

# Wind Resource Summary for Cavalier Site

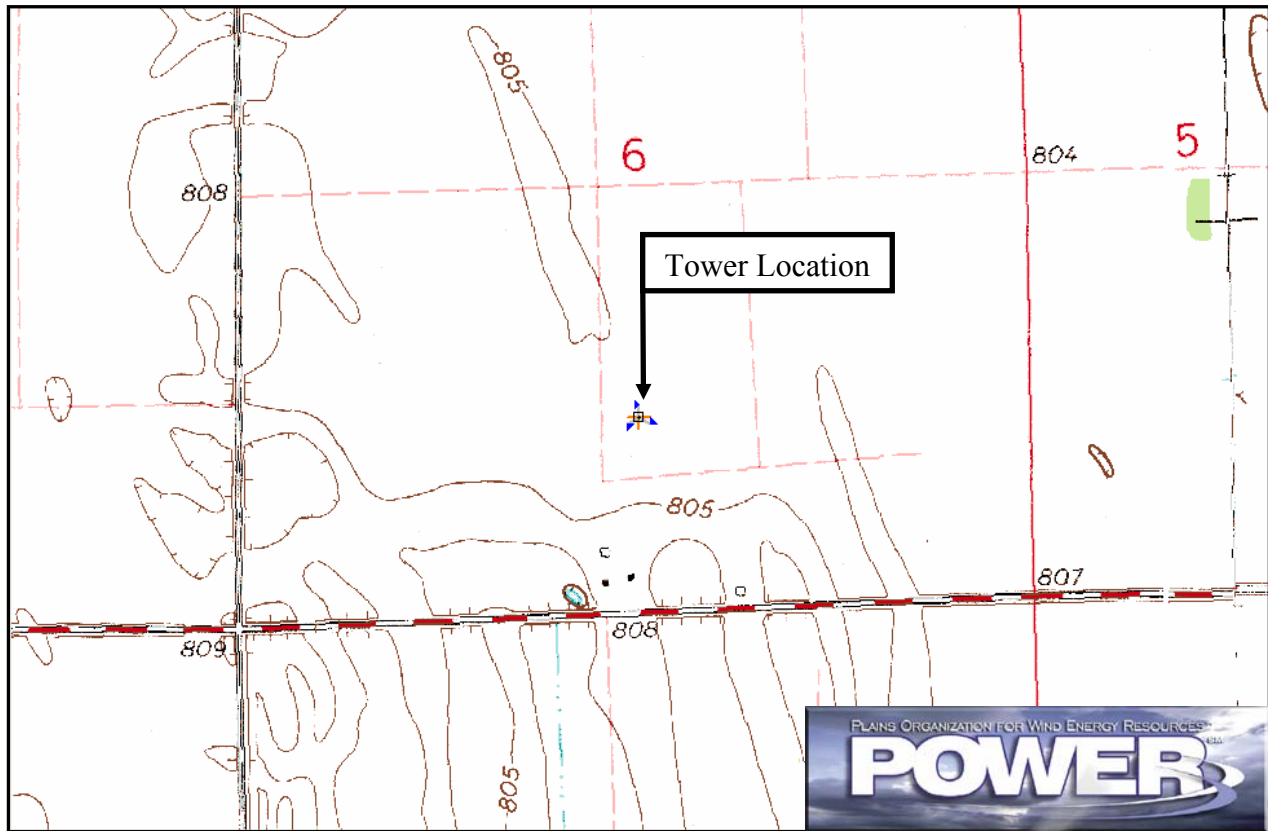
## Cavalier Economic Development Corporation

### Summers<sup>a</sup> 2002 & 2003

#### Site Description:

Latitude: N 48° 42' 19"	Township: 160 N
Longitude: W 97° 15' 56"	Range: 51 W
Elevation: 804 feet	Section: 6
Tower Type: NRG Tilt-up	Tower Height: 164 feet

The monitoring site was 10 miles northeast of the town of St. Thomas, North Dakota, and 6.5 miles west of the Red River. The tower was instrumented at three levels: 33 feet (10 m), 125 feet (38 m), and 164 feet (50 m). The site was roughly 800 feet north of a farmstead, which may affect winds from the south. The landscape is very flat and primarily used for agriculture.



Summary Wind Data:	33 ft AGL <sup>b</sup>	125 ft AGL	164 ft AGL
Mean Wind Speed	8.8 mph	12.3 mph	13.8 mph
Maximum, 60-min Mean Wind Speed	37.9 mph at 164 ft AGL – 6/29/2002 11:00 p.m.		
Estimated Wind Power Class <sup>c</sup>	Class 2 (224 W/m <sup>2</sup> at 164 ft AGL)		

<sup>a</sup> Data recovery rates at 33, 125, and 164 feet were 97%, 97%, and 97%, respectively.

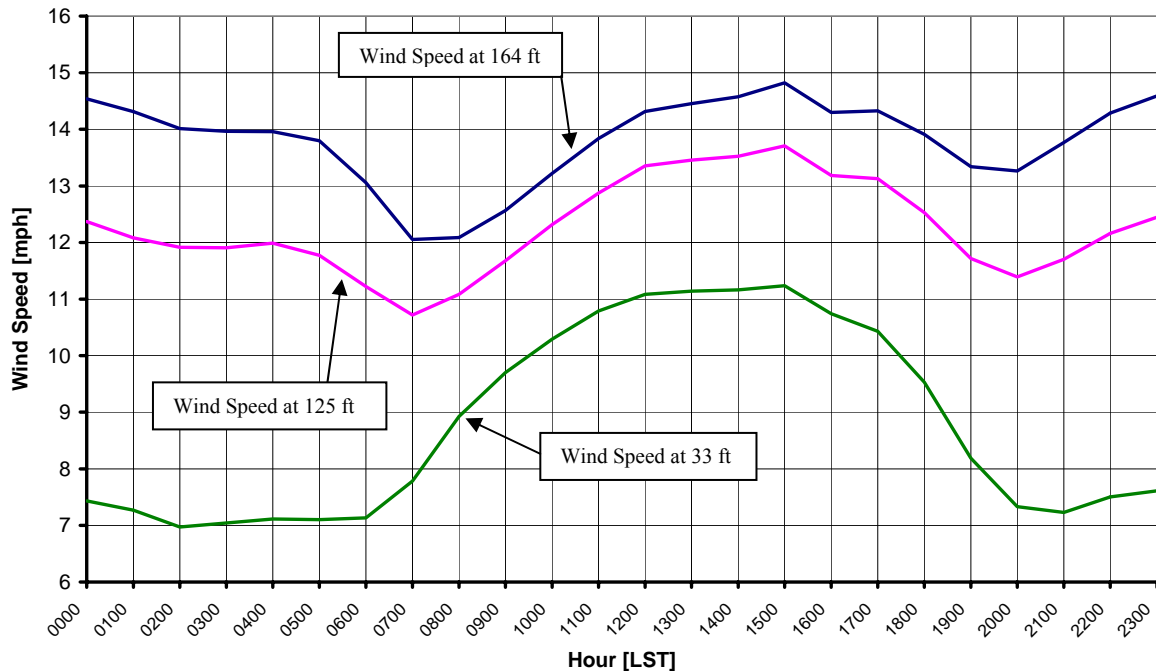
<sup>b</sup> Above ground level.

<sup>c</sup> Air temperature was not factored into calculations.

## Average Hourly Wind Speeds

LST <sup>d</sup>	164 ft AGL		125 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s
0000	14.5	6.50	12.4	5.53	7.4	3.32
0100	14.3	6.40	12.1	5.40	7.3	3.25
0200	14.0	6.26	11.9	5.33	7.0	3.12
0300	14.0	6.24	11.9	5.32	7.0	3.15
0400	14.0	6.24	12.0	5.36	7.1	3.18
0500	13.8	6.17	11.8	5.26	7.1	3.17
0600	13.1	5.84	11.2	5.02	7.1	3.19
0700	12.1	5.39	10.7	4.79	7.8	3.48
0800	12.1	5.40	11.1	4.96	8.9	3.99
0900	12.6	5.62	11.7	5.22	9.7	4.34
1000	13.2	5.91	12.3	5.51	10.3	4.60
1100	13.8	6.19	12.9	5.76	10.8	4.82
1200	14.3	6.40	13.4	5.97	11.1	4.96
1300	14.5	6.46	13.5	6.02	11.1	4.98
1400	14.6	6.52	13.5	6.05	11.2	4.99
1500	14.8	6.63	13.7	6.13	11.2	5.02
1600	14.3	6.39	13.2	5.89	10.7	4.80
1700	14.3	6.41	13.1	5.87	10.4	4.66
1800	13.9	6.22	12.5	5.60	9.5	4.26
1900	13.3	5.96	11.7	5.24	8.2	3.66
2000	13.3	5.93	11.4	5.09	7.3	3.28
2100	13.8	6.16	11.7	5.23	7.2	3.23
2200	14.3	6.39	12.2	5.44	7.5	3.35
2300	14.6	6.52	12.4	5.56	7.6	3.40

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<sup>d</sup> Local standard time.



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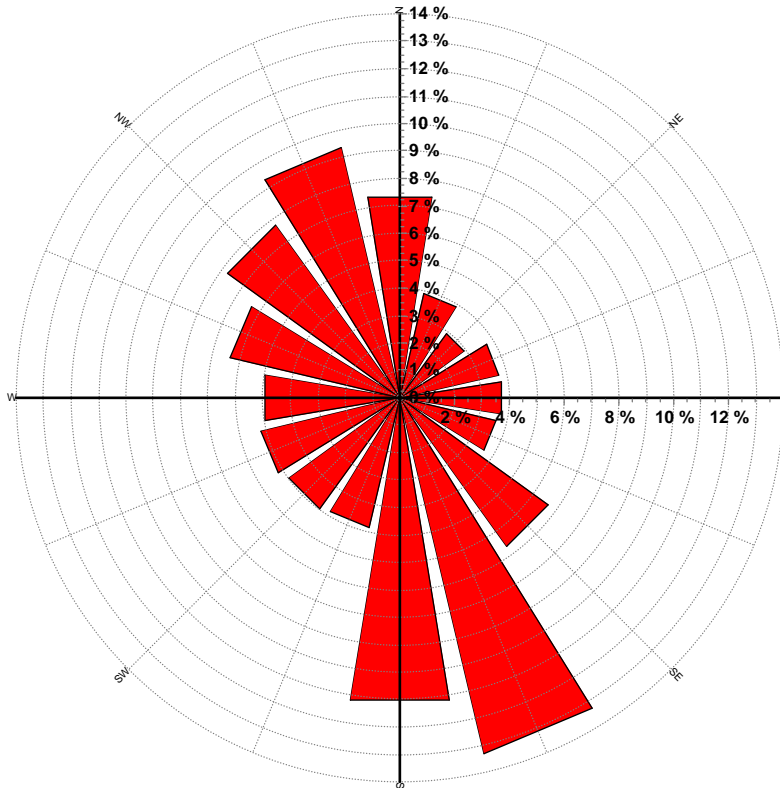
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## Wind Directional Frequency

**Winds from the... Frequency (%)**

NNW	9.3
NW	7.8
WNW	6.3
W	5.0
WSW	5.2
SW	5.0
SSW	4.9
S	11.2
SSE	13.3
SE	6.7
ESE	3.6
E	3.8
ENE	3.7
NE	2.9
NNE	3.9
N	7.4

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Wind Rose for 164 ft AGL  
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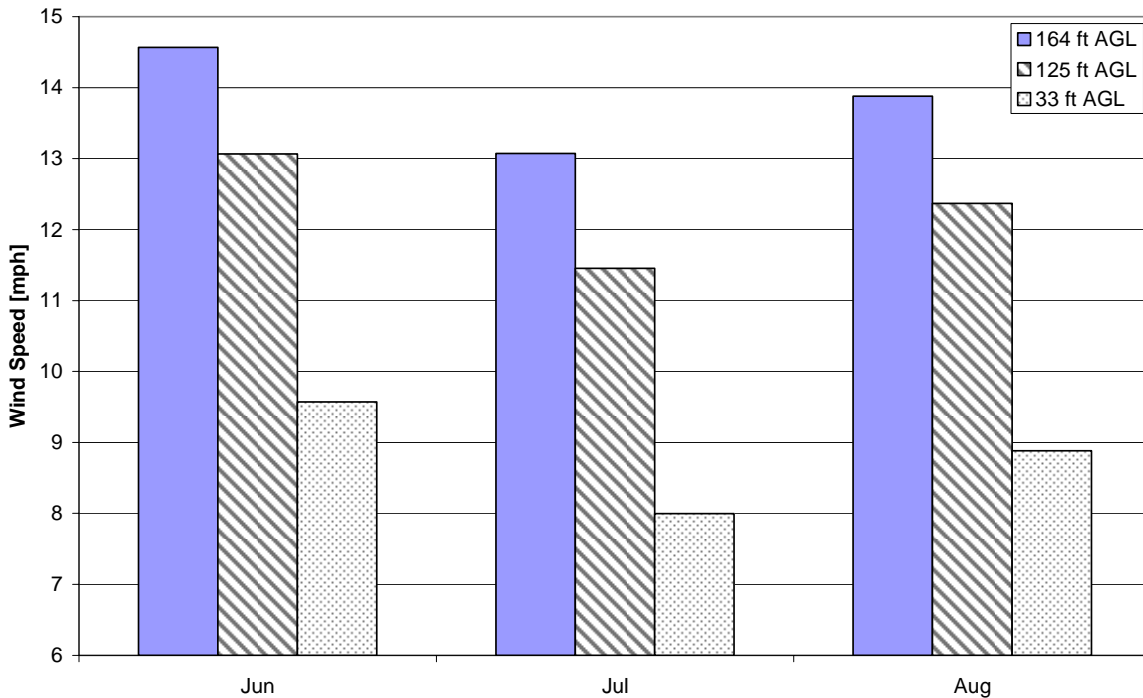
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## Monthly Wind Speed Averages

Month	164 ft AGL		125 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s
Jun	14.6	6.51	13.1	5.84	9.6	4.28
Jul	13.1	5.84	11.5	5.12	8.0	3.58
Aug	13.9	6.20	12.4	5.53	8.9	3.97

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