MidAmerican Energy Company
Wind Generation & Development
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Presentation Topics

- Wind Power in the U.S.
- Wind Power in Iowa
- Wind Power at MidAmerican Energy
- Wind Project Development
- Wind Project Construction
- Questions
Wind Power in the U.S.

- No. 1 source of new electric generating capacity
  - More than 66,000 MW of wind power generation capacity in the U.S., enough to power the equivalent of 18 million average homes
- 4.13% of all electrical energy generated in the U.S. in 2013 was from wind
- 48,000 operating utility-scale wind turbines in the U.S.
- Department of Energy estimates: wind could supply 20% of U.S. energy and support 500,000 jobs by 2030

Source: American Wind Energy Association
Wind Power in the U.S.

- 39 states host operating utility scale wind projects

Source: American Wind Energy Association
• More than 500 wind-related manufacturing facilities in the U.S.

Source: American Wind Energy Association
Iowa is Leading the Way

• No. 1 state in U.S. for percentage of power generated by wind energy – 28%
• No. 2 state in total wind generation (in MWh)
• No. 3 state in U.S. installed wind capacity (end of 2014)
  – 5,708 MWh installed
  – 3,447 wind turbines
  – Enough to power the equivalent of 1.5 million average Iowa homes
  – 8.4% of all U.S. wind generation
• No. 7 state in terms of wind resources

Source: American Wind Energy Association
Iowa is Leading the Way

- 98 wind projects online (end of 2014)
- 12 wind related manufacturing facilities

Source: American Wind Energy Association
Began building wind projects in 2004

No. 1 rate-regulated utility owner of wind generation in the U.S.

Wind project benefits:

- Stabilize rates in the long term for customers
  - No fuel costs
  - 4th lowest electric rates in the nation; 40% lower than the nation average
- Foster economic development in Iowa communities
  - Property taxes
    - 150 MW-65 turbine project – approximately $12m over the first 10 years
  - Landowner easement payments
    - Millions paid to landowners each year
- Demonstrate MidAmerican Energy’s commitment to the environment
• **Jobs**
  - More than 1000 temporary jobs
  - More than 200 permanent jobs

• **Increased business revenue during construction**

• **Support local jobs**
  - Wind industry in Iowa supports more than 6,000 jobs in Iowa

• **Renewable energy and low electric rates attract energy-intensive businesses to Iowa**
MidAmerican Energy Wind – By Year-End 2016:

- Own and Operate 2,020 turbines

- **4,048.2 megawatts of wind generation capacity**
  - Approximately 4.2% of the total installed capacity in the U.S.

- **21 distinct parks**
  - Located in 23 counties

- Wind comprising nearly 42 percent of generation capacity

- Approximately 50% of retail sales from wind generation
Renewable Energy Generation Leadership

MidAmerican Energy – Balanced Generation Portfolio

2000
- Coal: 70%
- Natural Gas: 19%
- Nuclear/Other: 11%

2016
- Coal: 36%
- Natural Gas: 16%
- Nuclear/Other: 6%
- Wind: 42%

MidAmerican Energy – Balanced Generation Portfolio
Wind Project Development

• **Siting Considerations**
  - Wind Resource (wind resource map next slide)
    • Western Iowa has the best wind resource
  - Transmission Access
    • Available transmission line
    • Transmission system not congested
  - Welcoming landowners to host wind facilities
  - Welcoming Regulators
    • Tax abatement adopted by the county
    • Wind ordinance and permitting is not overly restrictive
  - Environmental Considerations
    • Pre-construction environmental surveys
    • Low concentration of threatened, endangered and protected species

• **Approximately two years from start of development to end of construction**
Iowa’s Wind Resource
MidAmerican Wind Turbine Construction
YouTube – Time Lapse Video

MidAmerican Energy Company - From the Ground Up: Building our energy future, one turbine at a time