

Golden Valley Electric Association
Eva Creek Wind Project

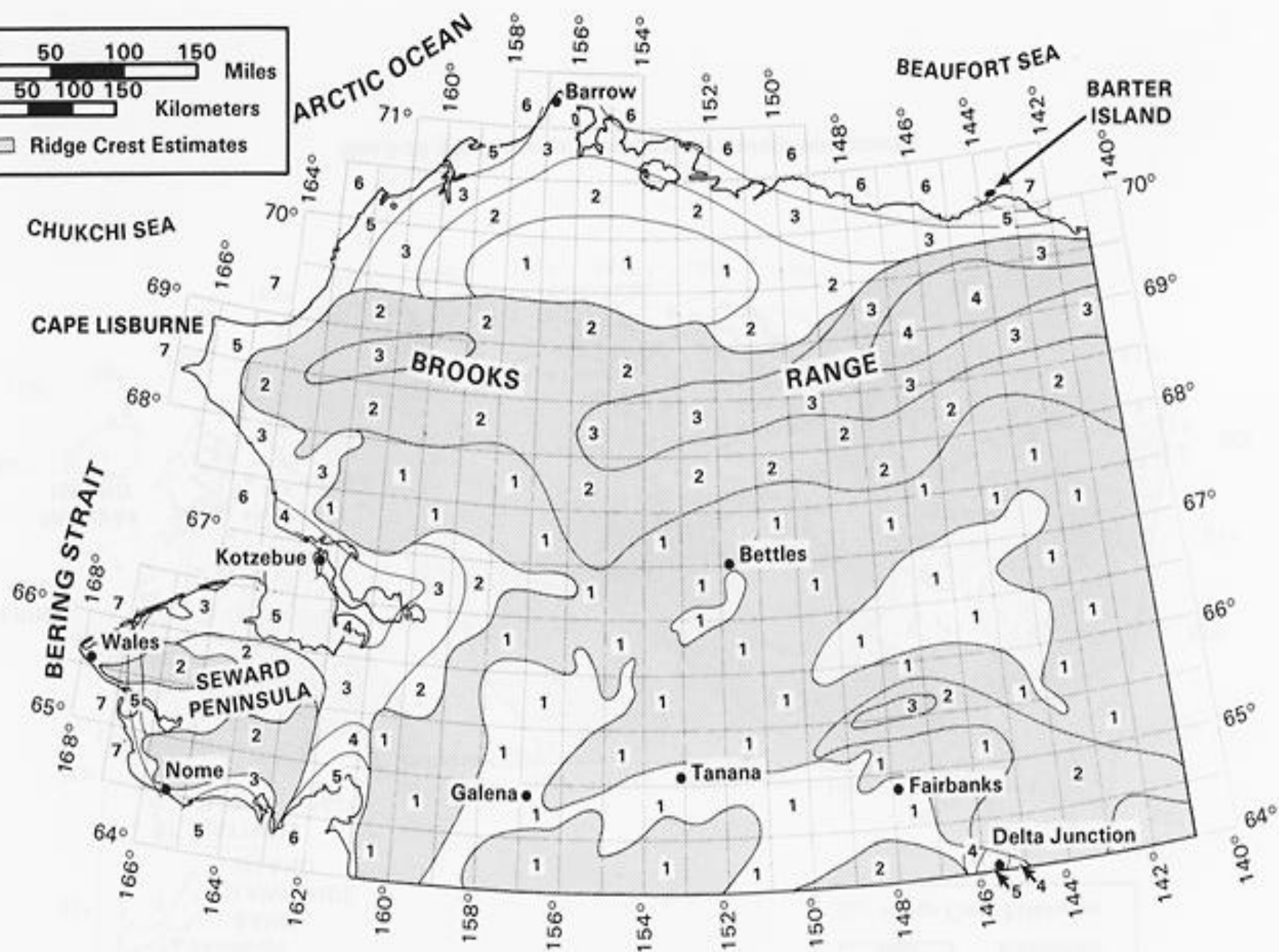
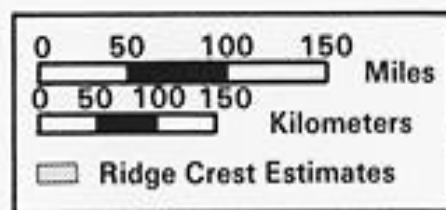
***2007 Rural Energy Conference
Fairbanks, Alaska***

GVEA Quick Facts

- ❑ Incorporated in 1946
- ❑ 30,700+ members, 41,700 meters
- ❑ 14.5 customers per mile of line, 2,885 miles of line
- ❑ 2,327 square mile territory
- ❑ Record low -79°F, high +99°F, year round average 22°F
- ❑ Five generation sites
 - North Pole – Combined Cycle Gas Turbine
 - Zhender – Gas Turbine
 - Delta – Gas Turbine
 - Healy – Coal Fired
 - Bradley Lake – Hydro
- ❑ World's most powerful UPS – BESS – 46 MW battery

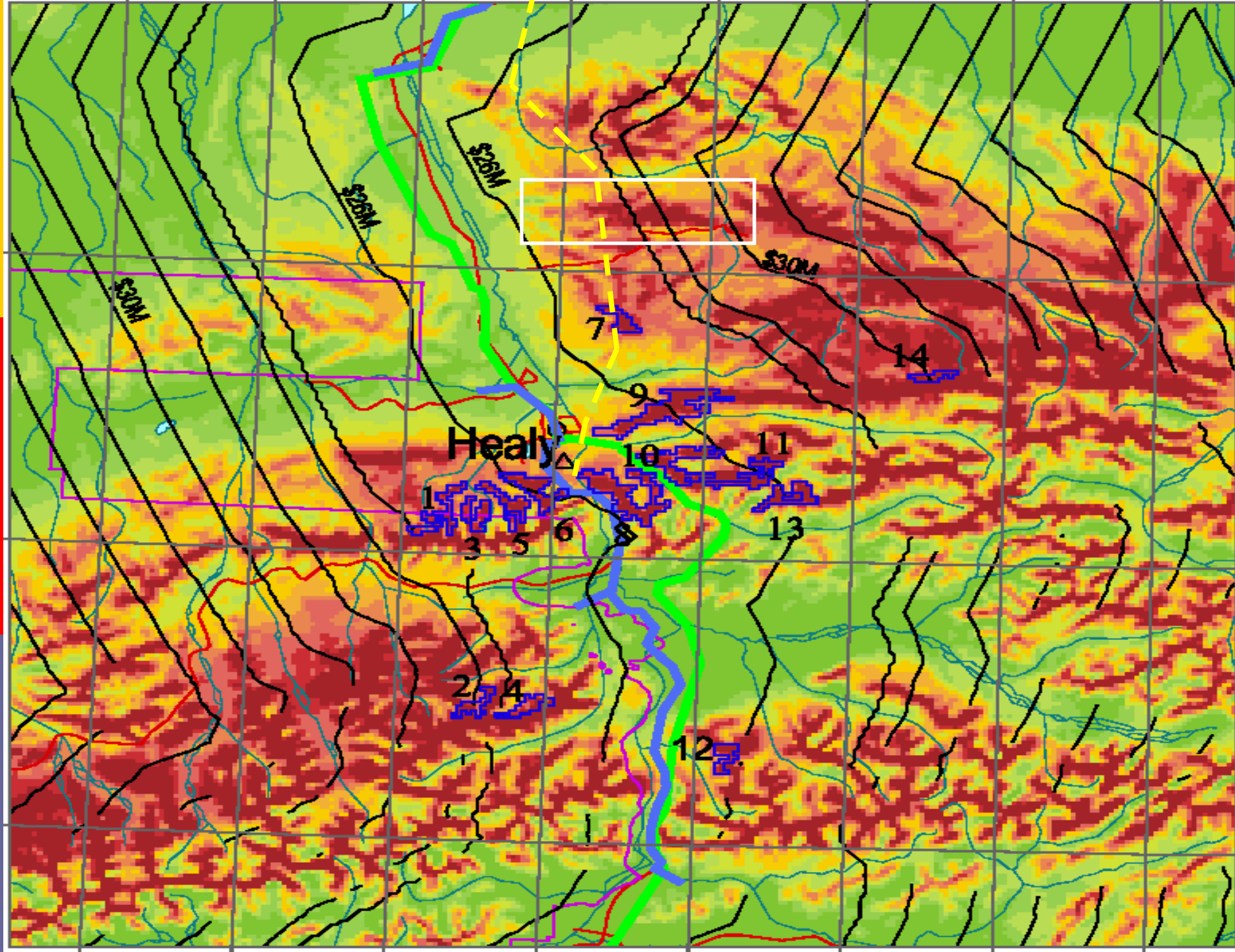
GVEA Alternative Energy History

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- ❑ The team considered wind the most viable source of renewable energy in the Interior, but the national weather maps showed very poor wind resources.



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- ❑ So the first question was: **Do we even have wind resources in the Interior?** A study was commissioned with TrueWind to compare topology with high wind data.



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- ❑ The team considered wind the most viable source of renewable energy in the Interior, but the national weather maps showed very poor wind resources.
- ❑ So the first question was: Do we even have wind resources in the Interior? A study was commissioned with TrueWind to compare topology with high wind data.
 - This study suggested that wind resources are indeed viable in the interior.
- ❑ We set about selecting test locations with the aid of a meteorologist Rich Simon of the WinDots group.

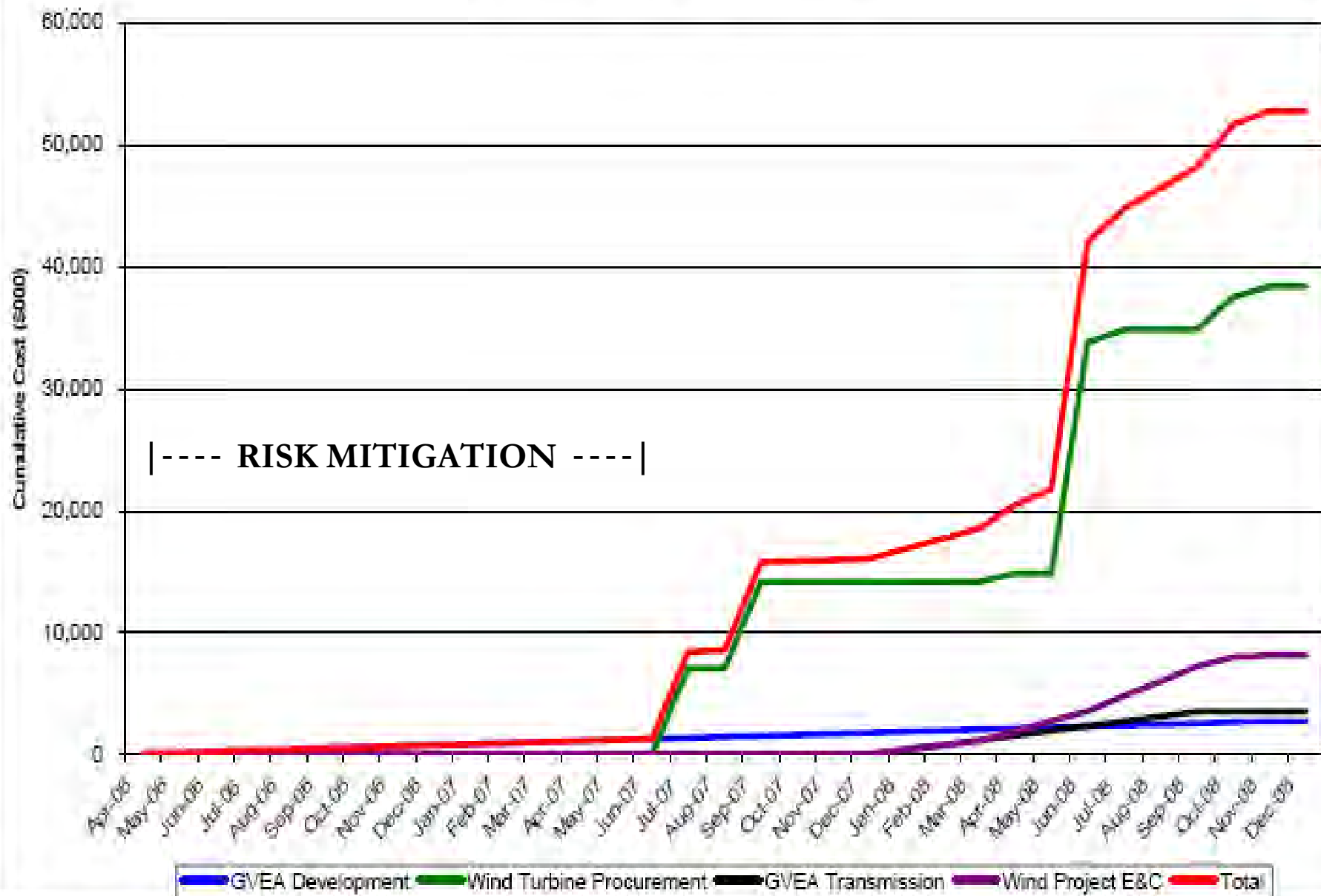
GVEA's Met Towers



The first of nine towers, one of a pair on Murphy Dome, 17 miles from Fairbanks.

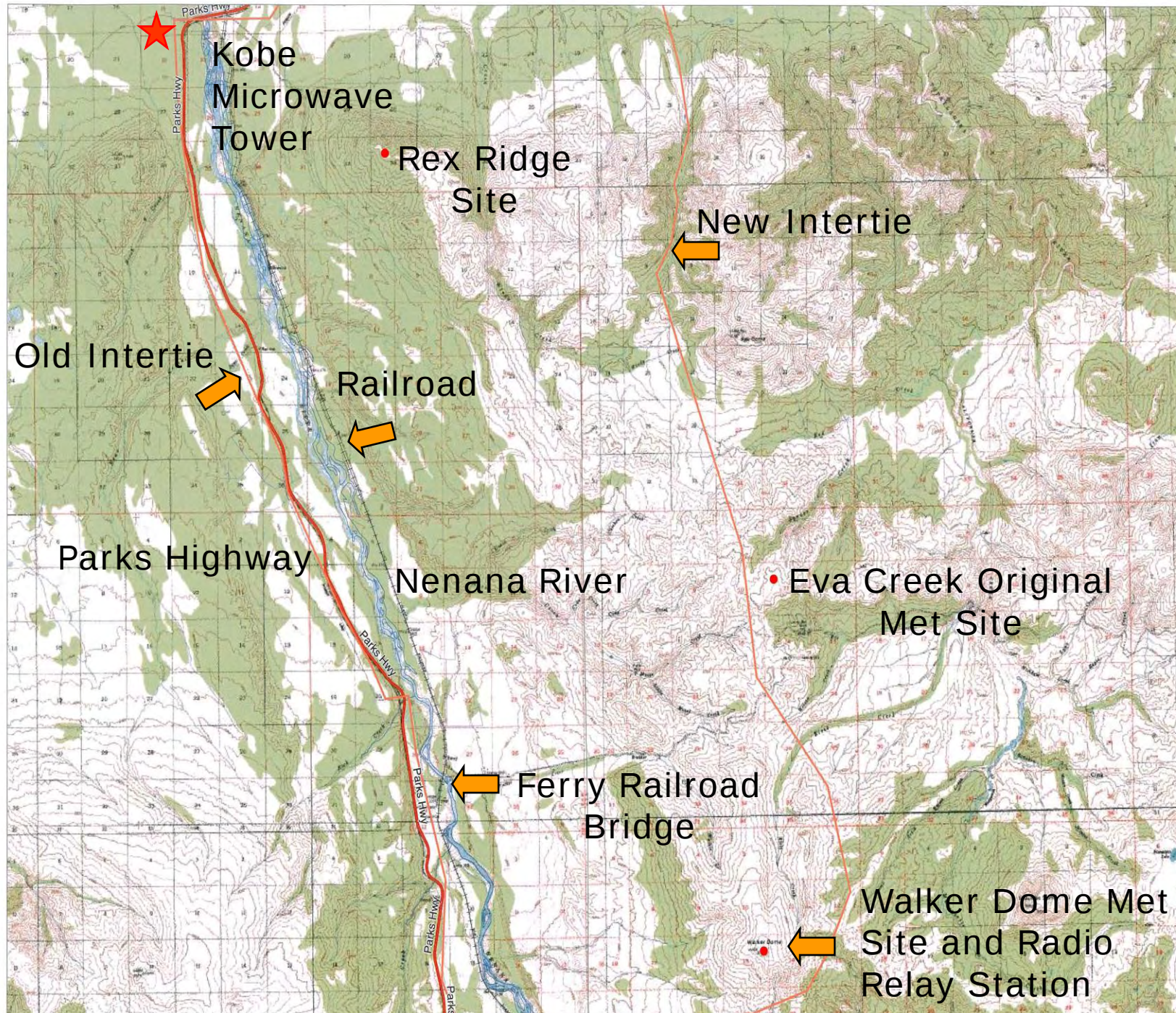


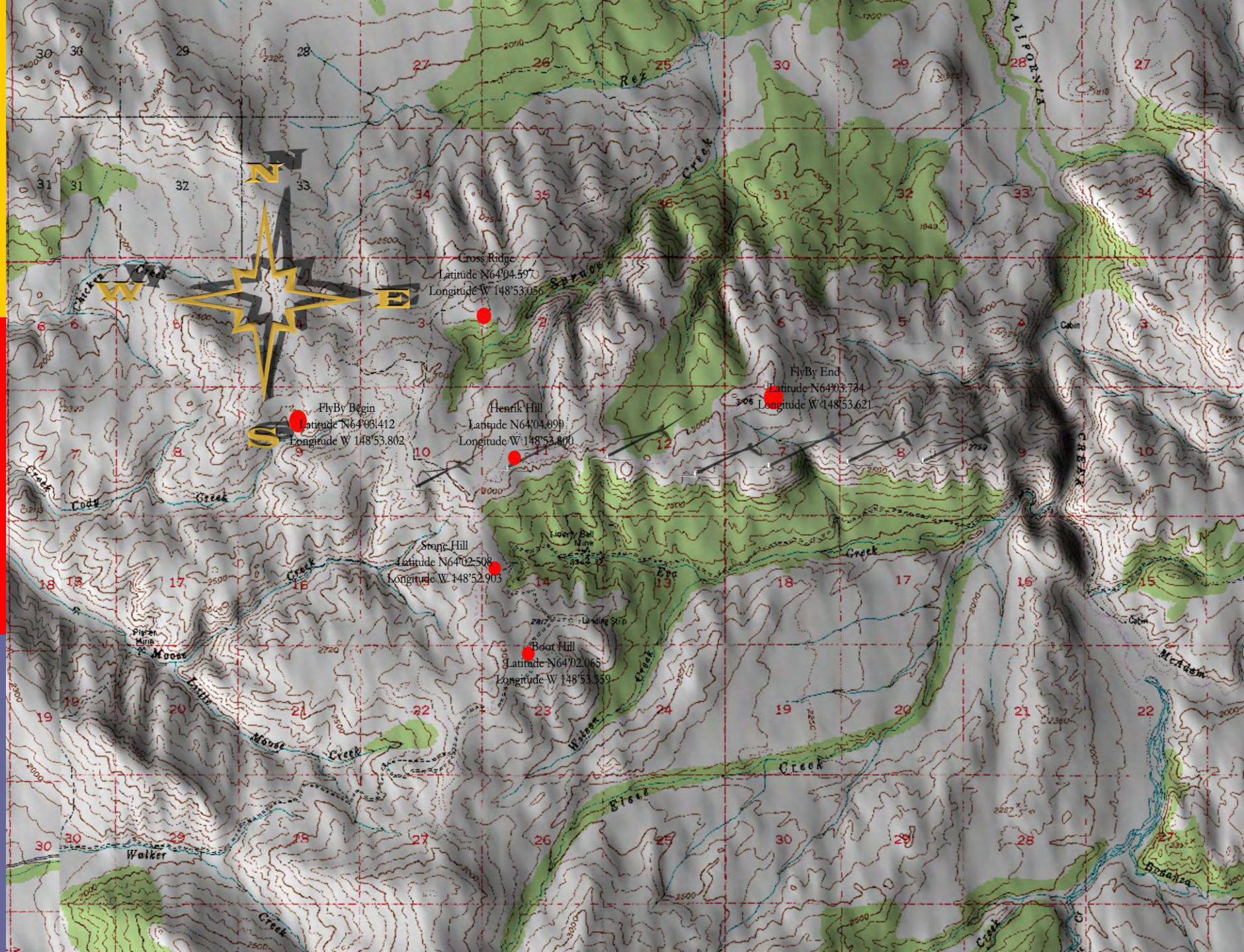
GVEA Wind Project Capital Cost



Risk Mitigation

- ❑ Up front due diligence reduces contingency cost additions later.
 - Wind resource multi-year multi-site logging
 - Land access and lease/own determinations
 - Avian issues
 - Environmental / archeological research
 - Geotechnical investigation
 - Involvement with the local people
 - Logistics – road and rail access
 - FAA, DNR and other agency interaction





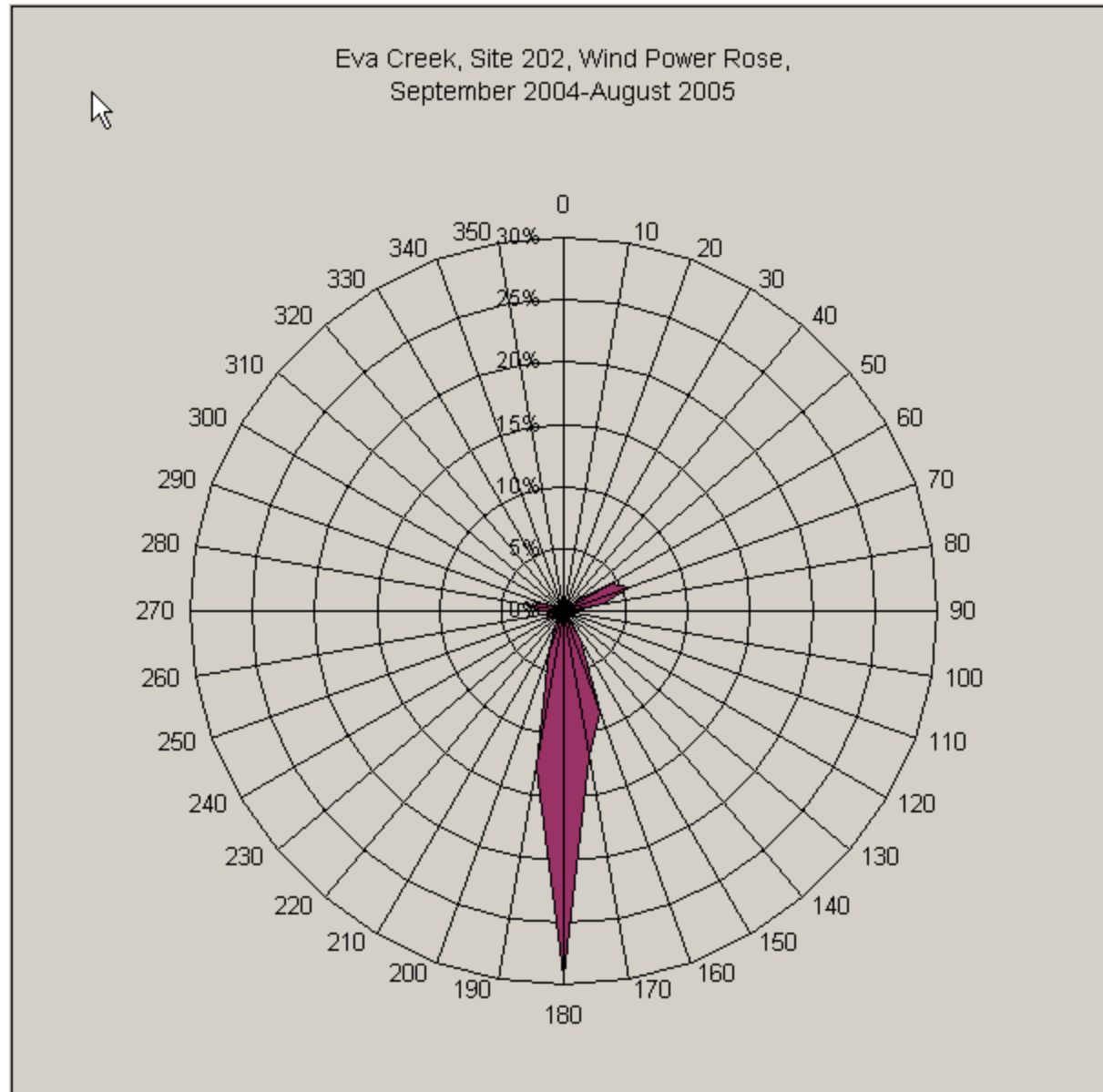




Things we found

- ❑ Both at Eva Creek and Murphy Dome we have approximately a 32% net capacity factor.
- ❑ Murphy Dome needs 17 miles of line (we do have ROW) and has a military radar site within a mile.
- ❑ Eva Creek straddles the Intertie, has reasonable existing roads, and is miles away from any residences, but no road bridge. Railroad access same side of Nenana River.
- ❑ Zero correlation to Eva and Murphy winds.
- ❑ 2 – 4% correlation to Murphy and Fairbanks International.
- ❑ Both sites are above 2,000 feet elevation and benefit from the temperature inversion.
- ❑ When it is windy the wind tends to be warm, relatively (GE 1.5 MW wind turbine low temp cut-off is -22F.)

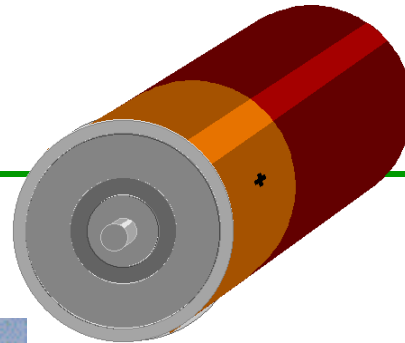
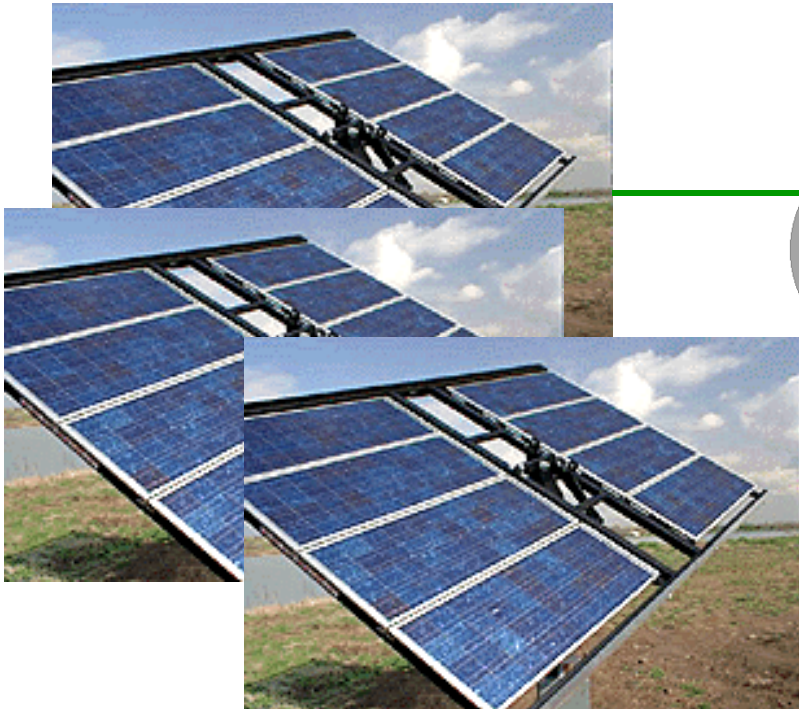
To Weld or Not to Weld...



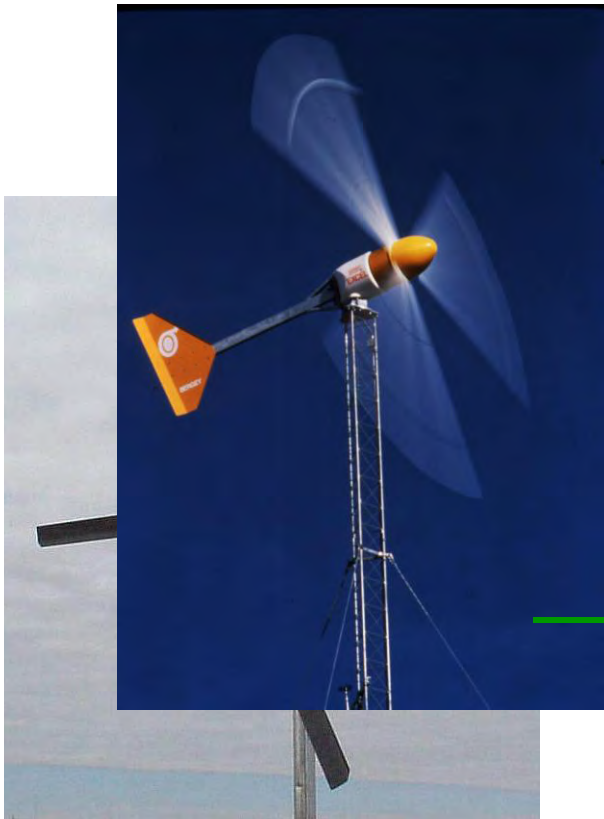
Financial approaches

- There are four primary ways for an RUS coop to build a wind generation site:
 - Conventional/RUS loans and do it yourself
 - CREB (zero interest bonds for rural coops)
 - BOT – Build / Own / Transfer
 - New interest from independent investors to fund BOT/BOO.
 - Pursue grants for some percentage of total cost
- Most rural coops have aging infrastructure and have a significant challenge handling the capital projections for the next decade or so.

Renewables Availability



Same Deal with Wind



Focus 2007 and on

- ❑ Complete the Wind Integration Study to determine the capacity of the grid to accommodate wind generation.
- ❑ Plan the scope of the avian and other studies.
- ❑ Track new developments such as the General Compression “dispatchable” wind technologies.
- ❑ Form associations with construction groups and manufacturers.
- ❑ Work through all the time consuming risk mitigation elements of the project so when the Board of Directors sees fit to go with a wind generation project it can be an informed decision, lowest cost and easily fast tracked.

Thank you, you have been a wonderful audience....

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