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Lincoln Chamber of Commerce Growth and Development Forum

Wind Energy in Nebraska

David C. Levy

January 20, 2021

Significant Growth of Alternative Energy

- At the end of 2012, the installed capacity of wind power in the United States was just over 60,000 megawatts (MW); now it is over 100,000 MW
- In each of the past five years, wind power was the fastest growing energy segment in the US
- Wind power has delivered 30 percent of all new generating capacity for the last five years
- Wind energy now accounts for around 10 percent of all electricity generated in the US
- In Iowa and South Dakota, wind generated electricity exceeds 30 percent of total electricity

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Benefits of Investment in Renewable Energy

- Property taxes
  - A 200 MW wind project generates approximately $1,300,000 annually in new revenue
- Landowner payments
  - A 200 MW project generates approximately $1,000,000 annually
- Economic growth through local spending and new jobs
- Wind energy in Nebraska is potentially a $5-8 billion industry – approximately $3 billion to date
- Energy diversification – particularly in response to increasing federal regulation and consumer demand

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Four Legs of a Successful Wind Project

- Good wind resource
- Available transmission capacity
- Willing landowners
- Power purchase agreement

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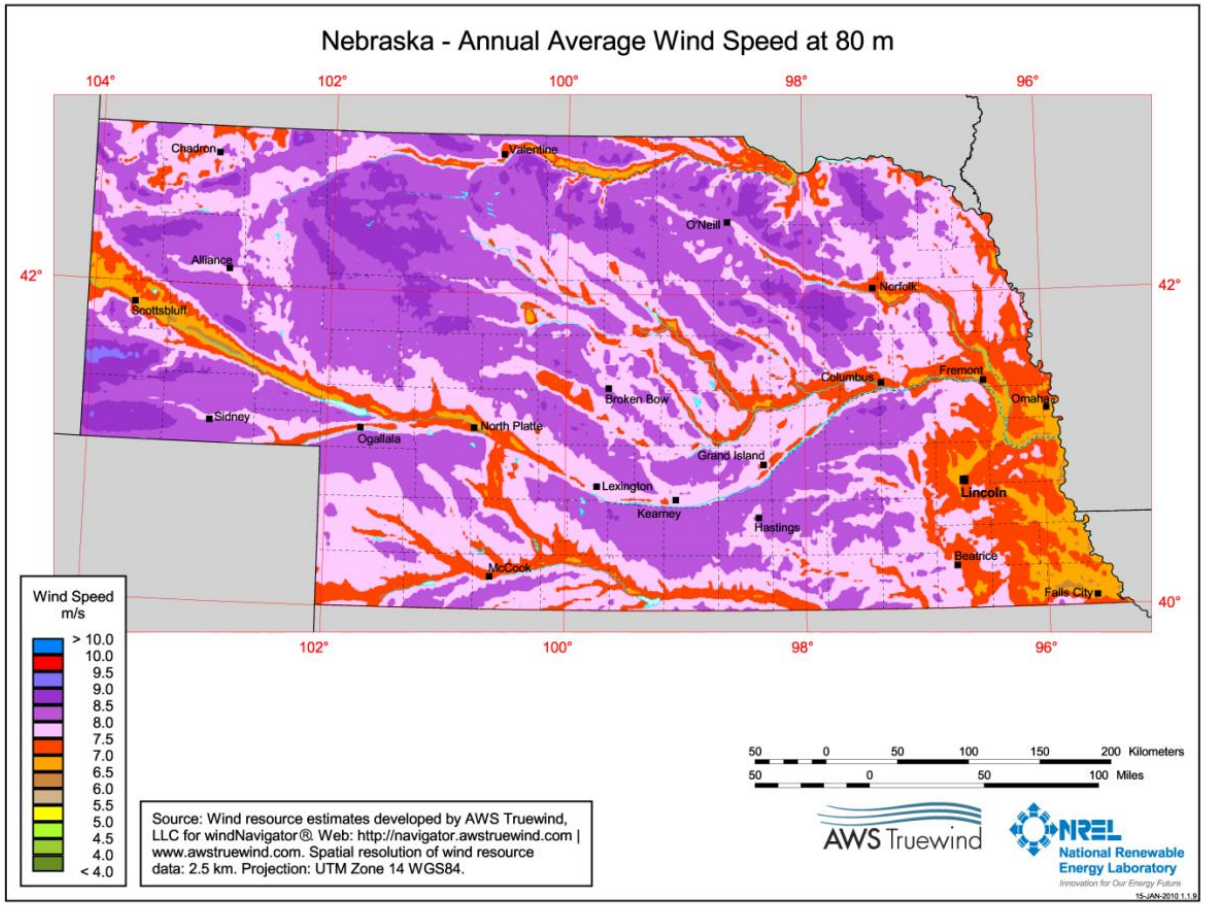
Nebraska – Annual Average Wind Speed at 80 m



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Potential Landowner / Local Issues

- Crop damage
- Removal of turbines, panels and equipment
- Restoration of roads and other municipal infrastructure

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Decommissioning

- Nebraska's Triple Backstop
  - 1) Landowner / lease
  - 2) County zoning
    - Decommissioning bond
  - 3) Nebraska Power Review Board
    - Decommissioning bond

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Property Value Impacts

- Peer-reviewed academic studies show no broad negative property value impacts
  - Lawrence Berkeley Laboratory – Thousands of parcels across the country over a decade
  - Wichita State University 2017 – Positive impact on property values

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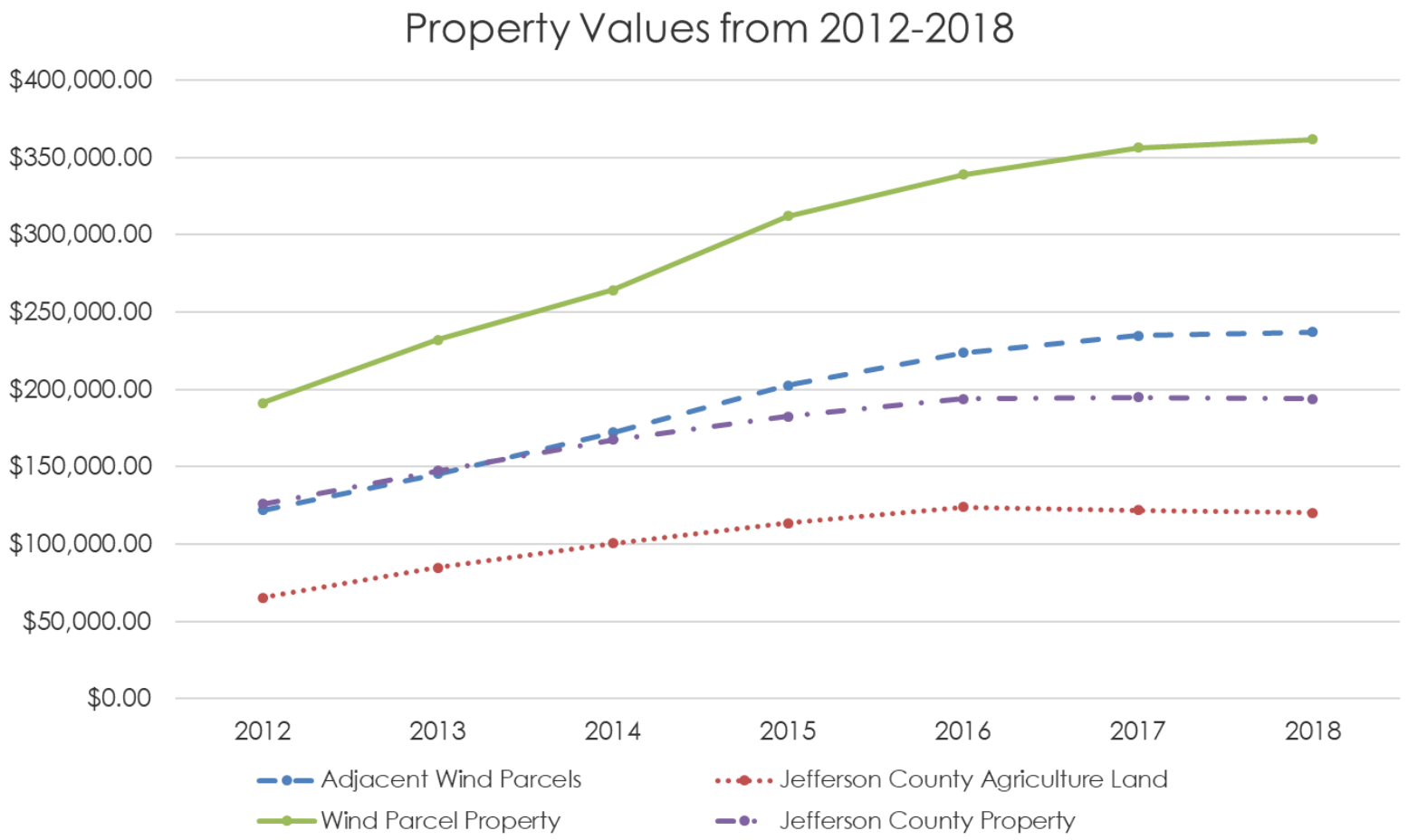
Local Empirical Data



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Zoning, Permitting and Environmental Issues

- Noise and setbacks (wind)
- Migrating birds, bats and Prairie chickens
- Wetlands and waterways
- Whooping crane and American burying beetle - federally listed
- Prairie chickens create and use "leks" for mating dances and other rituals; these leks are areas on the ground to which the birds return each year

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Typical Permitting Agencies

- United States Army Corps of Engineers
- United States Fish and Wildlife Service
- Federal Aviation Administration
- Nebraska Department of Transportation
- Nebraska Public Service Commission
- State Game and Parks Commission
- State Historic Preservation Office
- Local Municipalities – cities and counties

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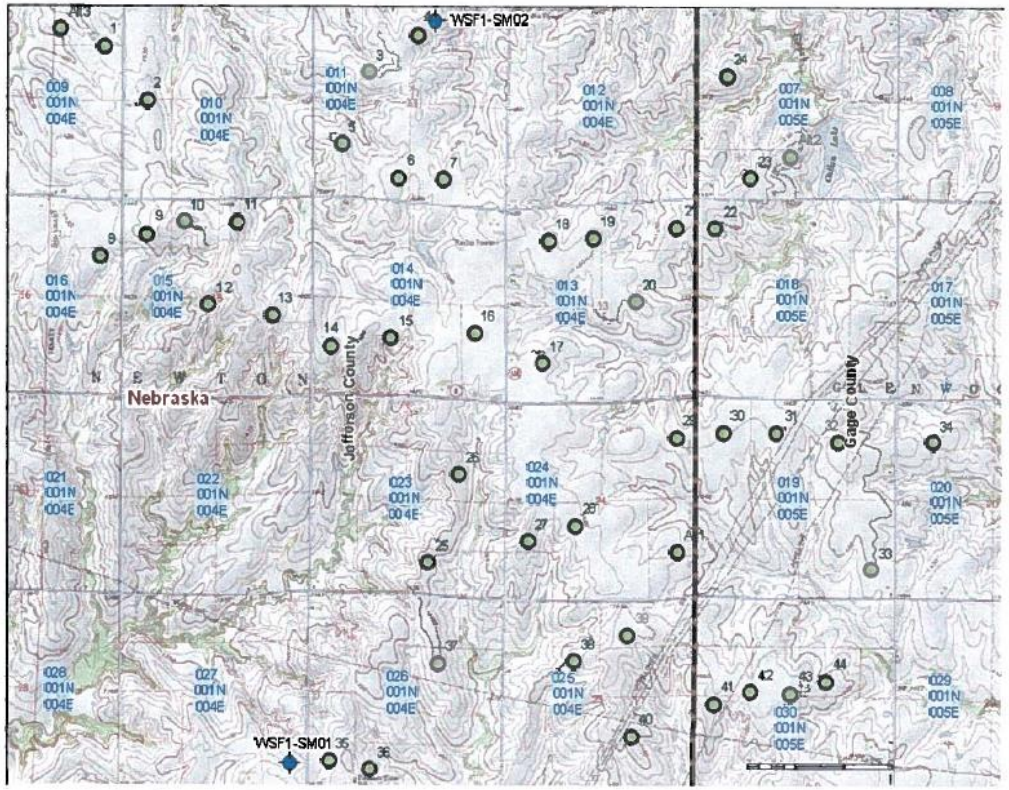
Wind Project Siting Example



The design of the a wind project is an iterative process that considers many factors

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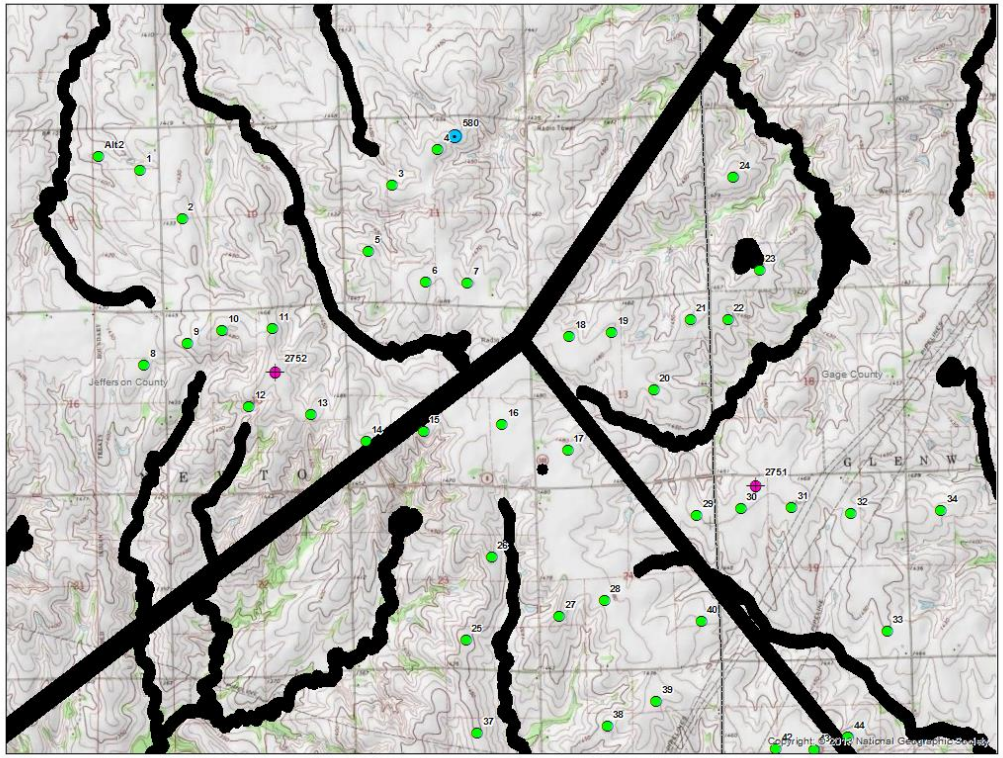
Project Setbacks



The wind farm design avoids beam paths, rivers, and water features

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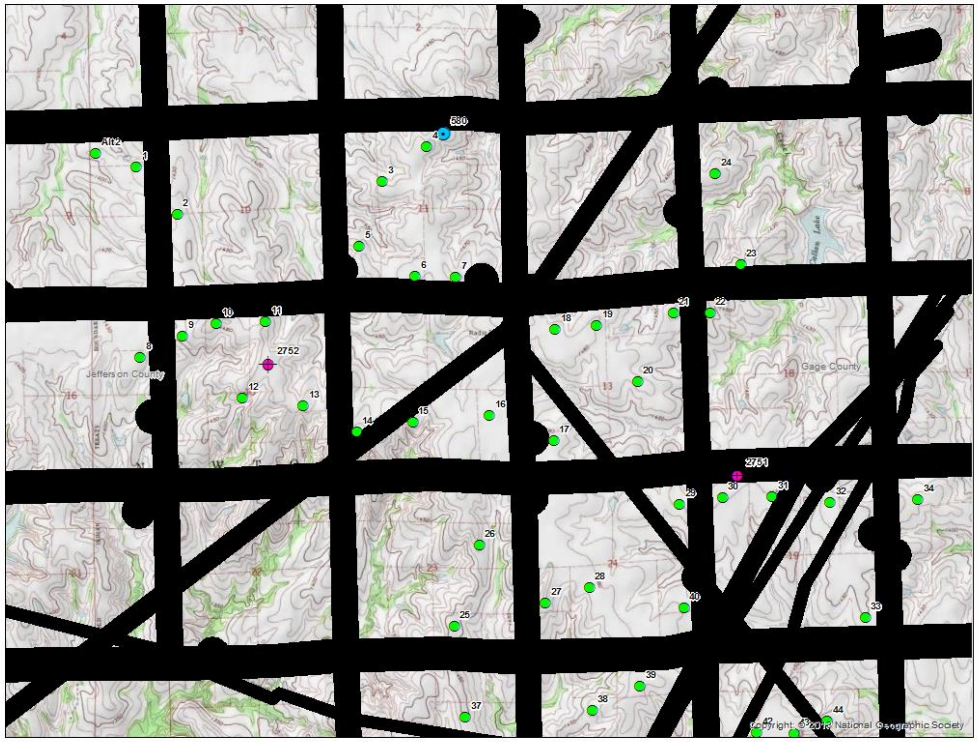
Project Setbacks (continued)



The wind farm design also avoids roads, pipelines, and existing structures

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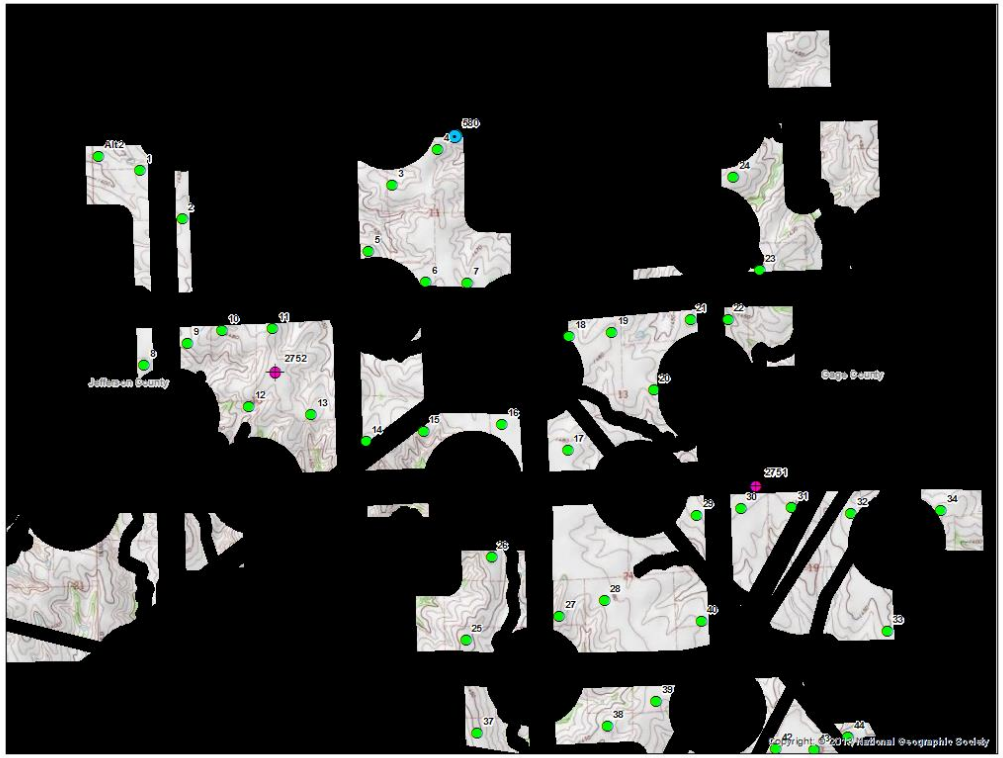
Project Setbacks (continued)



The wind farm design includes setbacks from homes and non-participating property owners

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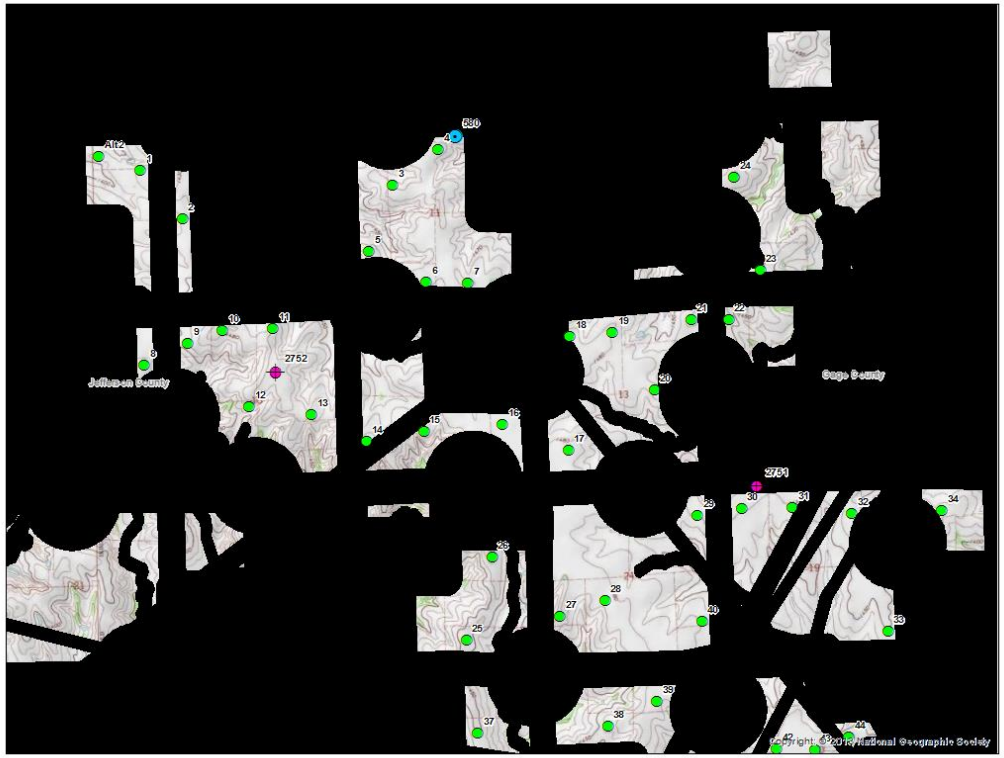
Project Setbacks (continued)



Once setbacks are met, the array is refined to minimize sound (50dBA limit) and shadow effects and reviewed by the turbine manufacturer for warranty requirements

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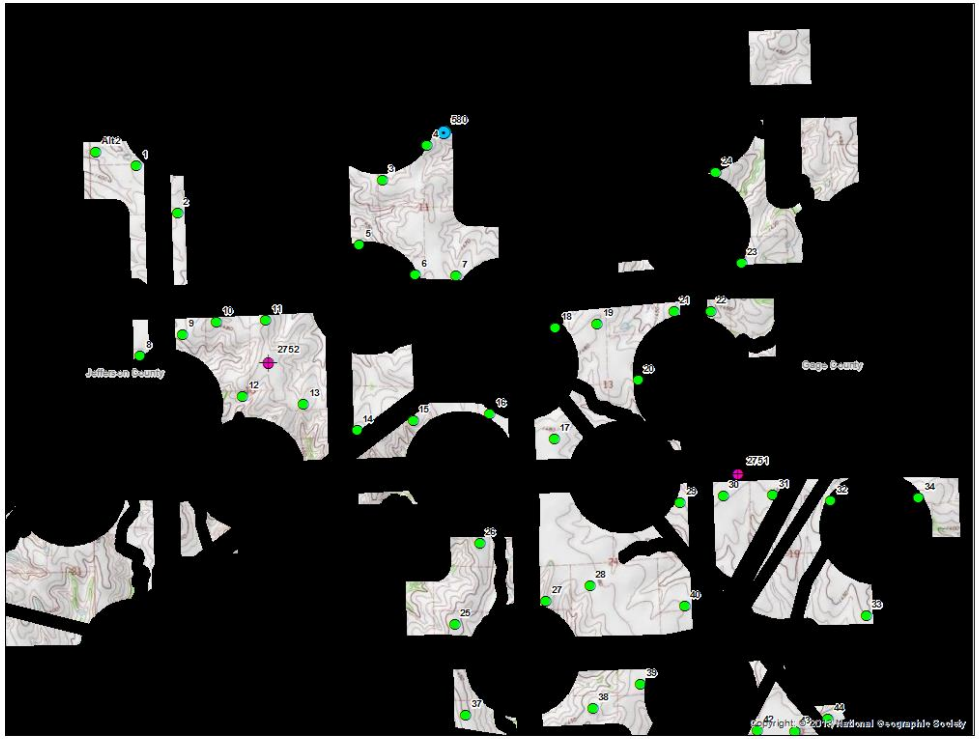
Project Setbacks (continued)



Once setbacks are met, the array is refined to minimize sound (45dBA limit) and shadow effects and reviewed by the turbine manufacturer for warranty requirements

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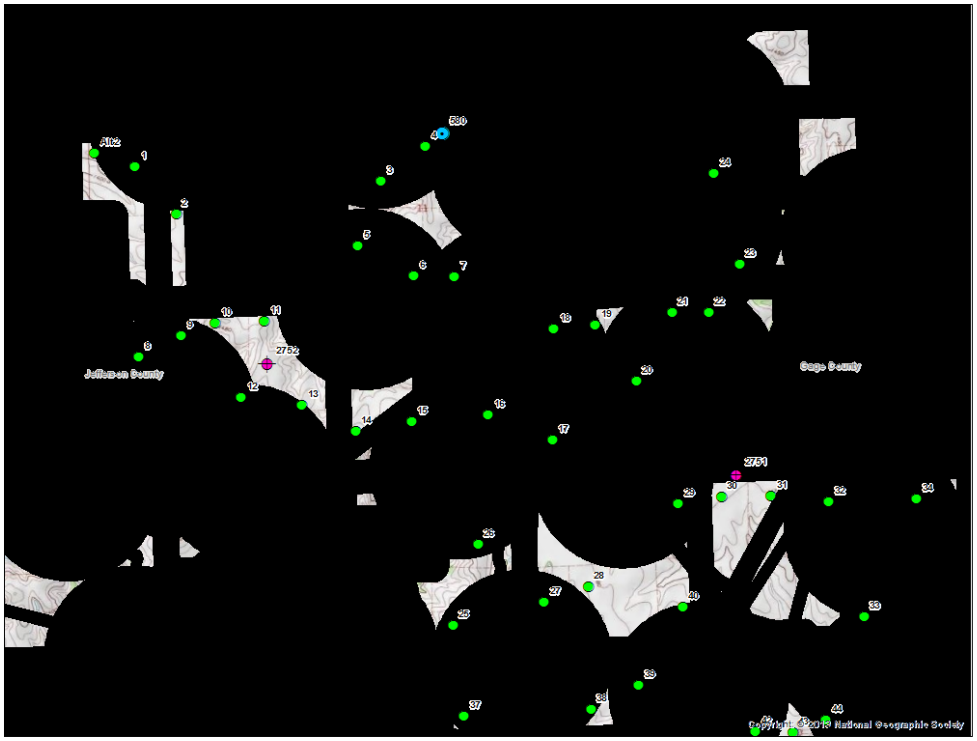
Project Setbacks (continued)



Once setbacks are met, the array is refined to minimize sound (37dBA limit) and shadow effects and reviewed by the turbine manufacturer for warranty requirements

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Nebraska Opportunities

- Top 3 wind resource
- Excellent solar resource
- Available transmission
- Southwest Power Pool
- Access to western grid

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Commercial and Industrial Customer Interest

- Facebook
- Hormel
- Pepsi
- Smuckers
- Vail
- Amazon
- Google
- Monolith

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Future of Alternative Energy

- In addition to our great resources and success in "traditional" renewable energy (utility-scale wind and solar development):
  - Distributed Generation
  - Battery Storage
  - Smart Grid

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Questions?

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