- Monitors wind energy project development
- Circulate updates on issues affecting wind on a bimonthly basis
- Funded by US Dept. of Energy
- RENEW provides facilitation support for group

# How RENEW Promotes Windpower

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- **Advocating for Sensible Permitting Standards**
  - Large Wind (>170 ft, 100 kW)
  - Small Wind (<170 ft, 100 kW)
  - Legislation (AB 899/SB 544)
- **Supporting Individual Wind Projects**
  - Voluntary Good Neighbor Policy
- **Setting the Record Straight About Windpower's Economic and Environmental Impacts (countering NIMBYism)**

# Why Promote Windpower?

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- Clean → Environmental
- Non-depleting → Energy Security
- **Fixed Price** → **Risk Management**
- Creates Wealth → Economic Development
- **Scalable to Utilities** → **Practicality**

***A sustainable source of wealth for Wisconsin!!***



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**Montfort Wind  
Energy Center**

**30 MW**

**Iowa County**

**In-service:  
2001**

**Montfort is still  
Wisconsin's  
"newest"  
operating wind  
energy plant**

# What Does 2005 Act 141 Do?

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- **2015 – Sets renewable energy content goal of 10%**
- **Increases RE content requirements on utilities**
  - **2004 – Estimated percentage ~3.5%**
  - **2010 – Increase of 2 percentage points**
  - **2015 – Increase of 4 percentage points**
- **More than doubles existing quantity of RE**
- **Estimated RE growth – 4.2 billion kWh/year**
- **Requires state of WI to purchase renewable electricity (10% by 2007; 20% by 2011)**

# Likely New Renewable Resource Mix

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- **Wind** **95%**
- **All others**  
**(solar, biogas, biomass, new hydro)** **5%**

*Of the 4.2 billion kWh/yr of RE that utilities must acquire by 2015, the contribution from wind will approach 4 billion kWh per annum.*

# WI Wind Projects - Class of 2008

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<u>Developer</u>	<u>(MW)</u>	<u>County</u>	<u>PPAs with</u>
We Energies	145	FDL	N/A
Invenergy	129	FDL/Dodge	WPL, WPPI, MGE, WPS
Alliant/WPL	68	FDL	N/A
Eurus/RES	54	Dodge	WPPI

Estimated output from these projects (396 MW → 1 billion kWh/year → 1.4 percent of WI electricity sales)

***Top two projects received CPCN approval from the PSC.***



***Project: Twin Groves***  
***Owner: Horizon Wind Energy***

***Location: McLean County, IL***  
***Size: 240 turbines, 396 MW***

# Windpower Projects Planned to Satisfy Act 141

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<u>Developer</u>	<u>Name</u>	<u>(MW)</u>	<u>State</u>	<u>PPAs with</u>
We Energies	Blue Sky GF	145	WI	N/A
Invenergy	Forward	129	WI	MGE, WPPI, WPS, WPL
Alliant/WPL	Cedar Ridge	68	WI	N/A
MWE	Butler Ridge	54	WI	WPPI
EcoEnergy	Various	<24	WI	WPPI
Iberdrola	Top of Iowa 2	50	IA	WPPI
MG&E	Top of Iowa 3	30	IA	N/A
WPS/enXco	Howard County	99	IA	N/A

Estimated output from these projects → 1.46 million MWH/yr  
(2.1 percent of WI electricity sales in 2010)

# The Post-2008 Pipeline

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- @ 180 MW of approved projects
- @ 400 MW of stalled projects

Increase in RE required between 2010 and 2015: 2.8 billion kWh/yr or 1,100 MW of wind capacity.

# How Wind Stacks Up (Against the Competition)

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- Pulverized Coal (Appalachian) \$80 - \$90/MWH
- Coal – CFC (Powder River) \$85- \$95
- Combined Cycle (NatGas) \$90 - \$100
- Livestock Manure \$90 - \$120
- Solar (Photovoltaic) \$200-\$300

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- Wind (75 MW in Wisconsin) \$80 - \$100/MWH
  - Wind (75 MW in Iowa) \$60 - \$75

Note: Renewable energy costs assumes continuation of federal and state incentives

Sources include utilities and MISO

In 2008 US \$

# Why Are Costs Rising?

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## Windpower Costs Have Risen 85% Since 2005

- Foreign exchange rates – US\$ declined 15% in last 12 months
- Raw materials (oil, steel, copper, labor)
- Component supply shortages (towers, cranes)
- Supply and demand effect

# On the Other Hand ...

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## Costs of Competing Fuels Are Rising Rapidly

- Natural gas prices have risen 27% in 12 mos.
- Diesel prices have risen 40% in 12 mos.
- New coal and natural gas plants also affected by Forex rates and rising raw materials prices

# Comparing Output - Wind vs. Solar

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- A typical household-size PV system (1.65 kW) will produce 2,000 kWh/yr
- A typical commercial wind turbine (1.65 MW) will produce 4,000,000 kWh/yr
- It would take 2,000 household-sized PV systems to equal the output from one commercial wind turbine in Wisconsin

# Comparing Output - Wind vs. Biogas

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- Capacity per cow 0.25kW
- Capacity per 1,000 cow farm 250 kW
- Annual output (80% capacity factor) 1,750,000 kWh

*Conclusion: one 1.5 MW wind turbine will produce the equivalent energy of two 1,000-cow dairy farms*

# Policy Priorities For Wind

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✓ Utility Resource Requirements

In place through 2015

Permitting Reform

AB 899/SB 544 not passed

Advanced Renewable Tariffs

Utilities adopting them in piecemeal fashion

# The Siting Picture for Wind

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**> 100 MW** Wind projects are reviewed by Public Service Commission, preempting local government ordinances. It is an expensive, time-consuming, lawyer-intensive process, but there is a clearly defined path to permit.

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**< 100 MW** Local government review projects. When opposition surfaces, local governments buckle. Moratoria and restrictive ordinances are adopted to prevent projects from being built.

# When Facing Local Opposition, What Can a Developer Do?

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- 1) Get Big – Expand project to >100 MW and obtain a CPCN from the PSC
  - Rely on agency's pre-emptive authority
  - Expensive and time-consuming
  - Reasonable probability of success
  - Only a handful of locations can accommodate 60 turbines
  
- 2) Go Somewhere Else

# What AB 899 Would Do

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- 1) Require PSC to establish, by rule, uniform siting standards (similar to the state's livestock operation siting law), covering:
  - ✓ Setbacks
  - ✓ Sound levels
  - ✓ Studies and testing requirements
  - ✓ Bonding requirements
  
- 2) Create process for appealing local decisions to PSC (also similar to the livestock facility siting law)

# So, Is Wisconsin Ready for Large-Scale Windpower?

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- + Utilities are investing in windpower projects and customers are buying windpower when offered the opportunity.
- Current rules regulating transportation of oversized equipment are a barrier, but may soon be fixed.
- + Executive branch views windpower as an essential strategy for driving economic growth and reducing CO<sub>2</sub> emissions.
- Local governments are not invested in carrying out state's energy policy, which explicitly favors renewable energy
- The permitting environment for projects < 100 MW is the worst of any Midwestern state and as bad as in New England.

# For More Information

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