Use GIS to Assess Wind Turbine Placement

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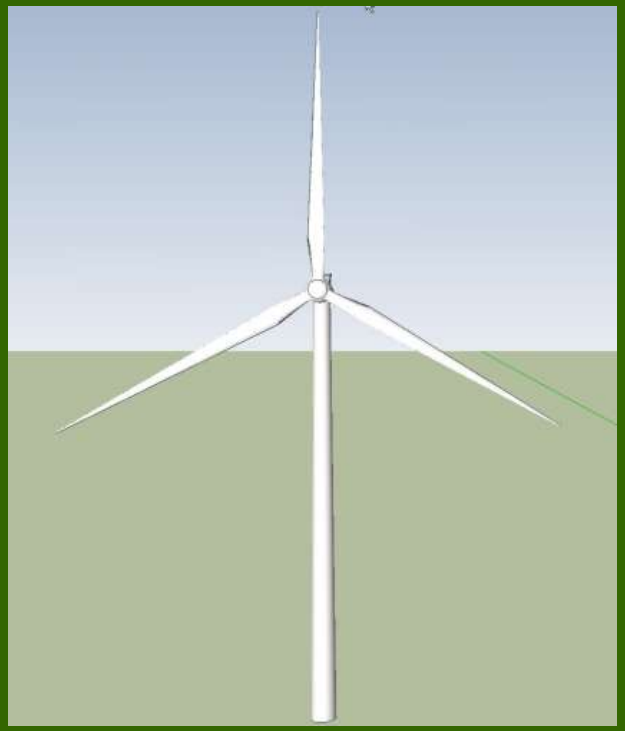
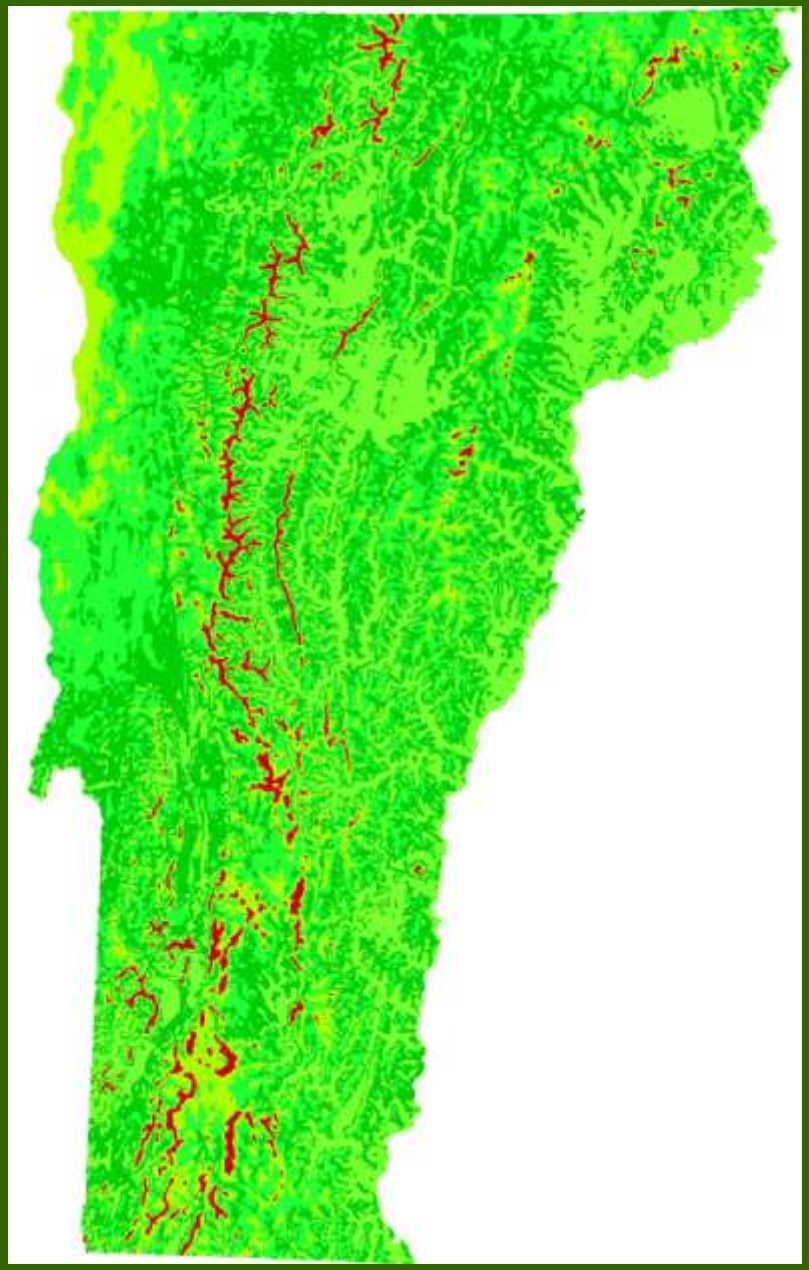


Everyone supports the concept of "Green Energy."

Everyone agrees we need alternative sources of energy.

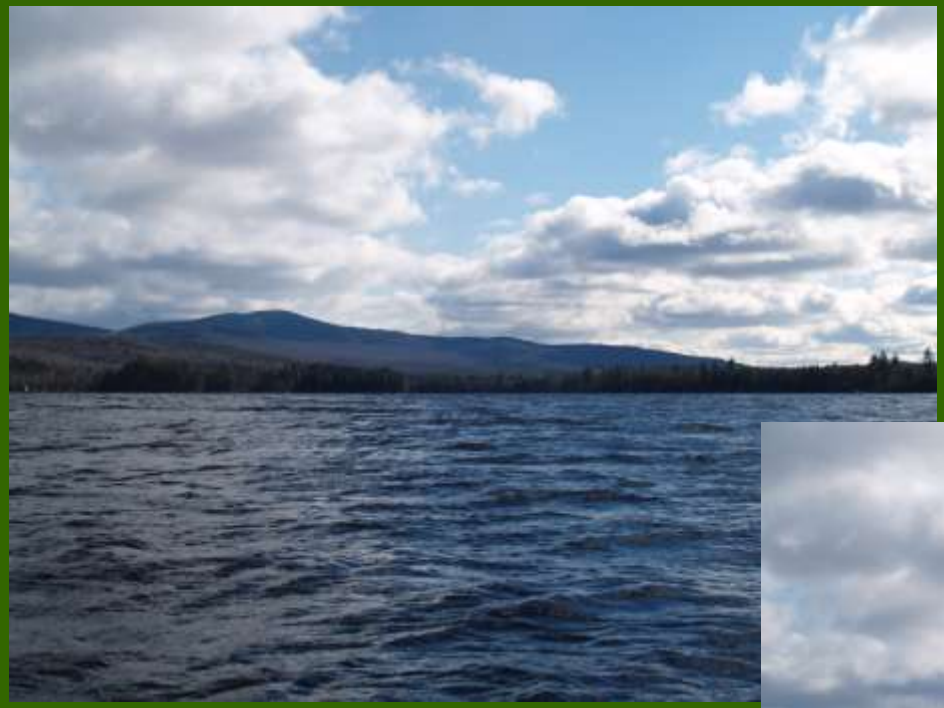
Our challenge is to identify the right option and scale it to fit our environment.



Are the “windy” areas and 450 ft tall turbines compatible with the Vermont scenic landscape?

GIS has the capability to help us make informed decisions.

GIS tools give us the ability to verify results, not just provide a visual presentation where we are expected to accept the work.



Photomontage - Before

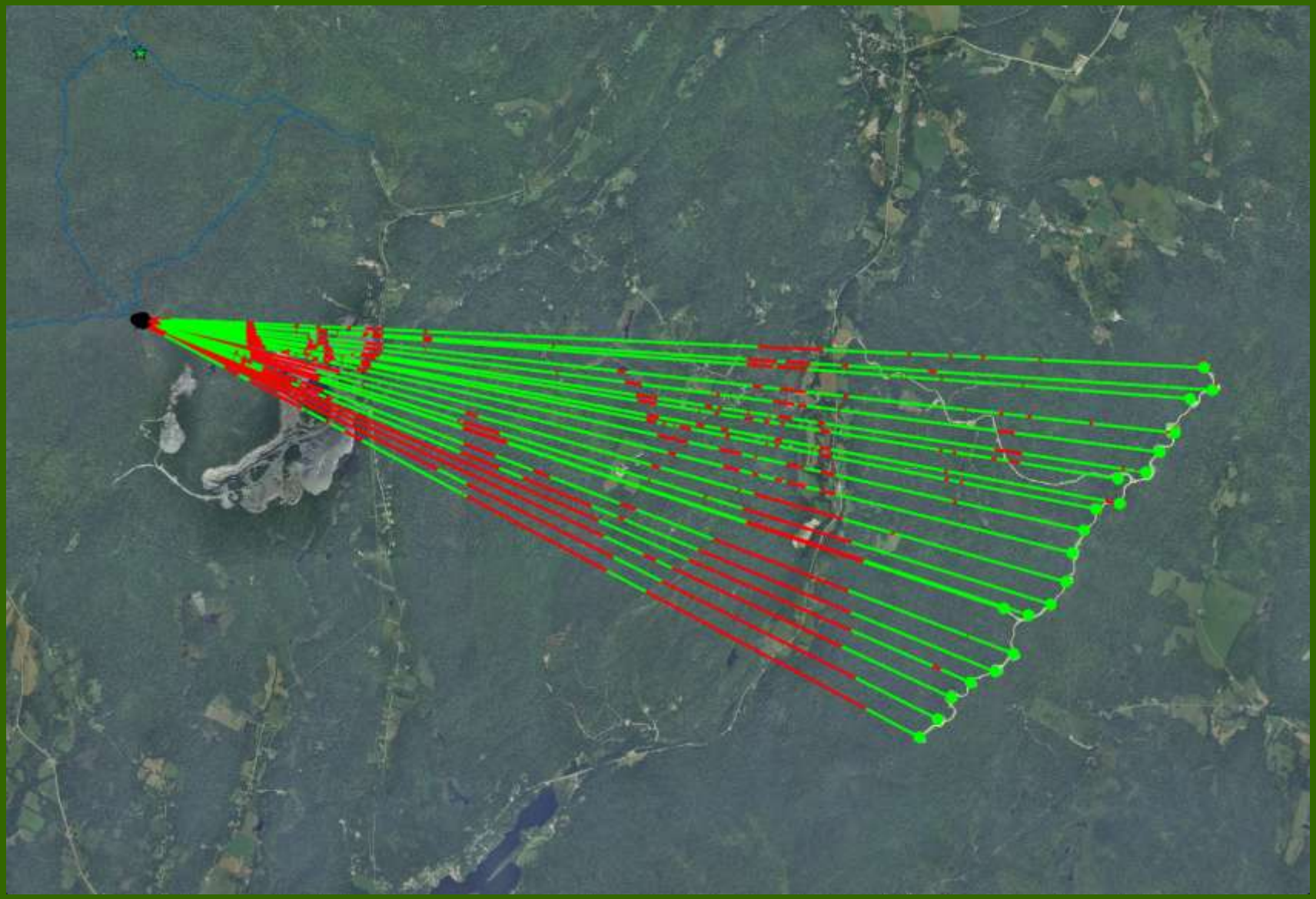
Photomontage - After

3D Simulation of the wind generation facility in Lowell, VT

In Google Earth
Terrain alterations can not be shown

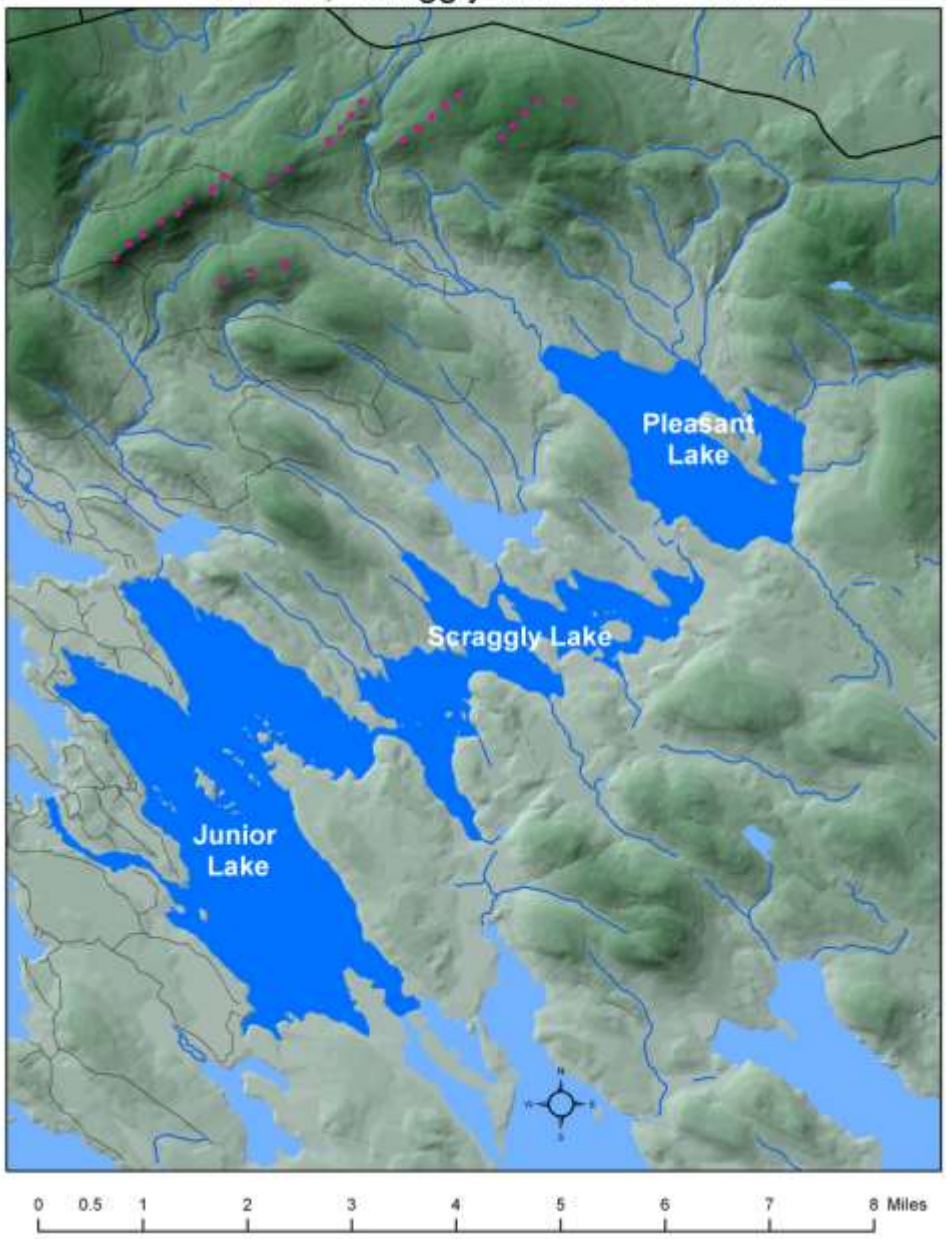
In ArcGIS ArcScene
Terrain alterations shown

Summary Line-of-Sight from Belvidere Mountain to the Lowell Turbines

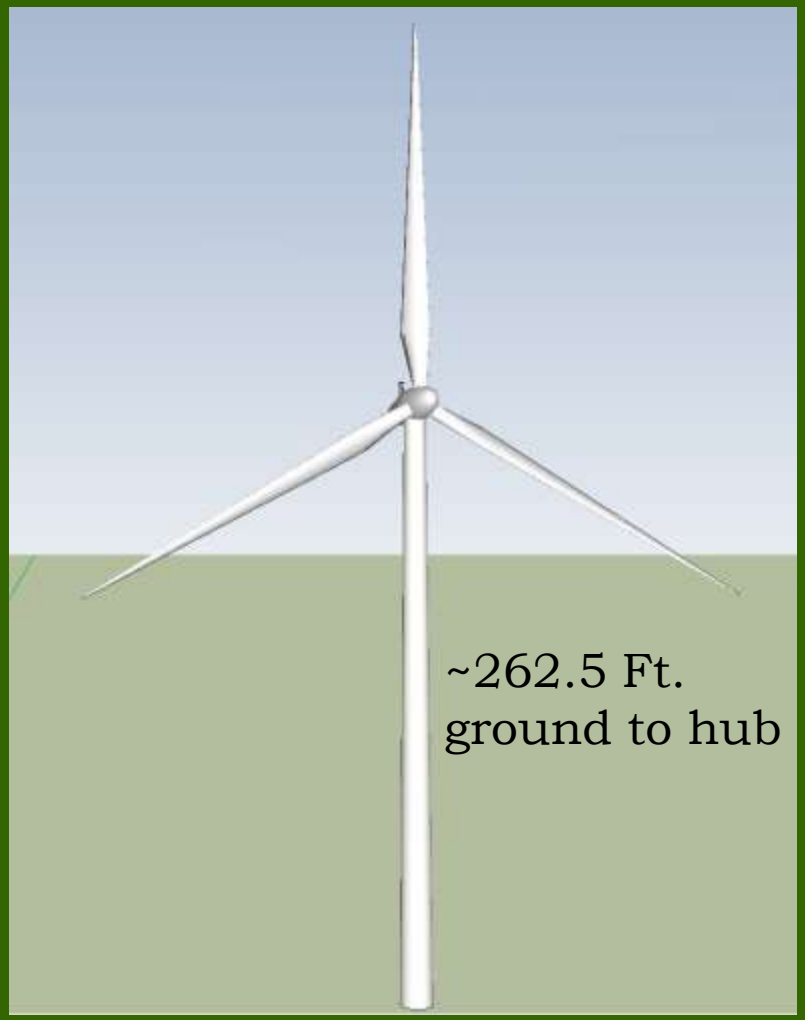


Green is visible Red is not visible

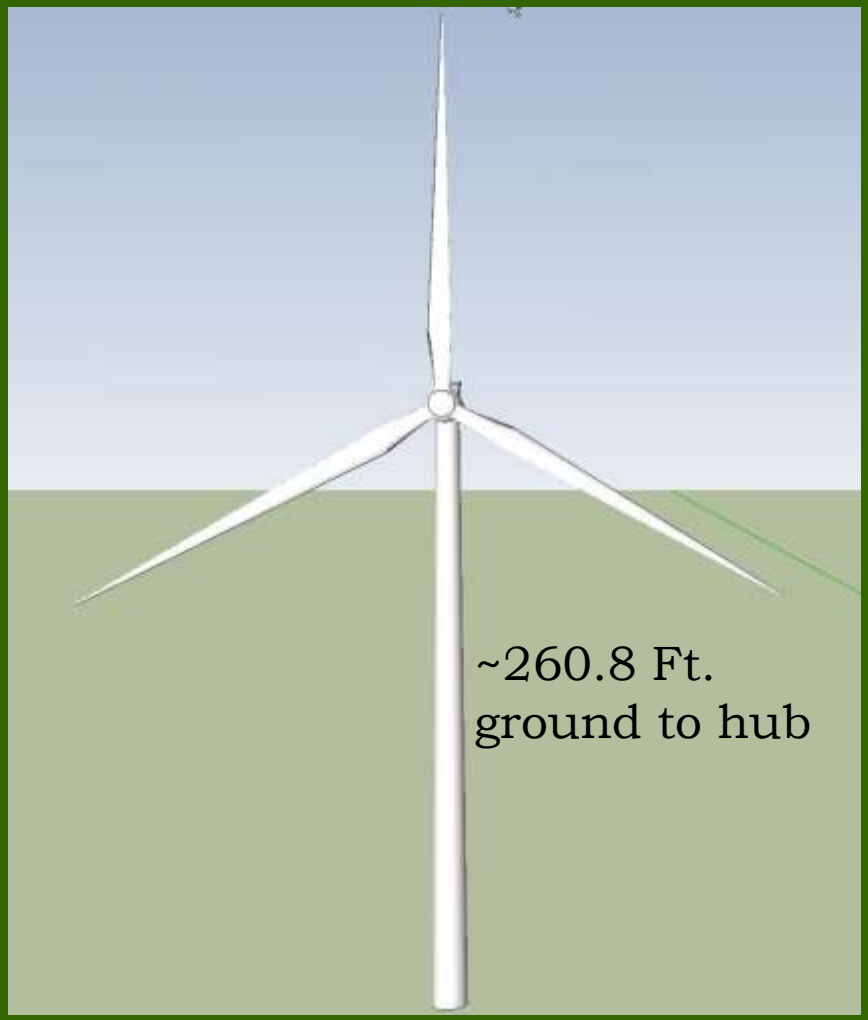
Review of Turbine Visibility from Pleasant, Scraggly and Junior Lakes.



Proposed Turbines

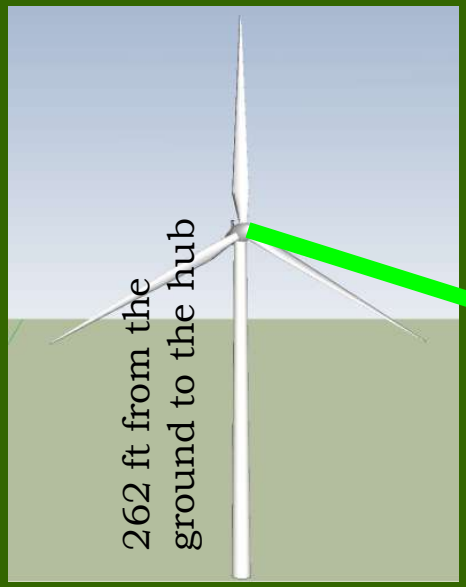


Siemens 2.3 MW



Siemens 3.0 MW

Determining visibility of a turbine on the ridge to a 6 ft. tall observer up to 8 miles away.



Turbine on the ridge

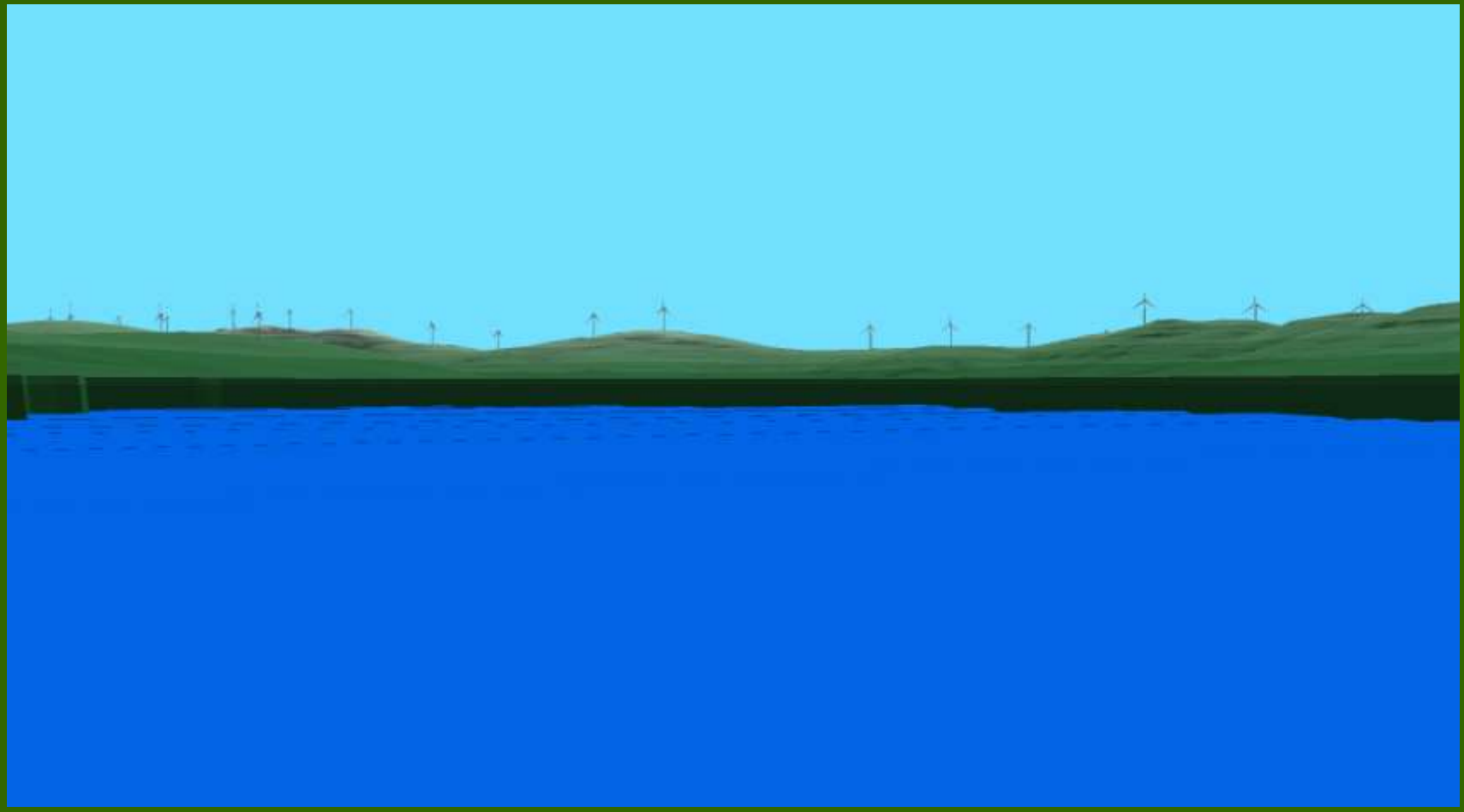
Up to 100 Ft.

Trees on shoreline

6 feet

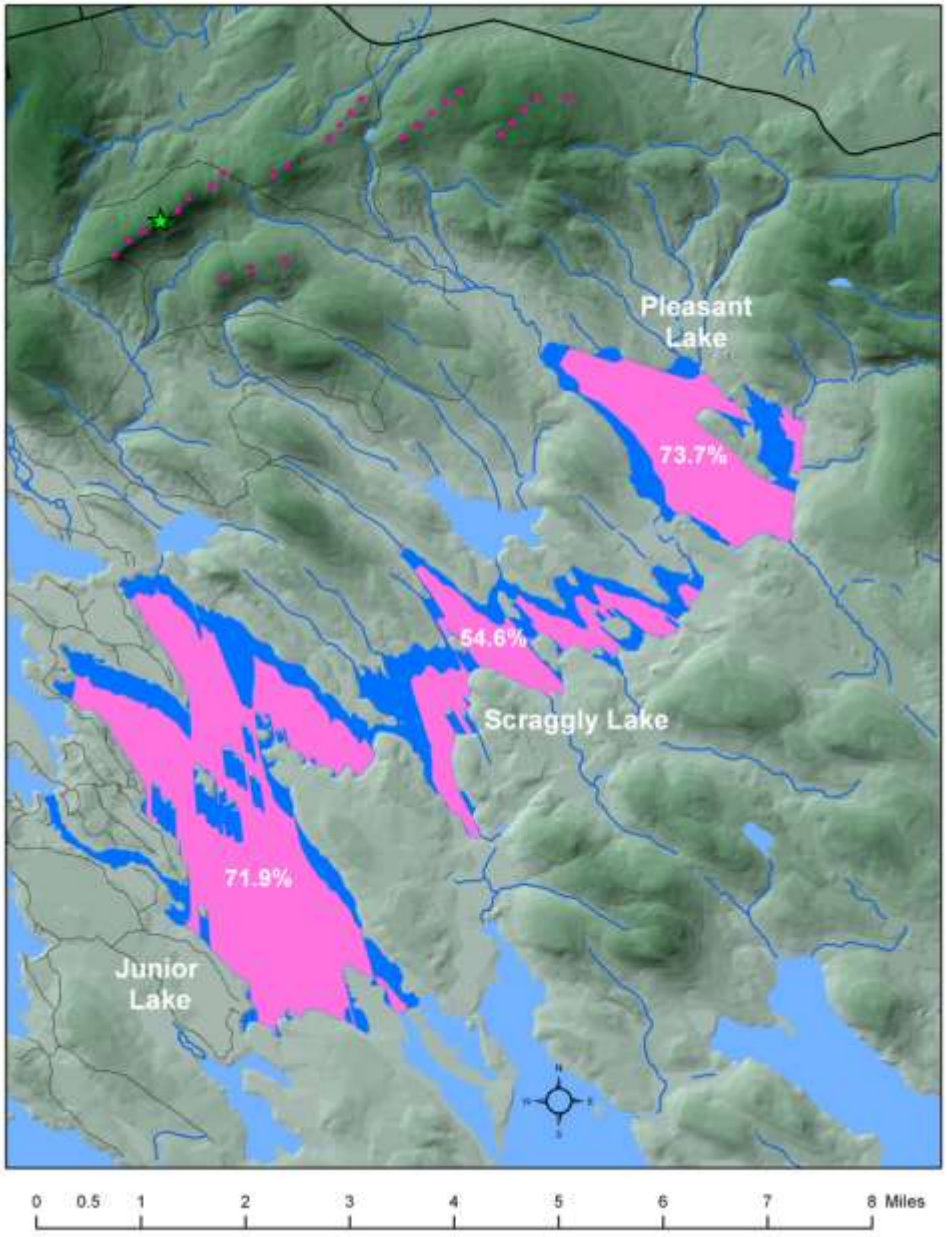
Observer

Multiple Turbines Visible from the North End of Pleasant Lake

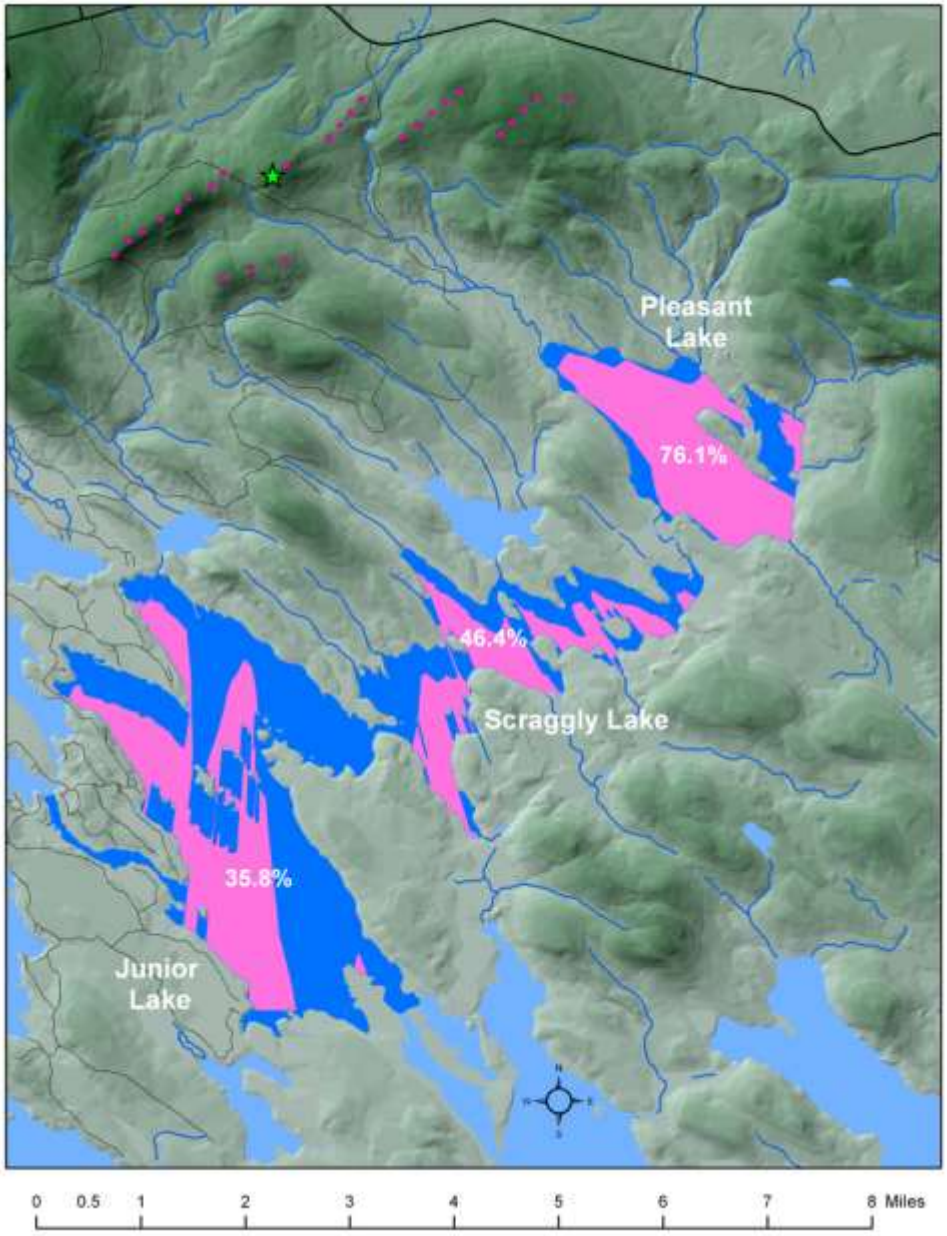


(The dark band above the water simulates trees of up to 100’ tall)

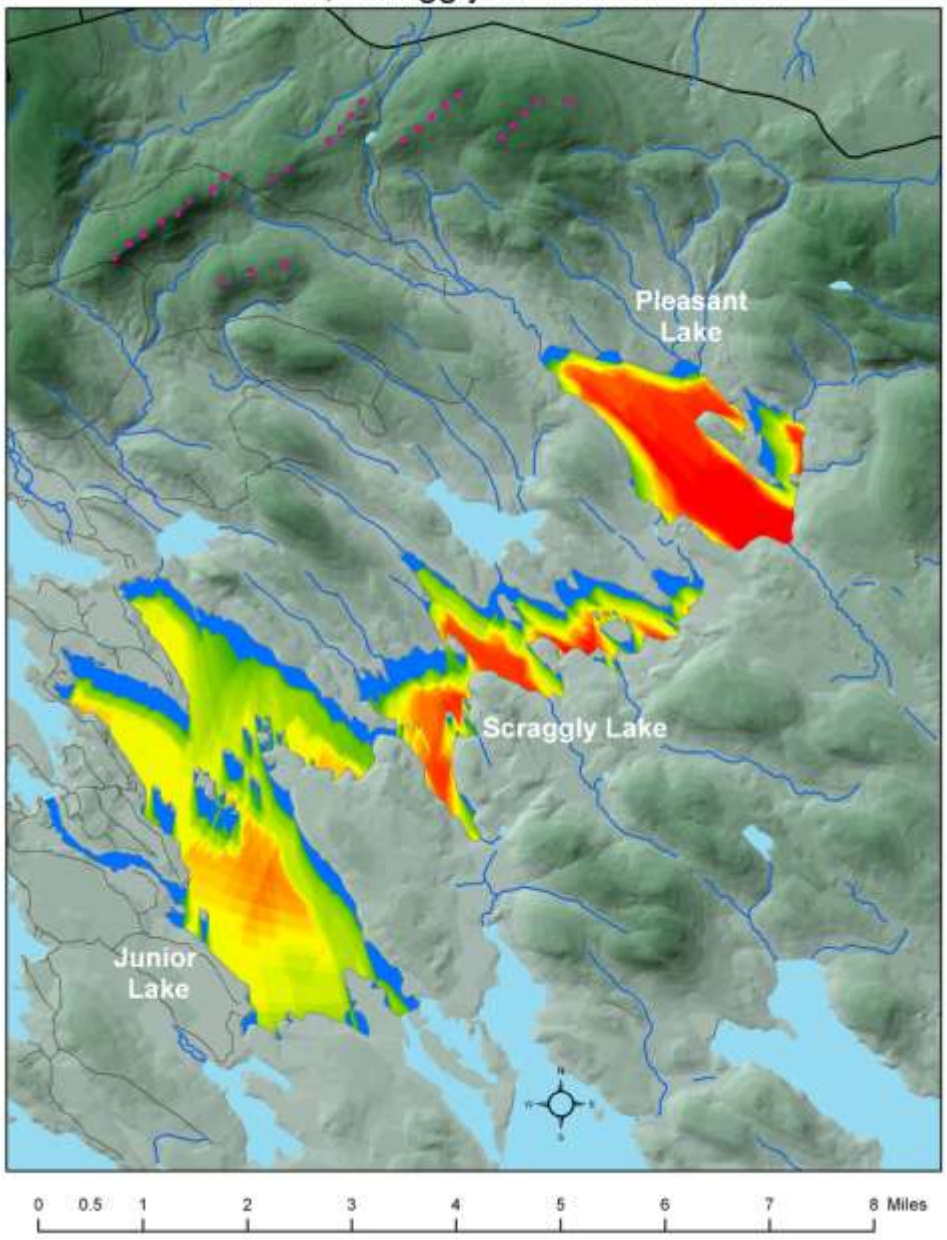
From Turbine #4



From Turbine #9



Turbine Density When Viewed from Pleasant, Scraggly and Junior Lakes.

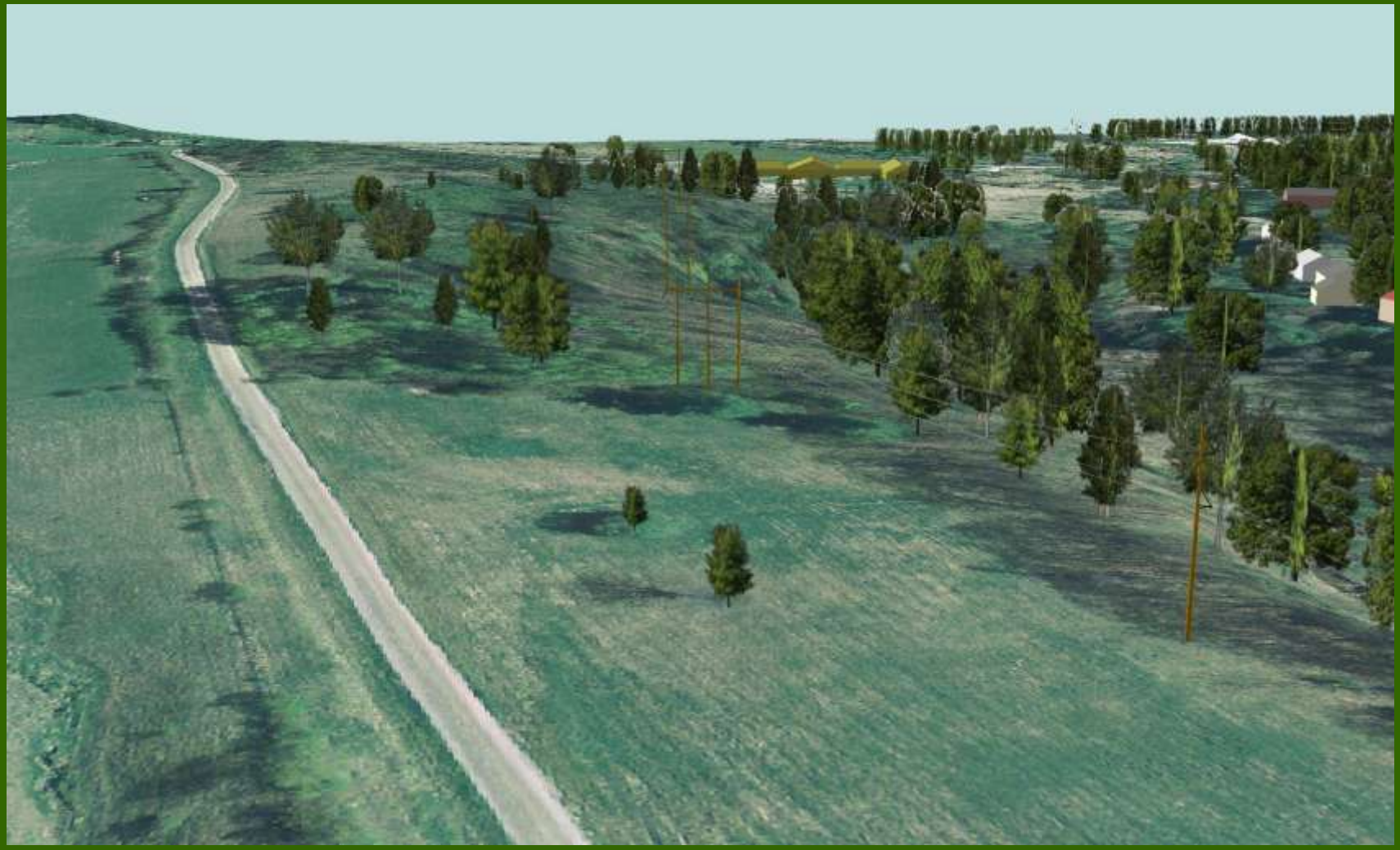


Red areas see up to 27 turbines

Green areas see fewest turbines

Blue areas of the lakes do not see turbines due to terrain or vegetation obstruction.

Don’t forget the need for transmission lines!



Are there alternatives to 40 story tall turbines?

Should we be placing large turbines on ridge lines, or where the energy can be used directly or added to the grid?

Northern Power's NP100 Turbine
Made in Barre, VT
Hub Height is ~120 feet
Blades are ~ 69 feet long

Installations include:

Bolton Valley Ski Area
Burlington Airport
Dynapower in So. Burlington
Coming Soon: Northlands Job Center in Vergennes

The Siemens turbines are over twice as tall!

Searsburg – Vermont's only operating wind farm – July 1997

Hub height is ~ 130 feet Blades are ~ 65 ft long

Is this a better location ?

Use GIS to Assess Wind Turbine Placement and Make Informed Decisions

Thanks for listening