

Wind Resource Summary for Olga #2 Site

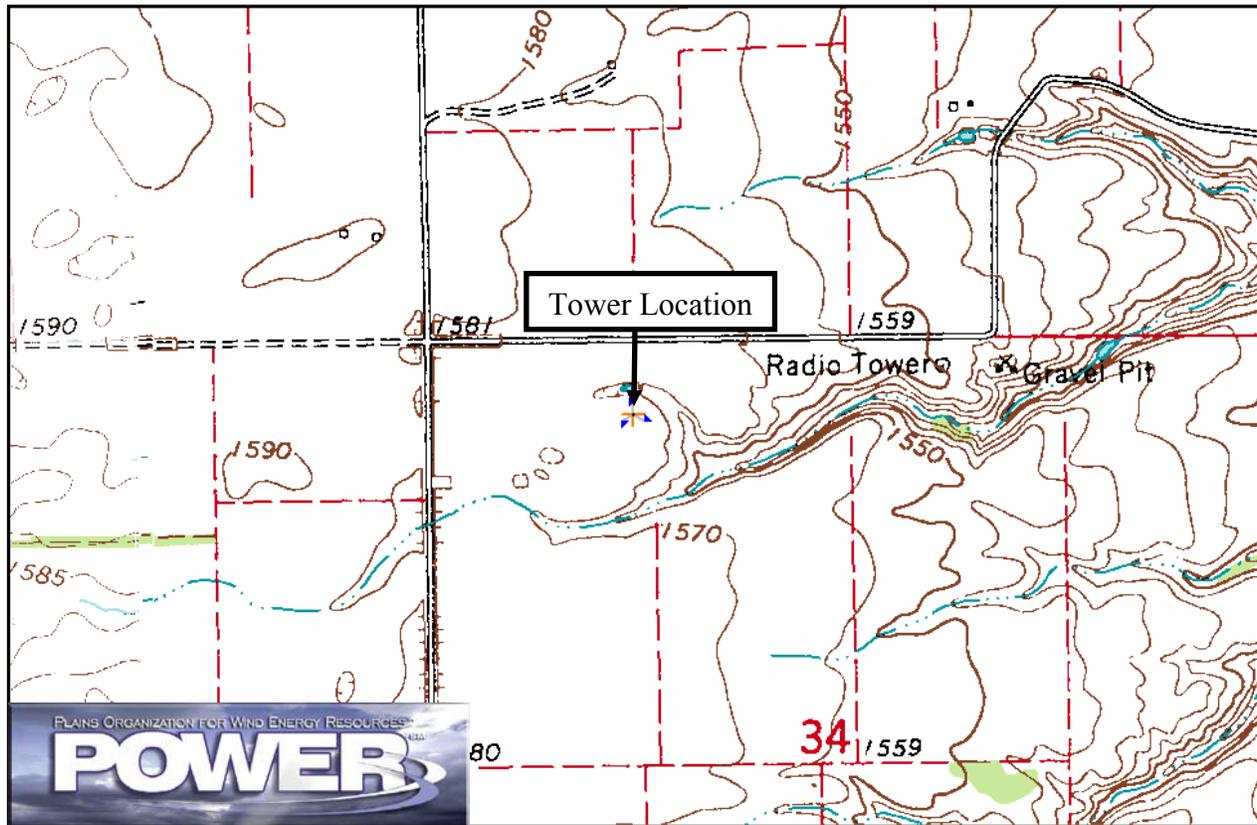
North Dakota Utility Study

Monitoring Period:^a 10/1/1994 – 10/30/1996

Site Description:

Latitude: N 48° 38' 36"	Township: 160 N
Longitude: W 97° 59' 15"	Range: 57 W
Elevation: 1570 feet	Section: 34
Tower Type: NRG Tilt-Up	Tower Height: 33 feet

The monitoring site was 2.9 miles northeast of the town of Milton, North Dakota. The site was situated on the Pembina Escarpment. The tower was instrumented at one height, 33 feet (10 m). The land around the site is mostly cropland; however, clusters of trees and brush exist west of the site in the wash ways associated with the escarpment.



Summary Wind Data:	33 ft AGL^b
Mean Wind Speed	12.9 mph
Maximum, 60-min Mean Wind Speed	51.1 mph – 12/5/1995 2:00 a.m.
Estimated Wind Power Class^c	Class 4 (227 W/m ²)

^a Data recovery rate for wind speed was 82%; data recovery rate for wind direction was 28%.

^b Above ground level.

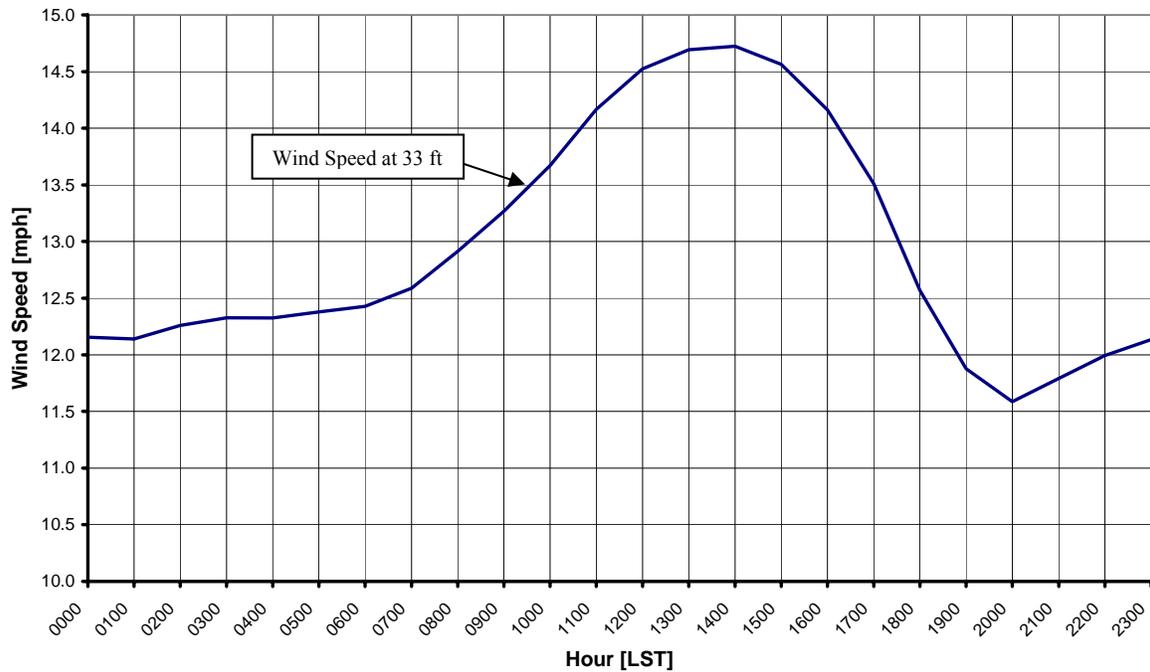
^c Air temperature was not factored into calculation.

Average Hourly Wind Speeds

33 ft AGL

LST ^d	mph	m/s
0000	12.2	5.43
0100	12.1	5.43
0200	12.3	5.48
0300	12.3	5.51
0400	12.3	5.51
0500	12.4	5.53
0600	12.4	5.56
0700	12.6	5.63
0800	12.9	5.77
0900	13.3	5.93
1000	13.7	6.11
1100	14.2	6.33
1200	14.5	6.49
1300	14.7	6.57
1400	14.7	6.58
1500	14.6	6.51
1600	14.2	6.33
1700	13.5	6.04
1800	12.6	5.62
1900	11.9	5.31
2000	11.6	5.18
2100	11.8	5.27
2200	12.0	5.36
2300	12.1	5.42

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10/1/1994 – 10/30/1996



^d Local standard time.



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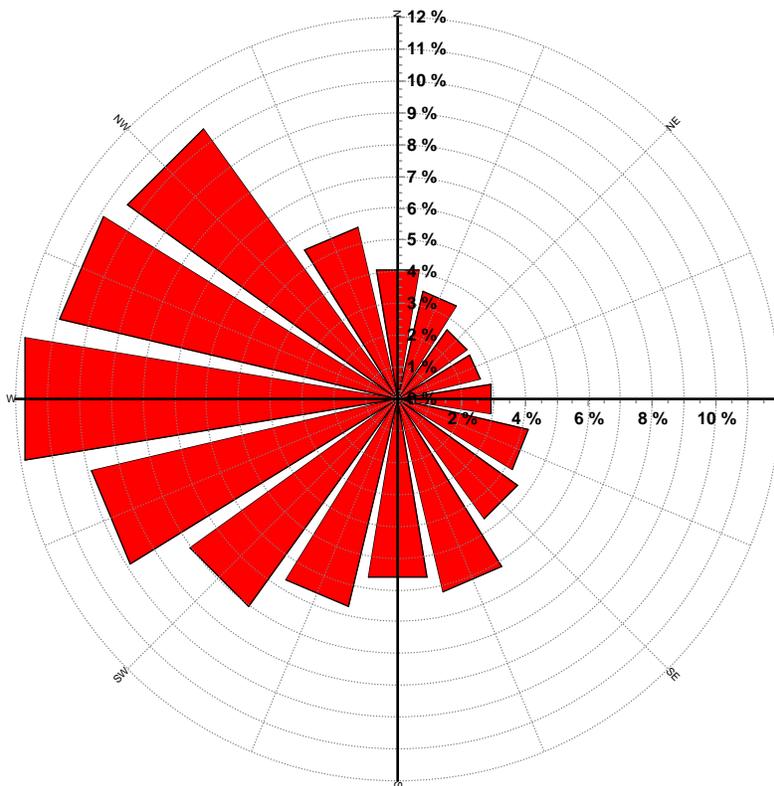
Wind Directional Frequency

Winds from the... Frequency (%)

NNW	5.5
NW	10.5
WNW	10.9
W	11.9
WSW	9.9
SW	8.0
SSW	6.7
S	5.7
SSE	6.2
SE	4.6
ESE	4.2
E	3.0
ENE	2.7
NE	2.7
NNE	3.5
N	4.1

* Wind direction data only available for about 6 months.

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Wind Rose for 33-ft AGL
10/1/1994 - 3/31/1995 & 7/5/1995 - 8/28/1995



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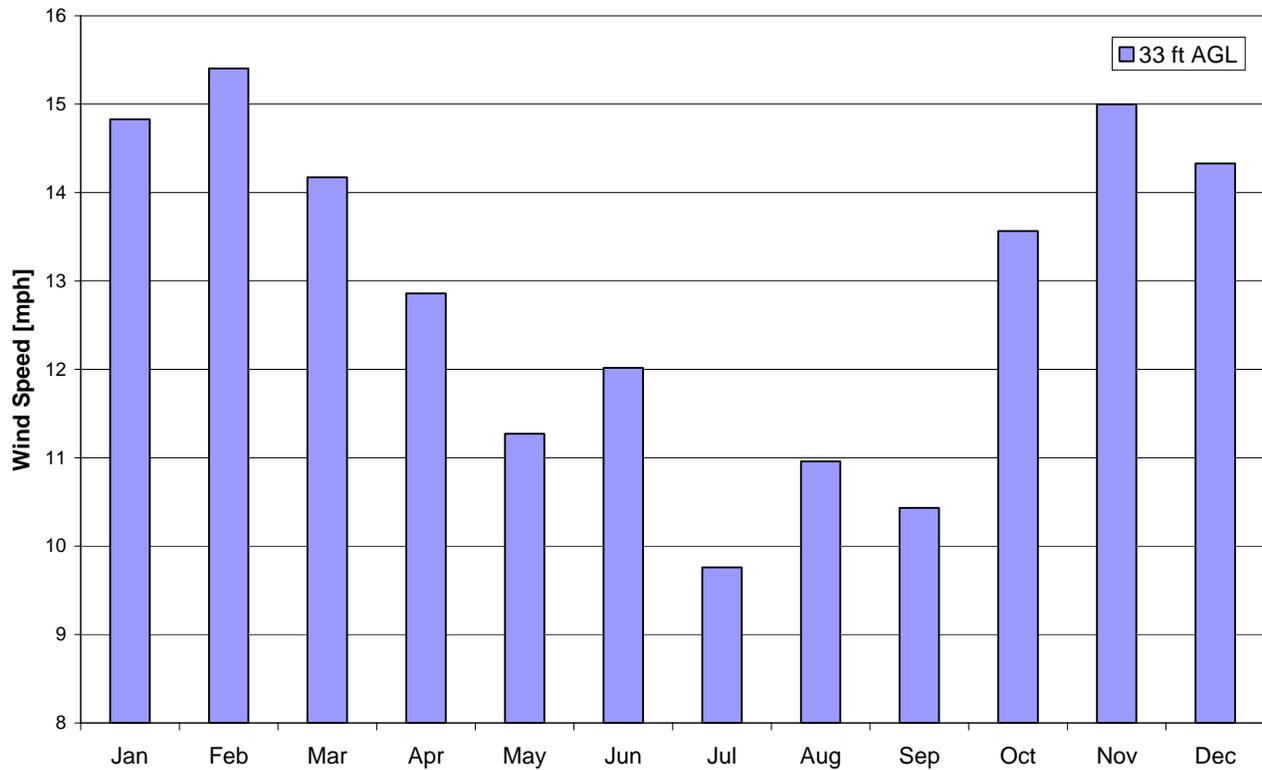
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Monthly Wind Speed Averages

33 ft AGL

Month	mph	m/s
Jan	14.8	6.63
Feb	15.4	6.89
Mar	14.2	6.34
Apr	12.9	5.75
May	11.3	5.04
Jun	12.0	5.37
Jul	9.8	4.36
Aug	11.0	4.90
Sep	10.4	4.66
Oct	13.6	6.06
Nov	15.0	6.70
Dec	14.3	6.41

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