Development Overview
Indiana Wind Development at the Crossroads

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Vice President, Energy Marketing

Windiana
Indianapolis, IN July 21, 2010
Corporate Overview

- Developer, owner and operator of large-scale wind energy and natural gas-fueled power projects.
- Headquartered in Chicago
  - Development offices in Austin; Denver; San Diego; San Francisco; Washington, D.C.; Toronto; Scotland and Poland; and Lafayette, IN!
- 350 Employees

One of the ‘top 10’ wind energy developers in North America based on constructed projects over the last several years.

Largest “independent” wind energy developer in the United States (unassociated with a corporate parent).

Development pipeline includes more than 18,000 MW of wind and 5,000 MW of thermal.

Active through North America and in select areas in Canada and Europe.
Primary Company Business Lines

Invenergy

- Wind Energy
- Natural Gas Energy
- Solar Energy
Invenergy Overview
Portfolio of projects - over 5000 MW of capacity

- Invenergy Wind: 27 projects - 3360 MW capacity
- Invenergy Natural Gas Projects: 5 projects - 2210 MW capacity
- Invenergy Solar: 2 projects - 20 MW capacity

At the end of 2009, Invenergy was the 6th largest owner/operator of wind energy facilities in the United States.

Projects above are in operation, construction, or under long-term contract.
Invenergy
Fully Integrated In-House Capabilities

**DEVELOPMENT**
- Dedicated development team
- In-house wind resource expertise
- Permitting, transmission, and interconnection expertise

**ENERGY MARKETING/FINANCING**
- Well-structured long-term power purchase agreements
- Extensive project finance expertise

**ENGINEERING/CONSTRUCTION**
- Dedicated engineering team
- Leadership in wind energy project construction

**OPERATIONS**
- Invenergy Services managing construction and operation of more than 1,500 MW of wind projects

**BENEFITS**
- Control the value chain
- Shorter development cycle
- Economies of scale
- Minimize execution risk
- Ownership mentality
Invenergy Indiana

Key Development State for Invenergy

- Invenergy has been actively developing in Indiana since 2007
- Opened an office in Lafayette in January of 2008
- 2-3 wind projects under active development
- Invenergy has secured over 84,000 acres in Indiana under long-term lease options
- Typical wind project size is ~ 200 MW to take advantage of economies of scale

Invenergy’s Lafayette Office
World Wind Capacity Growth as of End of 2009

Total wind power installed in the world since 1993 (in MW)

Worldwide capacity more than doubled from 2006 to 2009

Invenergy
World Wind Capacity Growth as of End of 2009

Source: 2009 AWEA Annual Wind Industry Report
U.S. Wind Industry: 2009

Total Installation in 2009: 9,922 MW

Total U.S. through 2009: 35,159 MW

Source: American Wind Energy Association
State by State Installed Capacity (MW)

Source: American Wind Energy Association
US Wind Farm Ownership

2009 Capacity by Owner Type

- Community: ~1%
- IOU/POU: ~15%
- IPP: 84%

Ownership does not include structural investors, which may have a share of equity.

Source: 2009 AWEA Annual Wind Industry Report
Renewable Production Standards (RPS)

29 states & DC have an RPS
5 states have goals

State renewable portfolio standard
State renewable portfolio goal
Solar water heating eligible

Minimum solar or customer-sited requirement
Extra credit for solar or customer-sited renewables
Includes separate tier of non-renewable alternative resources

WA: 15% by 2020*
MT: 15% by 2015
OR: 25% by 2025 (large utilities)
5% - 10% by 2025 (smaller utilities)
NV: 25% by 2025*
CA: 20% by 2010
AZ: 15% by 2025
CA: 20% by 2020
Hawaii: 20% by 2020
TX: 5,880 MW by 2015

MN: 25% by 2025 (Xcel: 30% by 2020)
WI: Varies by utility; 10% by 2015 goal
IA: 105 MW
IL: 25% by 2025
MI: 10% + 1,100 MW by 2015*
NY: 24% by 2013
OH: 25% by 2025†
VT: (1) RE meets any increase in retail sales by 2012; (2) 20% RE & CHP by 2017
ME: 30% by 2000
New RE: 10% by 2017
NH: 23.8% by 2025
MA: 15% by 2020
+ 1% annual increase (Class I Renewables)
RI: 16% by 2020
CT: 23% by 2020

CO: 20% by 2020 (IOUs)
10% by 2020 (co-ops & large munis)*
UT: 20% by 2025*
KS: 20% by 2020
LA: 105 MW
MO: 15% by 2021
VA: 15% by 2025*
OH: 25% by 2025†
PA: 18% by 2020†
NJ: 22.5% by 2021
MD: 20% by 2022
DE: 20% by 2019*
DC: 20% by 2020

KS: 20% by 2020
ND: 10% by 2015
SD: 10% by 2015
MI: 10% + 1,100 MW by 2015*
WA: 15% by 2020*
OR: 25% by 2025 (large utilities)
5% - 10% by 2025 (smaller utilities)
NV: 25% by 2025*
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HI: 20% by 2020
TX: 5,880 MW by 2015

Source: Database of State Incentives for Renewables and Efficiency
Indiana Wind at the Crossroads

- Crossroads in wind resource: Resource dropping moving eastward across the central US
- Crossroads in the markets: PJM vs. MISO
- Crossroads in enactment of Renewable Portfolio Standard: Federal? State?
Wind Resource Map

United States - Annual Average Wind Speed at 80 m

Wind Speed
m/s

> 10.0
10.0
9.5
9.0
8.5
8.0
7.5
7.0
6.5
6.0
5.5
5.0
4.5
4.0
< 4.0

Load Centers & Wind Resources

Blue – High Wind Potential
Brown – Large Demand Centers
Green – Little Wind and Smaller Demand Centers

Source: NERC - Accommodating High Levels of Variable Generation Report
Indiana Wind at the Crossroads
Wind Resource, 80 Meters

Source: National Renewable Energy Laboratory
Indiana Wind at the Crossroads
Indiana Wind Resource, 100 Meters

Source: National Renewable Energy Laboratory
Indiana Wind at the Crossroads
PJM & MISO
Indiana Wind at the Crossroads
PJM & MISO

Map showing the boundaries of PJM and MISO regions.
Indiana is a Key Transmission Corridor

Figure 1-9. All new electricity generation including wind energy would require expansion of U.S. transmission by 2030.

Wind (MW) on Transmission Lines

- Existing
- New
  - 100 - 200
  - 200 - 500
  - 500 - 1000
  - > 1000

Total Between Balancing Areas Transfer >= 100 MW (all power classes, land-based and offshore) in 2030.

Wind power can be used locally within a Balancing Area (BA), represented by purple shading, or transferred out of the area on new or existing transmission lines, represented by red or blue arrows. Arrows originate and terminate at the centroid of the BA for visualization purposes; they do not represent physical locations of transmission lines.
Indiana Wind Industry Growth
Ranked 2nd in Capacity Additions in 2009

<table>
<thead>
<tr>
<th>Year</th>
<th>Wind Capacity Added</th>
</tr>
</thead>
<tbody>
<tr>
<td>2008</td>
<td>130 MW</td>
</tr>
<tr>
<td>2009</td>
<td>1,037 MW</td>
</tr>
<tr>
<td>2010</td>
<td>99 MW (Under Construction)</td>
</tr>
</tbody>
</table>

Source: AWEA & NRDC
Indiana Wind Industry Future
State or Federal RPS?

MN: 25% by 2025
2007

IA: 105 MW

IL: 25% by 2025
2007

WI: 10% by 2015
2006

MI: 10% by 2015
2009

MO: 15% by 2021
2009

OH: 25% by 2025
2009

Source: Desire.org
Indiana Wind Industry Future
Economic Development Benefits of Wind Projects

- According to the Dept. of Energy, a **150 MW** wind project in Indiana would produce:
  - 75 jobs and $86.2 million in local economic activity during its construction phase.
  - Equivalent of 42 full-time local jobs
  - Approximately $2.3 million in property taxes
  - $6.7 million in economic benefit to the local economy each year.

- **30 wind projects** of this size in Indiana would result in thousands of construction/permanent jobs, over **$71 million** in annual property tax revenue and **$200 million** per year in positive economic impact on local communities.

Source: Natural Resources Defense Council
Wind Industry Jobs by State, 2009

Source: AWEA
Indiana Wind Industry Growth
Current Generation Mix

- Approximately 30,000 MW total installed generation capacity in the Indiana
- Wind adds diversification for a generation sources that is not dependent on fuel cost
- Primary variables are wind resource and capital cost

Source: Ventyx, U.S. Energy of Information Administration
Indiana Wind Industry Future

- We are in a long-term rising cost environment
- Recently higher volatility including current low prices

Figure 9.2 Average Retail Prices of Electricity (Cents per Kilowatthour)

By Sector, 1973-2009

Source: U.S. Energy of Information Administration

Source: U.S. Energy of Information Administration

*Prices are not adjusted for inflation. See “Nominal Price” in Glossary.
*Public street and highway lighting, interdepartmental sales, other sales to public authorities, agricultural and irrigation, and transportation including railroads and railways.
Indiana Wind Industry Future
What is Capacity Potential?

- 44 Indiana counties with commercially viable wind density – that’s almost one-third of the state.

- What is a reasonable target for wind capacity potential?....... 

  30 projects x 150 MW = 4500 MW

  This would equate to ~ 15% wind generation capacity
Indiana Wind Industry Future
Developers Continue to Add New Projects

- PJM and MISO electrical interconnection queue MW additions by year

<table>
<thead>
<tr>
<th>Year</th>
<th>PJM Queue</th>
<th>MISO Queue</th>
</tr>
</thead>
<tbody>
<tr>
<td>2006</td>
<td>880 MW</td>
<td>980 MW</td>
</tr>
<tr>
<td>2007</td>
<td>1370 MW</td>
<td>1850 MW</td>
</tr>
<tr>
<td>2008</td>
<td>1950 MW</td>
<td>2570 MW</td>
</tr>
<tr>
<td>2009</td>
<td>2850 MW</td>
<td>1300 MW</td>
</tr>
<tr>
<td>2010</td>
<td>100 MW</td>
<td>400 MW</td>
</tr>
</tbody>
</table>

Developers are ready to meet the challenge
Indiana Wind Industry Future
Challenges

- Transmission interconnection
- Environmental and wildlife
- Clear policy
Indiana Wind Industry Future
Opportunity is Now

- Expiration of Tax Incentives at the end of 2012
- Equipment and construction costs are lower than in recent years
- Projects can still get electric interconnection – for now
Indiana Wind Industry Future

Conclusion

- Developers are ready to meet the challenge
- Support needed from utilities, state regulators, and other state leaders
- Indiana has potential to play a key role in the Country’s wind energy future