
Wind Rights
&
Project Development
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BASIN ELECTRIC
POWER COOPERATIVE
A Touchstone Energy® Cooperative

Basin Electric's Green & Renewable Projects

Existing:

230+ MW Wind

33 MW Waste Heat

643 MW Green & Renewable

New Wind:

120 MW in ND

150 MW in SD

New PPAs:

11 MW Waste Heat

99 MW Wind in SD

BASIN ELECTRIC POWER COOPERATIVE

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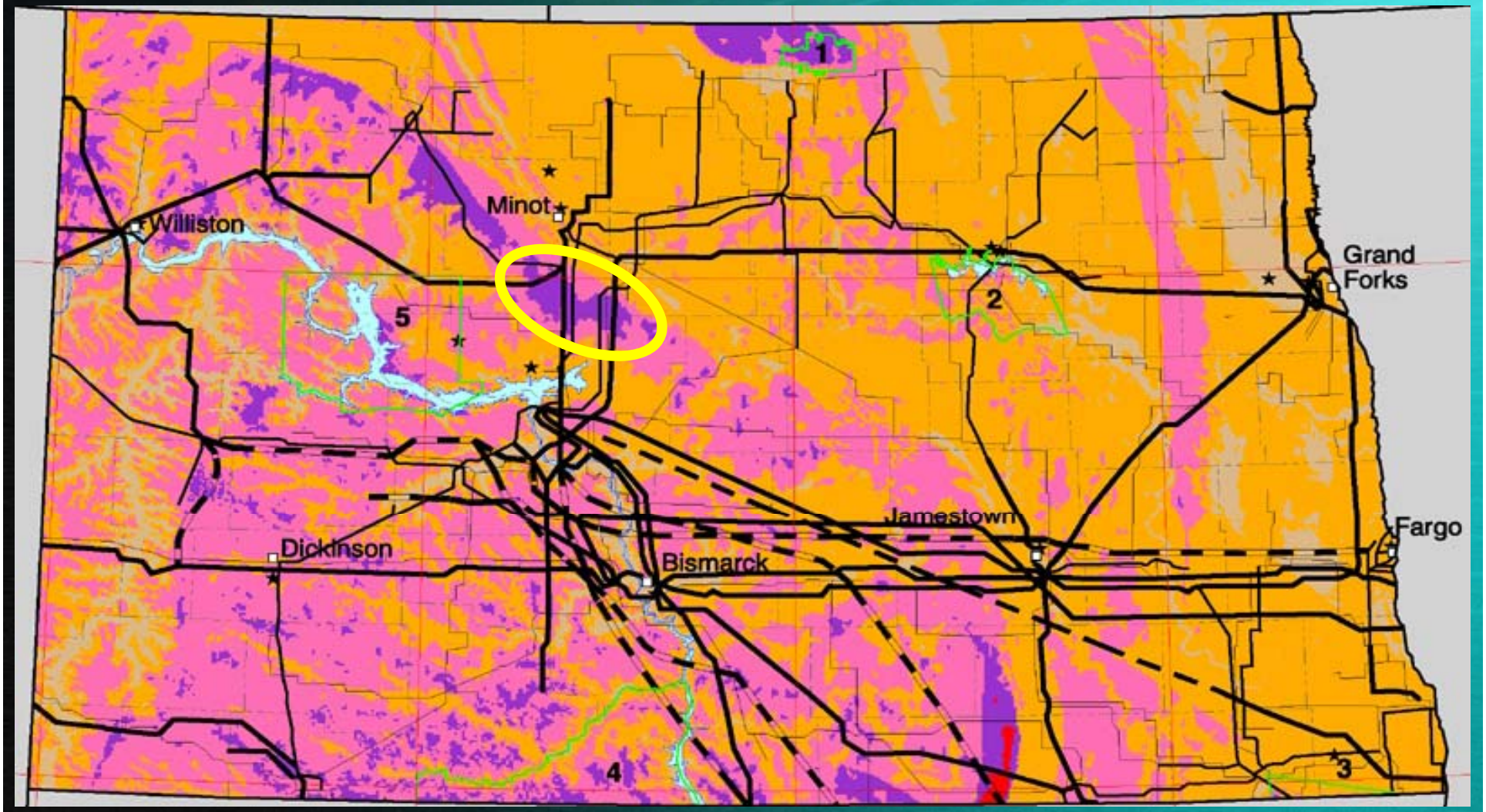
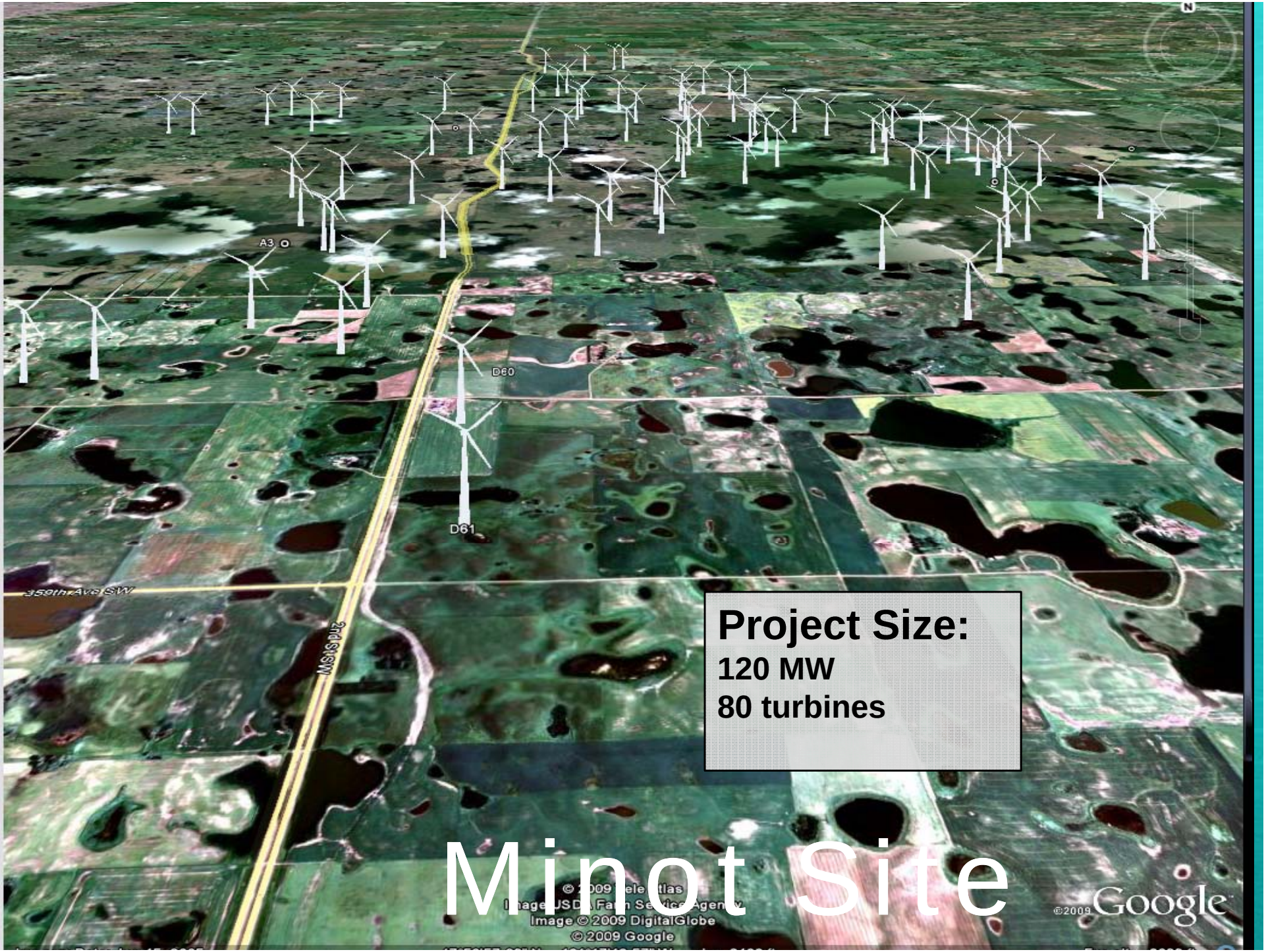
PrairieWinds 1 and PrairieWinds Minot Wind 2




A3
D60
D61
350thAve SW
Project Size:
120 MW
80 turbines
Minot Site
Image © 2009 DigitalGlobe
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Working with Stakeholders…

Landowners:

- Public Meeting & Letters
- 2 personnel assigned solely to landowner relations

County:

- Working with Ward County Engineer
- Roads are a top priority

Contractor

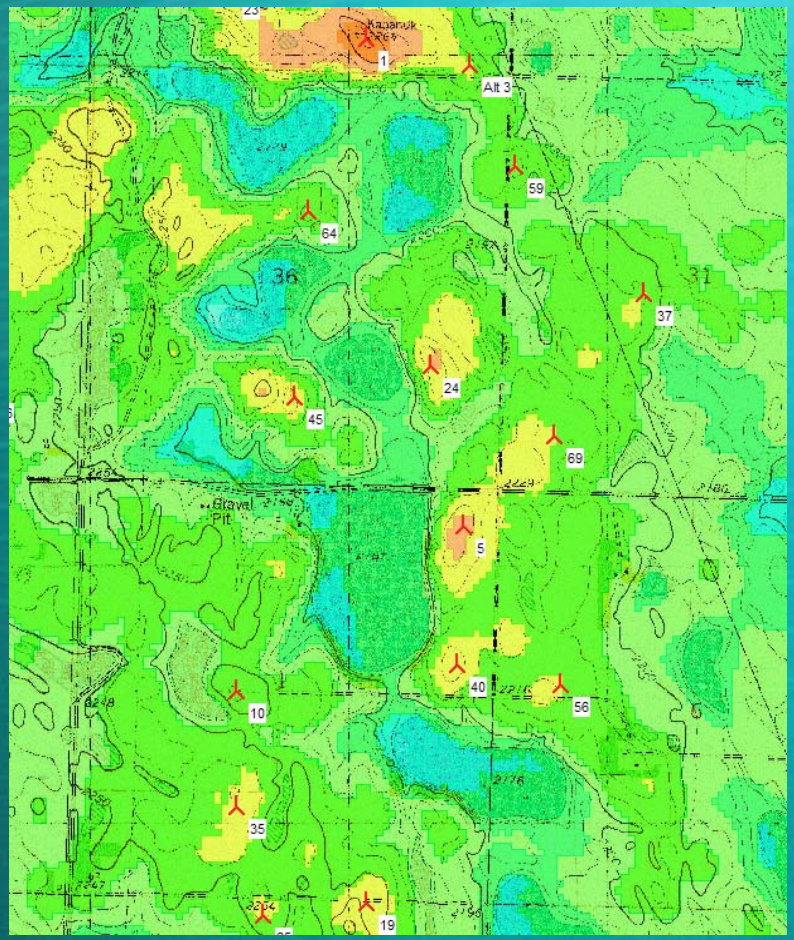
- Emphasis on landowner relations
- Road Maintenance and Cleanup

Setbacks & Wind Rights

WHY THEY ARE IMPORTANT

Siting Challenges

- Selecting “best” wind sites
- Landowner concerns
  - Cropland
  - Access
  - Proximity
  - Not Interested
- Economics



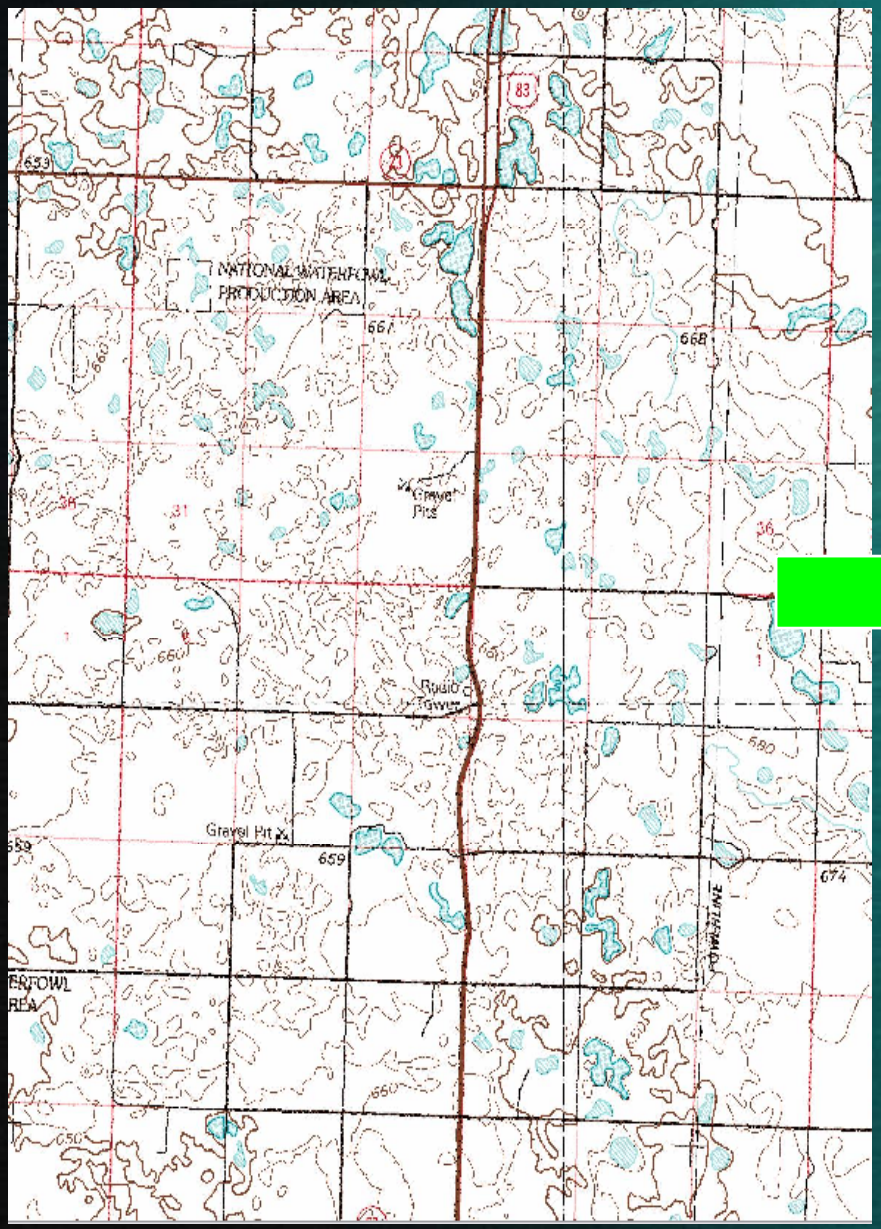
Some Exclusion Criteria

- 1,400 feet from residences w/rare exceptions
- 400 feet from roads & section lines
- Microwave paths
- Various utilities
- Shadow flicker
- Other

Exclusion Criteria (cont.)

- Environmental
  - Wetlands
  - Grouse Leks
  - Cultural/ Archeological Sites
  - Wildlife Production Areas

No Exclusions



A Few of the Exclusions

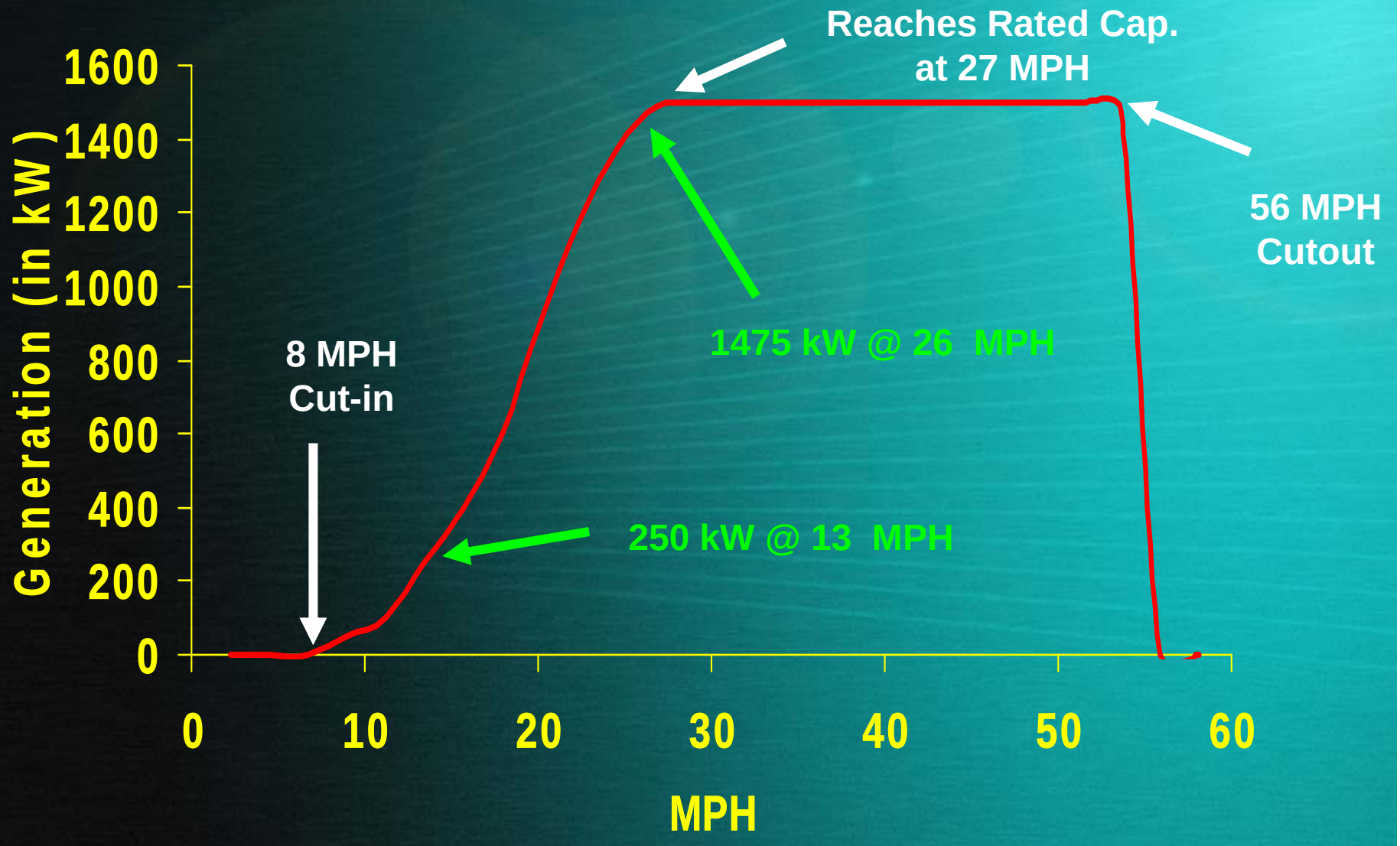
Siting is Critical!

Generation increases with the cube of wind speed

A 15% increase in wind speed yields a 50% increase in production

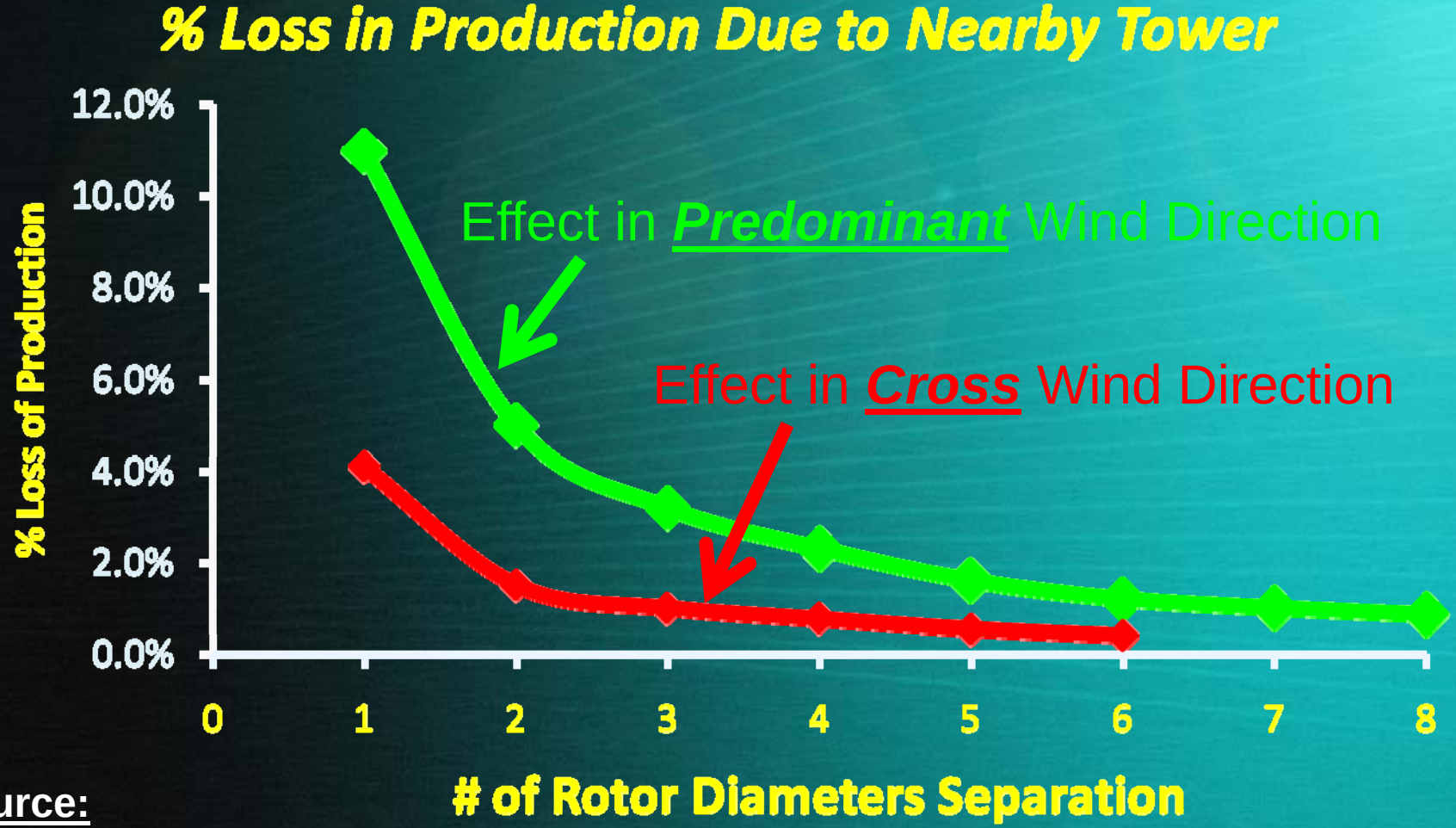
Power Curve:

Generation vs Wind Speed



Effects of Adjacent Turbines

Sample runs on existing project



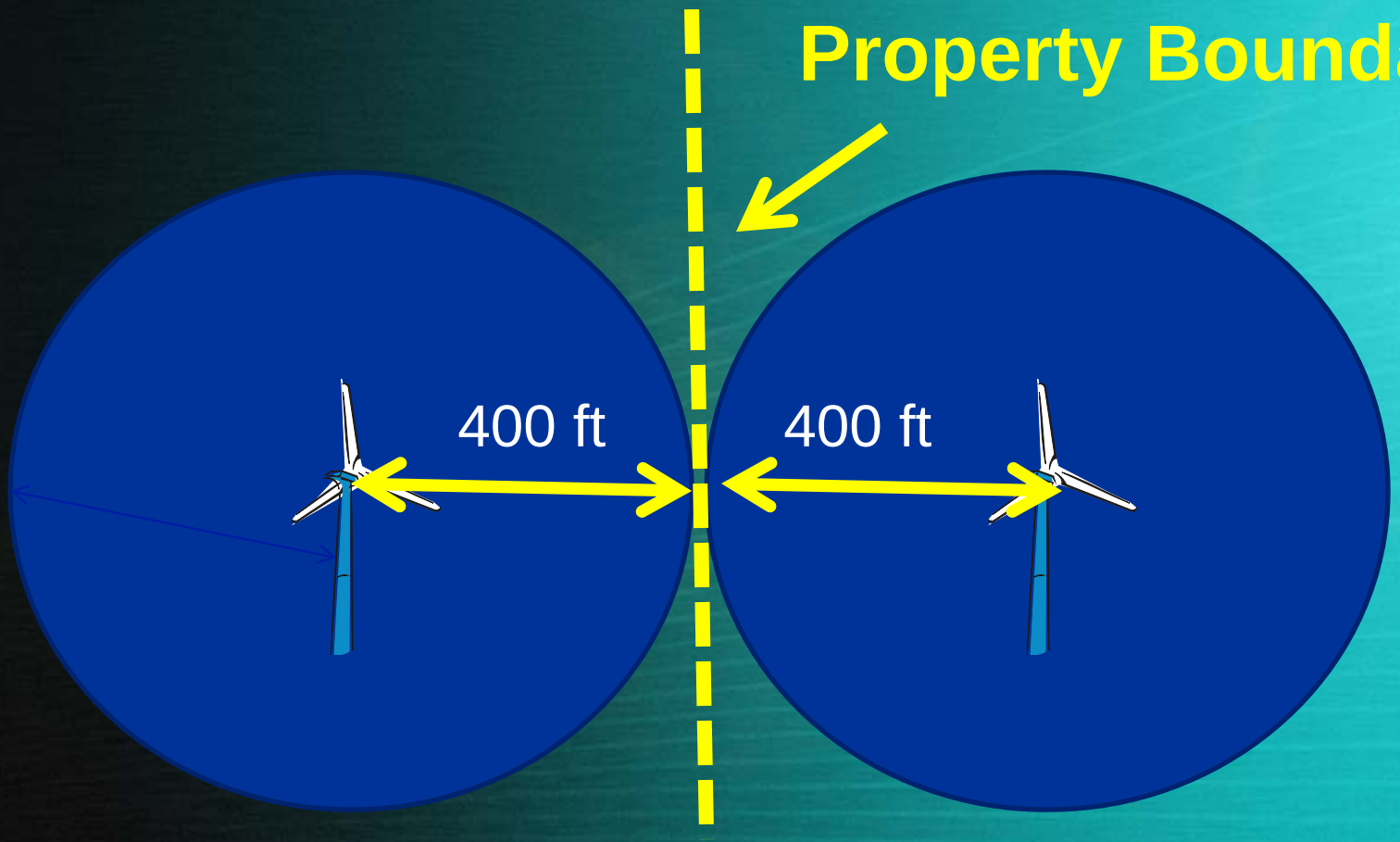
Source:

- WindPro Software
- 1.5 GE SLE turbines
- Rolling hill topography

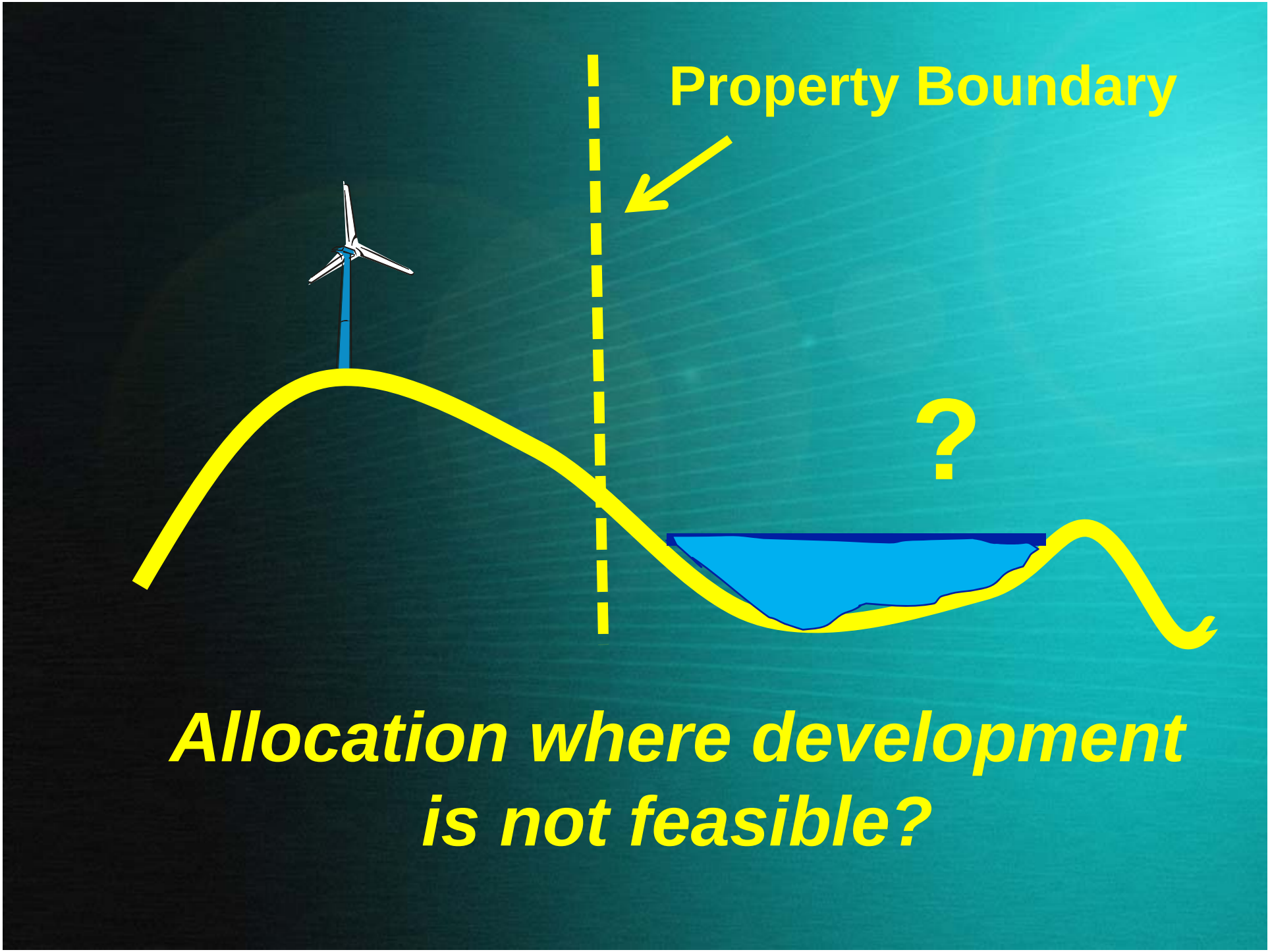
Allocation of Wind $$$

- The value of nearby wind sites is extremely variable
- The downwind effect diminishes rapidly

Allocating wind rights in an equitable manner is not simple!

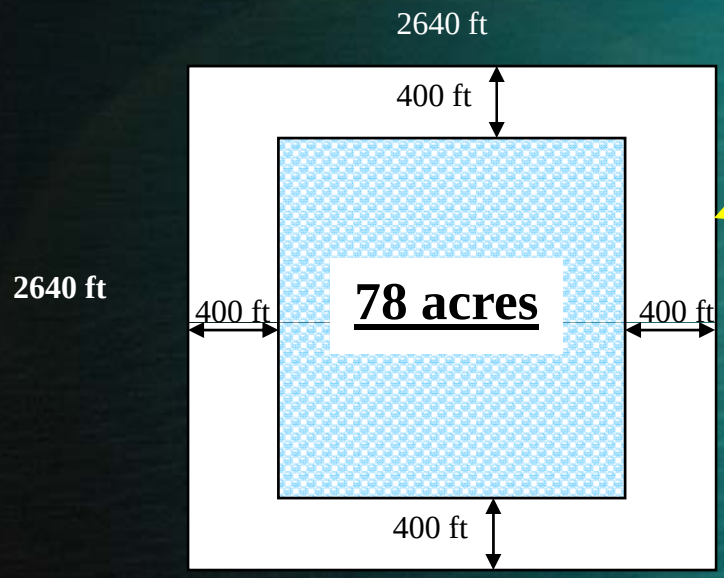


800 feet is greater than 3 rotor diameters



Allocation where development is not feasible?

Impact of Setback from Property Lines



82 acres

Example: A setback of "Fall Distance" can sterilize over 50% of the site.

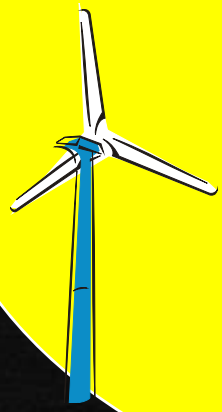
Typical Quarter Section: 160 ac

Then add real constraints, such as shadow flicker & noise…
Leaves limited area for wind

Investment & Risk Comparison

Project Developer

- ***Transmission Risk***
- ***2-3 years wind studies***
- ***Engineering $$$***
- ***Permitting Risk***
- ***Operating Risk***
- ***Market Risk***
- ***Tax Risk***



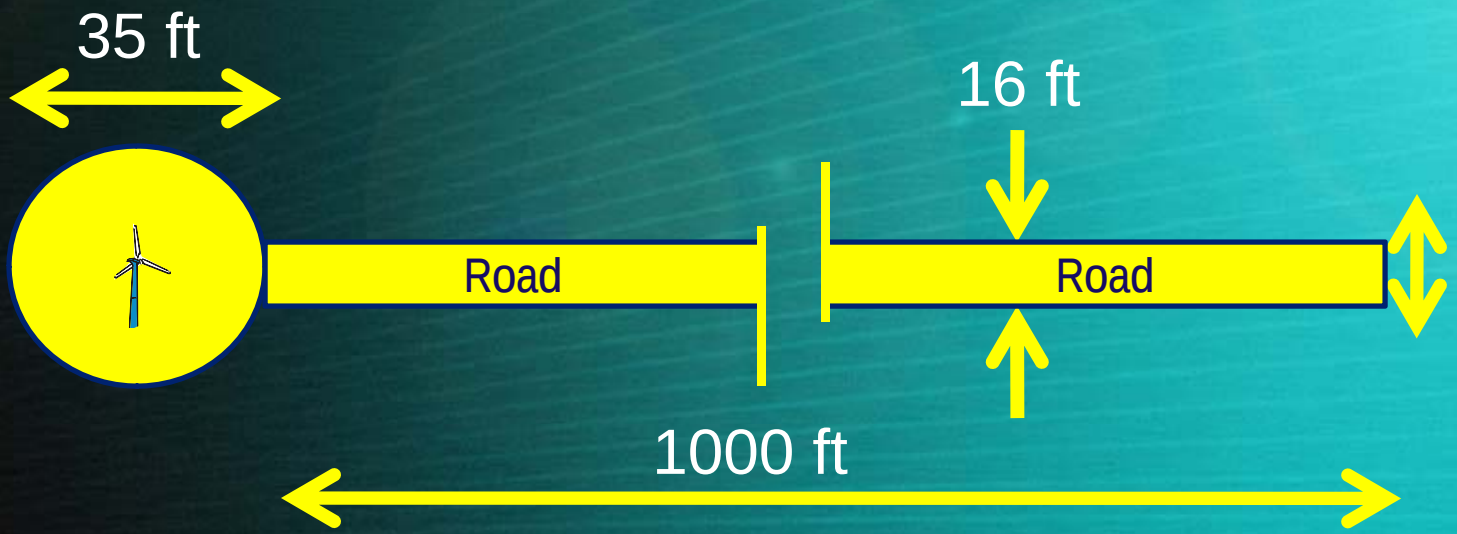
Cost: $3-5 Million/turbine

Landowner

¼ to ½ acre of land per turbine

Revenue: $4-$7k/turbine/yr

Typical Permanent Impact



Roughly 0.4 acres for each turbine, plus a road

Key Points to Consider…

Should nearby landowners have virtual veto rights over a neighbor's land?

Wind is not "produced" on the wind site & could be considered an interstate resource

How would existing projects be affected by establishing new rights?