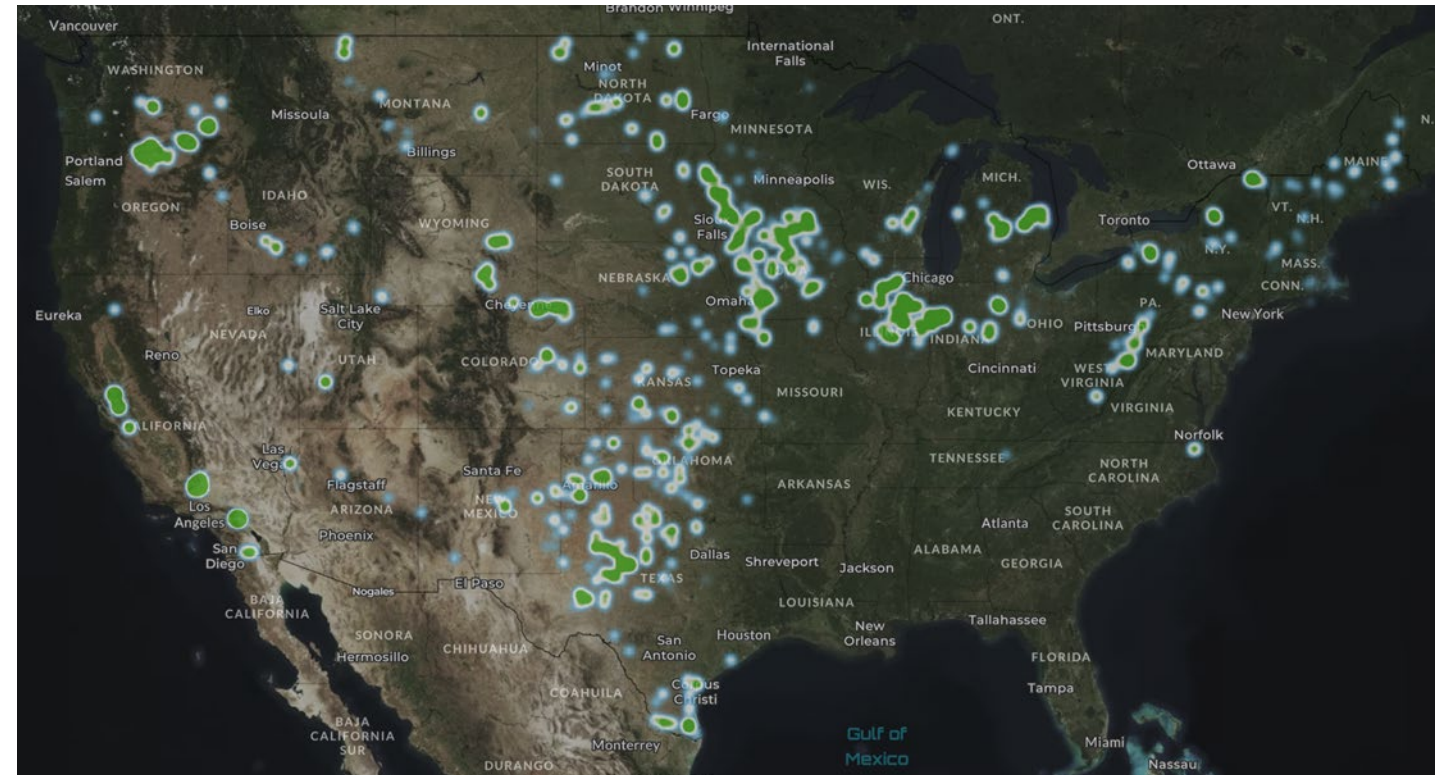
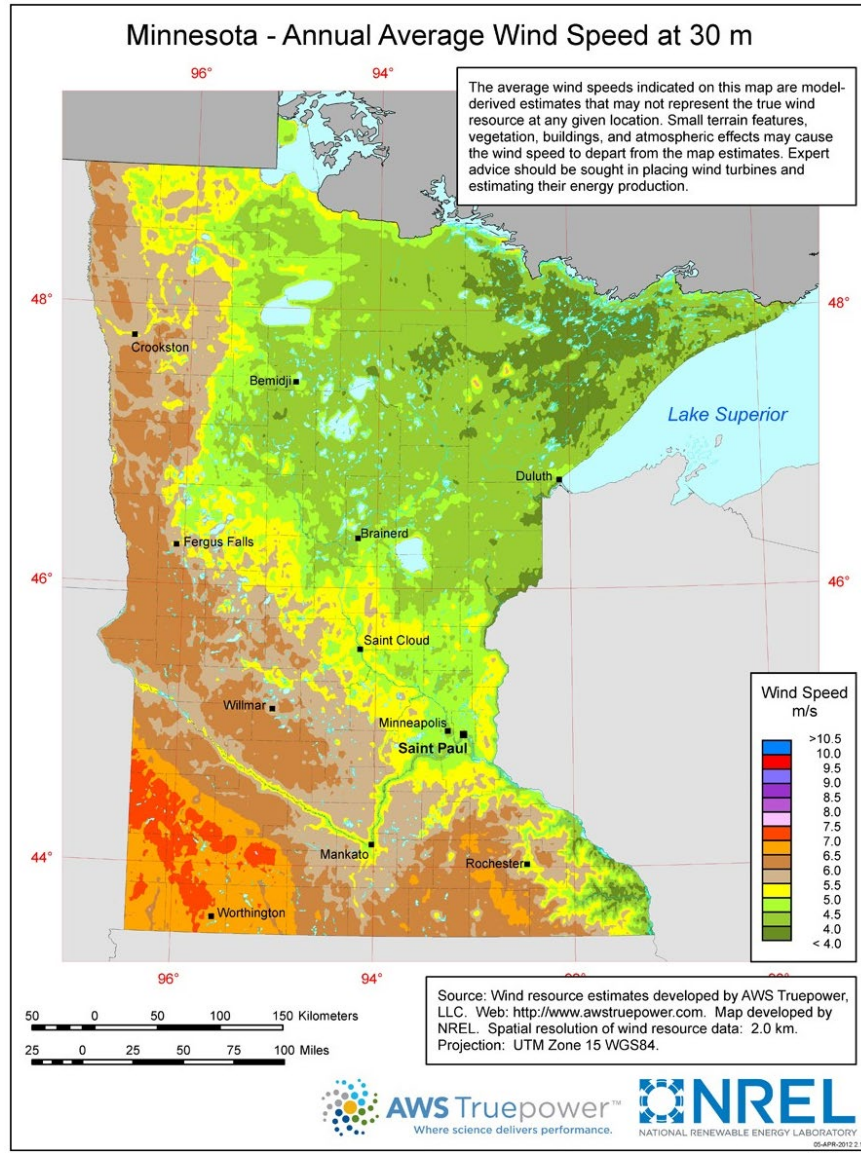


Wind Development & Our Conservation Agenda

David Trauba, MN DNR Interim Wildlife Section Manager

Wind Resources



USGS Wind Turbine Viewer

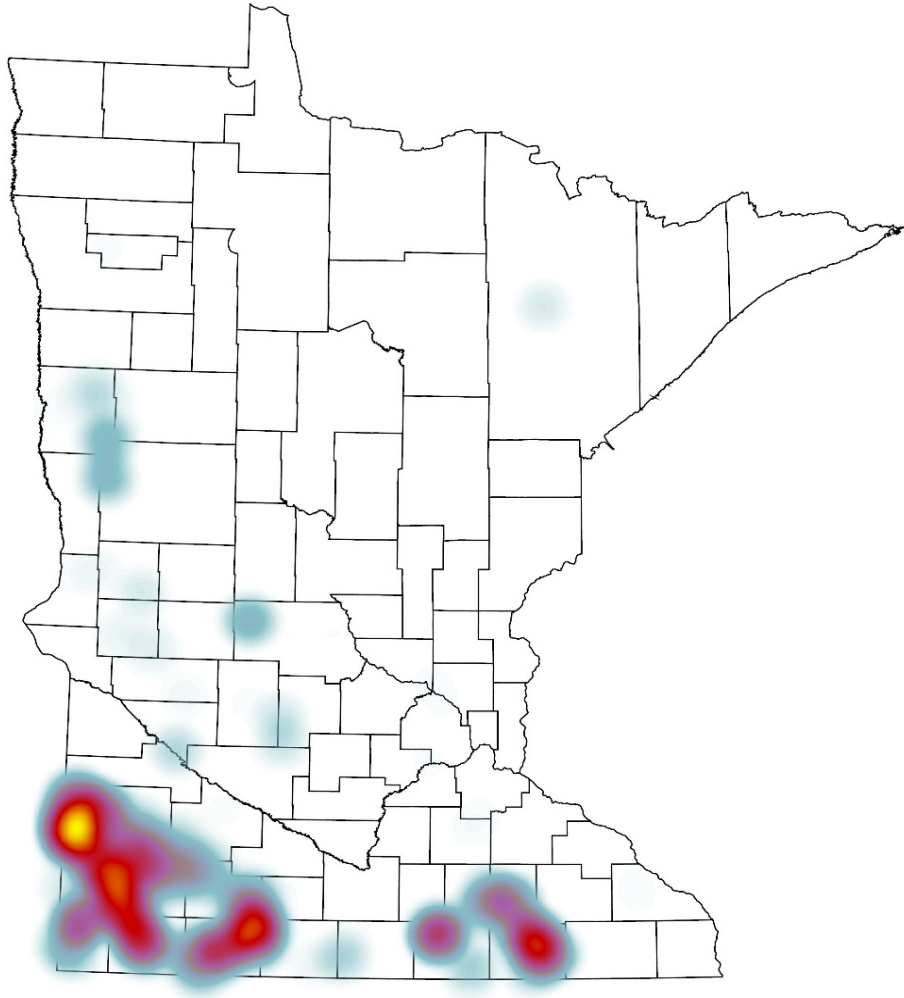
<https://eerscmap.usgs.gov/uswtodb/viewer/#4/37.25/-96.25>

Current Wind Turbine Statistics - U.S. Wind Turbine Database



- Seventy (70) Large Wind Energy Conversion System (LWECS) projects
- 2,732 turbines (96% in Region 4)
- Approximately 690,000 acres of wind easements
- Lincoln County has the most turbines (n=643), the most LWECS projects (n=13) and two new wind developments are in planning stages.
- 4,785 MW of energy

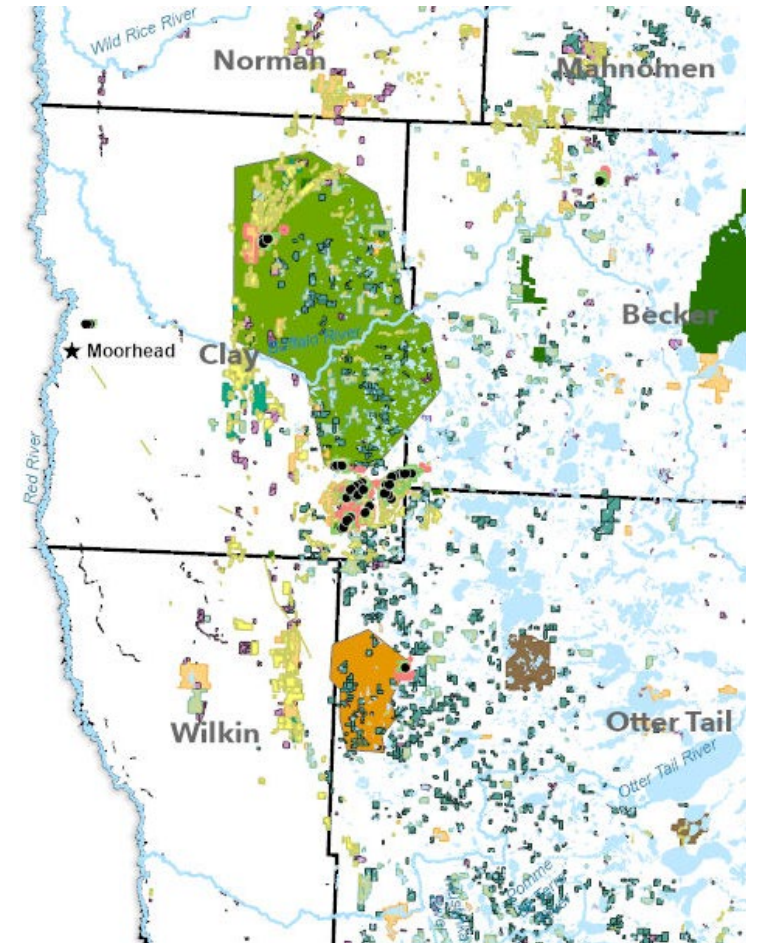
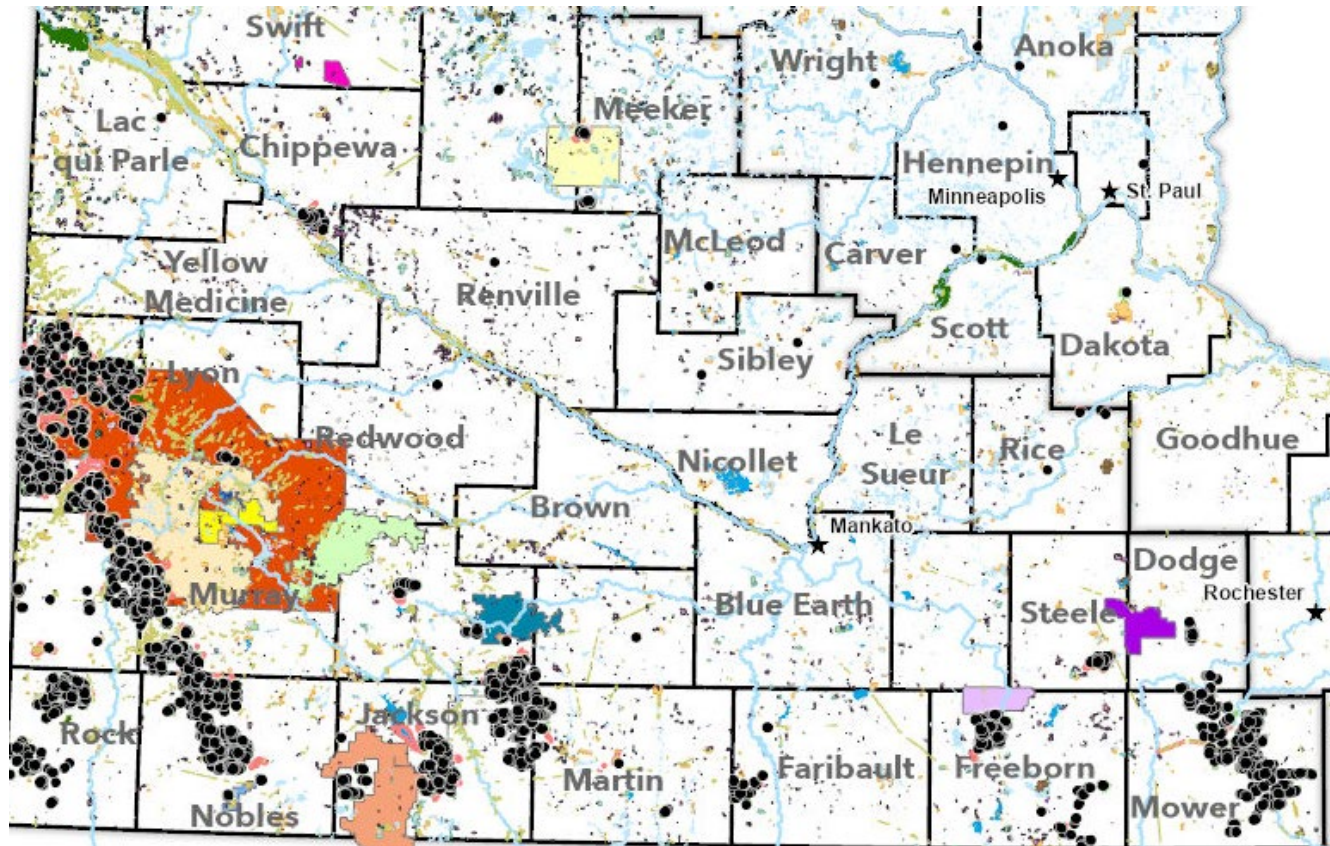
Permitted and Proposed Wind Developments



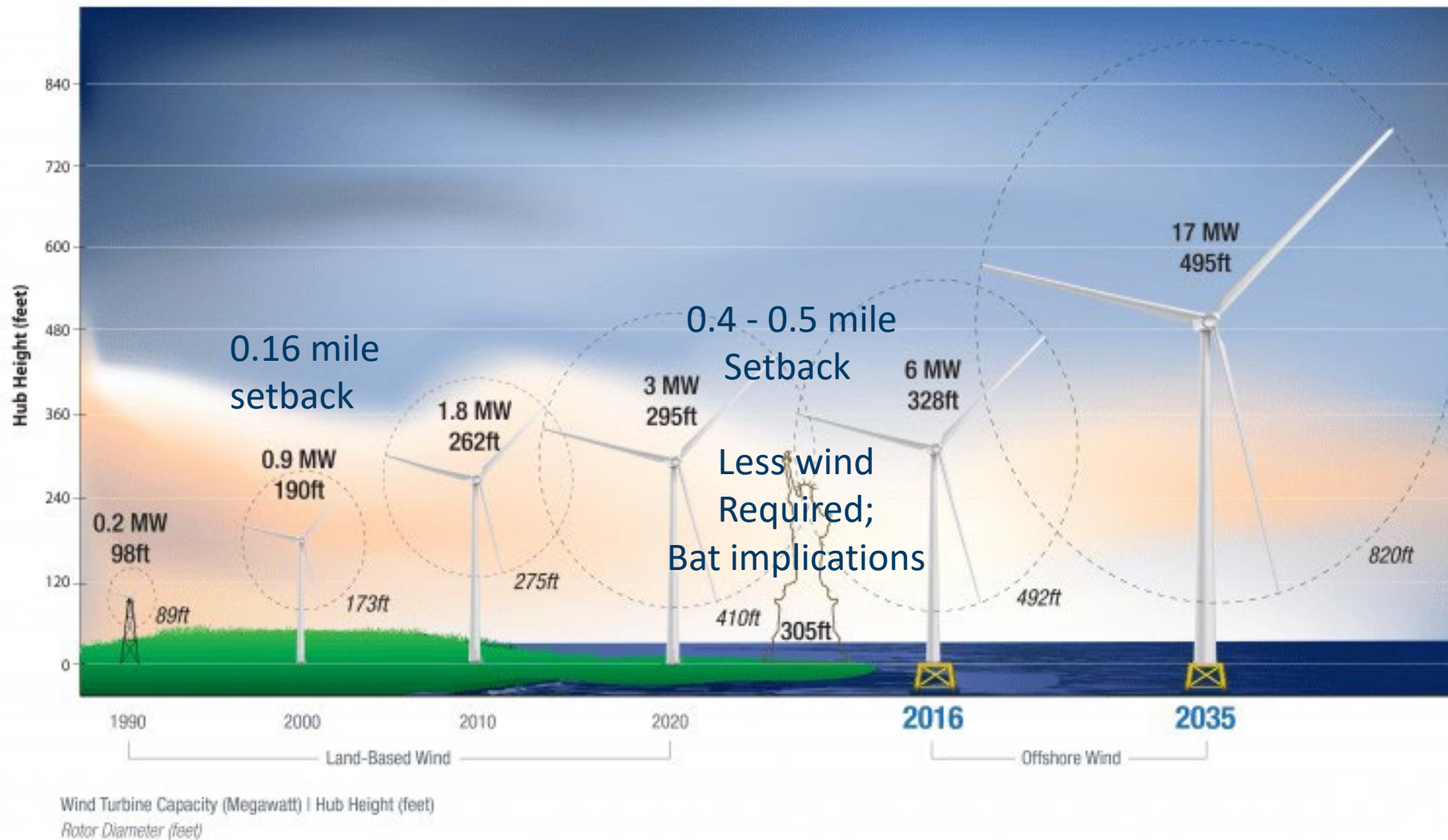
New Development Statistics:

- Fourteen LWECS
- Combined Project Area = 1.3 Million Acres
- May represent 700,000 acres of additional wind easements
- Sixteen counties but concentrated development in Lincoln, Lyon and Murray
- Approximately 3,967 MW (~892 towers)

Existing, Permitted and Proposed Wind Developments



PUC Setback Requirements – 5 x 3 rotor blade diameter

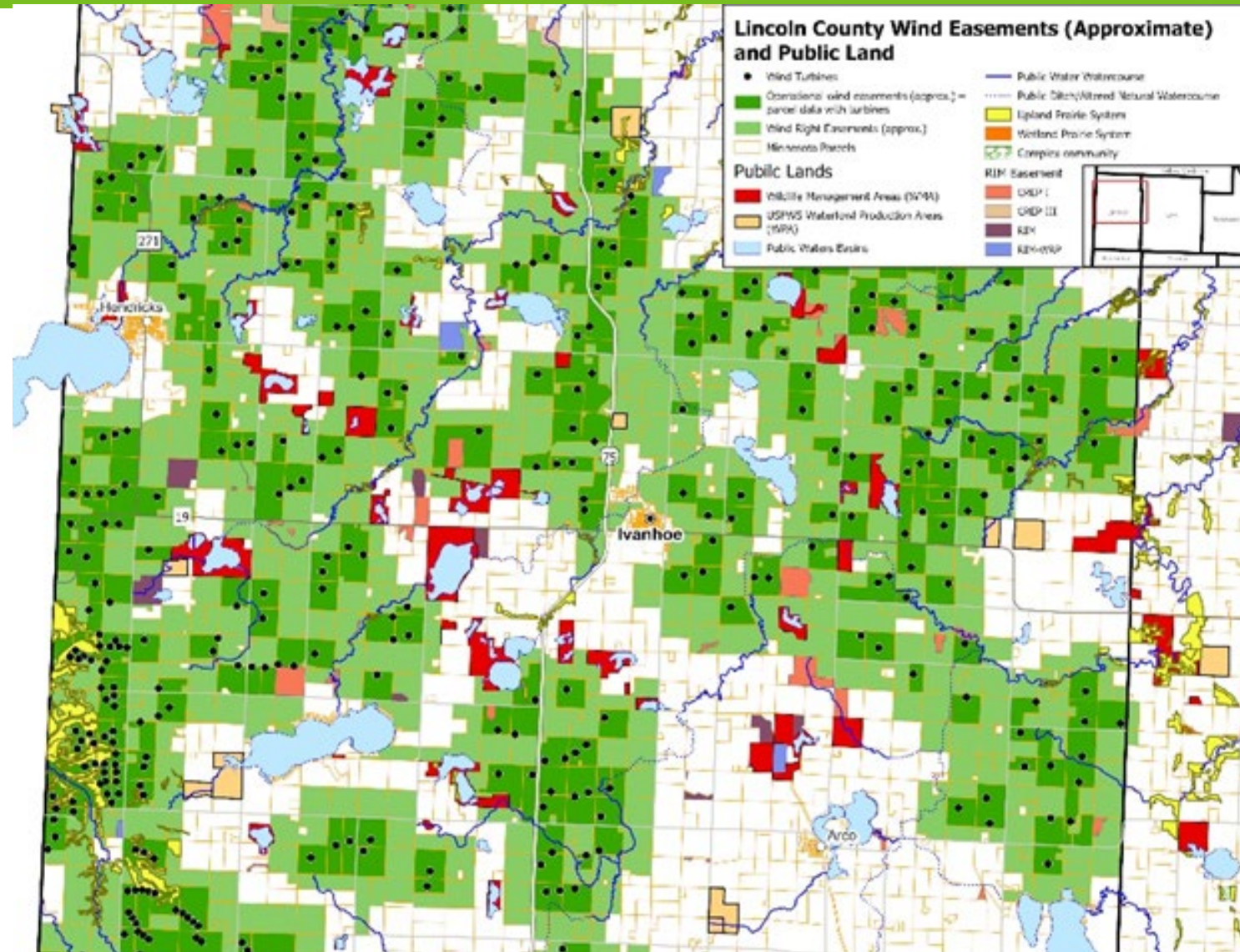


- Public Lands - setbacks
- Private Conservation Lands; unprotected habitat – no setback
- DNR Acquisition – we cannot encroach on 5x3 setback
- Turbine size drives the scale of wind easements

PUC and Applicant's Site Controls - Wind Easement

What is the issue?

- Land conservation - cannot purchase lands or place habitat easements on lands that contain wind easements
- Terms and conditions unacceptable to state and federal agencies
- Currently, we estimate 690,000 acres of wind easements exist – most in R4
- Factoring new and to be built, we estimate 1.3 to 1.5 million acres of wind easements exist in Minnesota. Equivalent to our entire WMA system
- Easements concentrated in 4-7 counties; *Conservation in the Dark*



DNR Conservation Agenda - Focus on Lincoln County

1994

- Buffalo Ridge

1998

- Lake Benton 1

1999

- Shaokatan Hills
- Lakota Ridge

2000

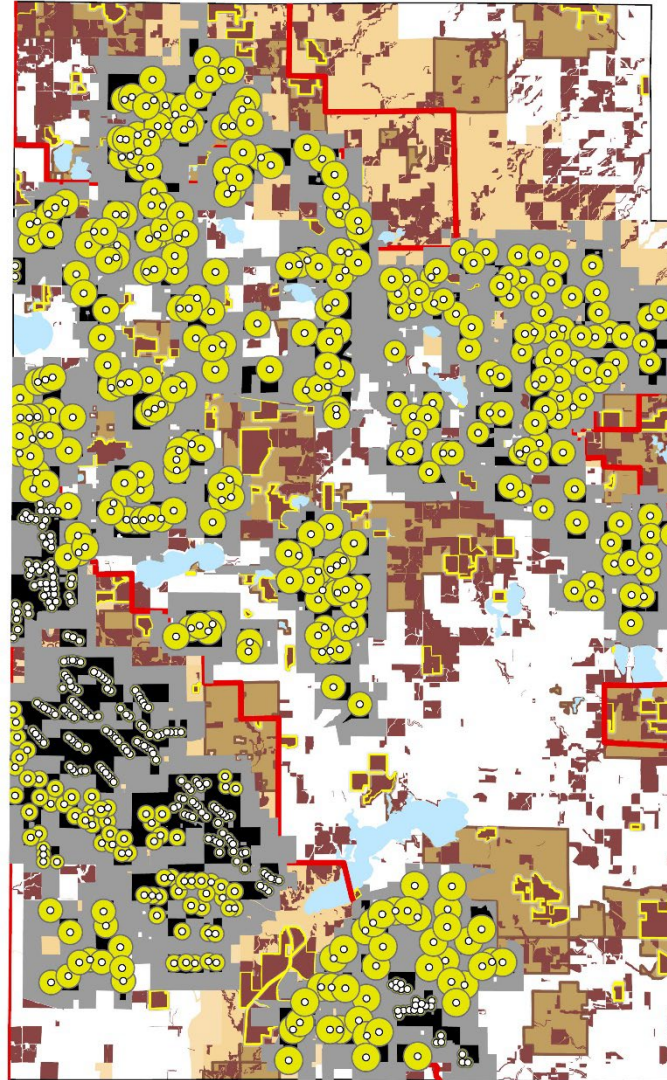
- North Shaokatan

2001

- Ruthton
- Lakeview Ridge

2003-2006

- Shaokatan Power Partners
- Lincoln County
- JJN Wind Farm
- Norgaard



2007

- Minn-Dakota

2011

- Community Wind North

2017

- Red Pine

2020

- Blazing Star 1

2021

- Blazing Star 2

2022

- Buffalo Ridge

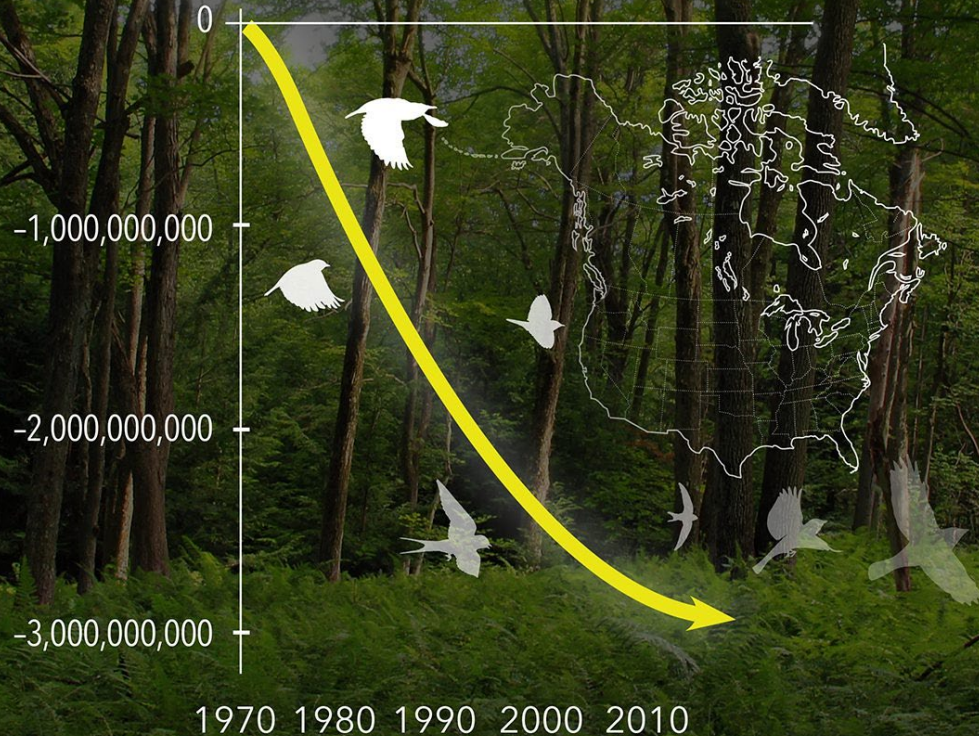
Indirect Effects - Disturbance and Displacement

- Rare to have “Before and After Control Assessments”
- Disturbance - visual impacts, noise, shadow flicker
- Displacement from suitable habitat e.g., ND research indicates a 53% displacement of grassland nesting birds within 300 m (984 feet) from a turbine; others studies up to 1 km (3,280 feet)
- In MN, CRP tracts without turbines had 4x greater grassland bird densities (180 m; 590 feet)
- Demographics effects due to further habitat fragmentation
- Abandonment (e.g., heron rookeries)
- Population level effects
 - A study of an endangered bird (Dupont's lark) reported a 5.8% annual decline without nearby wind turbines and a 21% annual decline with wind turbines nearby



MN Bird and Bat Fatalities – Facility Wide Estimates

2.9 billion
birds gone since 1970



Extrapolated 30-year Fatality Estimates

| Birds | Bats |
|---------|-----------|
| 587,880 | 1,269,900 |

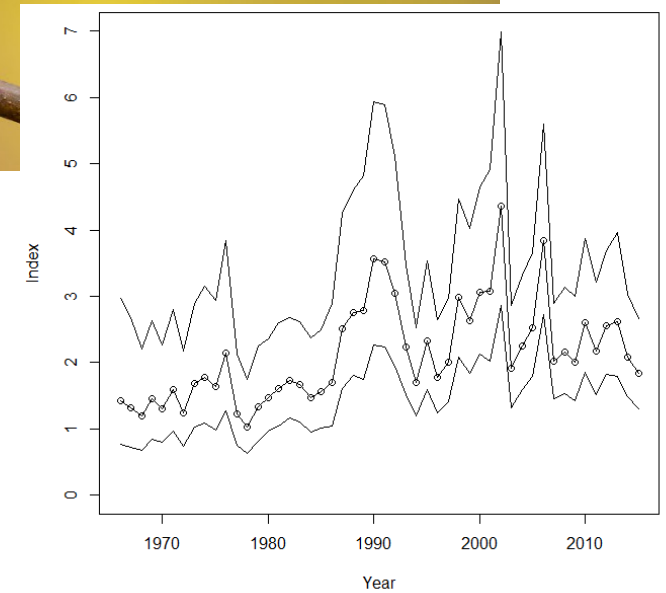
- Growing research = pre-construction surveys have no relationship to post-construction mortality. The “**sky is habitat**”
- Fatalities are occurring under current regulatory framework
- How do we mitigate these impacts

Bird Fatalities

American kestrel



Golden-crowned kinglet



Bat Fatalities

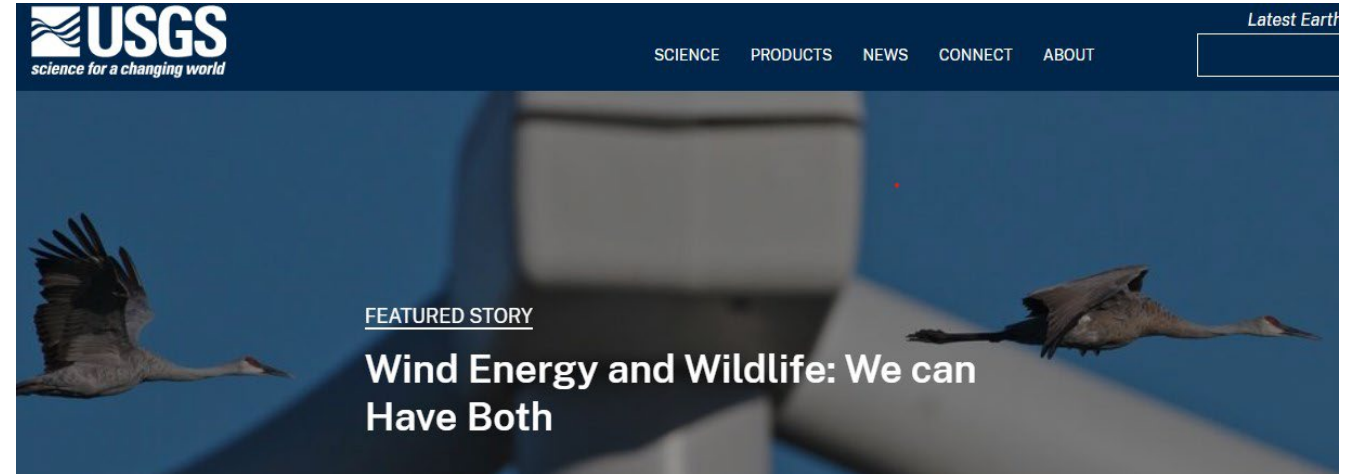
- Collisions with wind turbines are one of the leading causes of bat mortality in North America – especially migratory tree bats (hoary, silver-haired, eastern red bats) – account for 70% of all documented bat mortality
- Bats are also under severe threat from White Nose Syndrome
- Wind turbine fatalities are additive for both bats and birds. MW expected to double



Hoary Bat

Charting a New Path

- We can have both – what does that require?
- DNR Interdisciplinary team – our charge = to work cooperatively with staff subject matter experts from Department of Commerce and the Public Utility Commission to explore additional strategies regarding wind development and conservation.
- The state of Minnesota is a leader



Questions?

