

# Wind Resource Summary for Cavalier Site

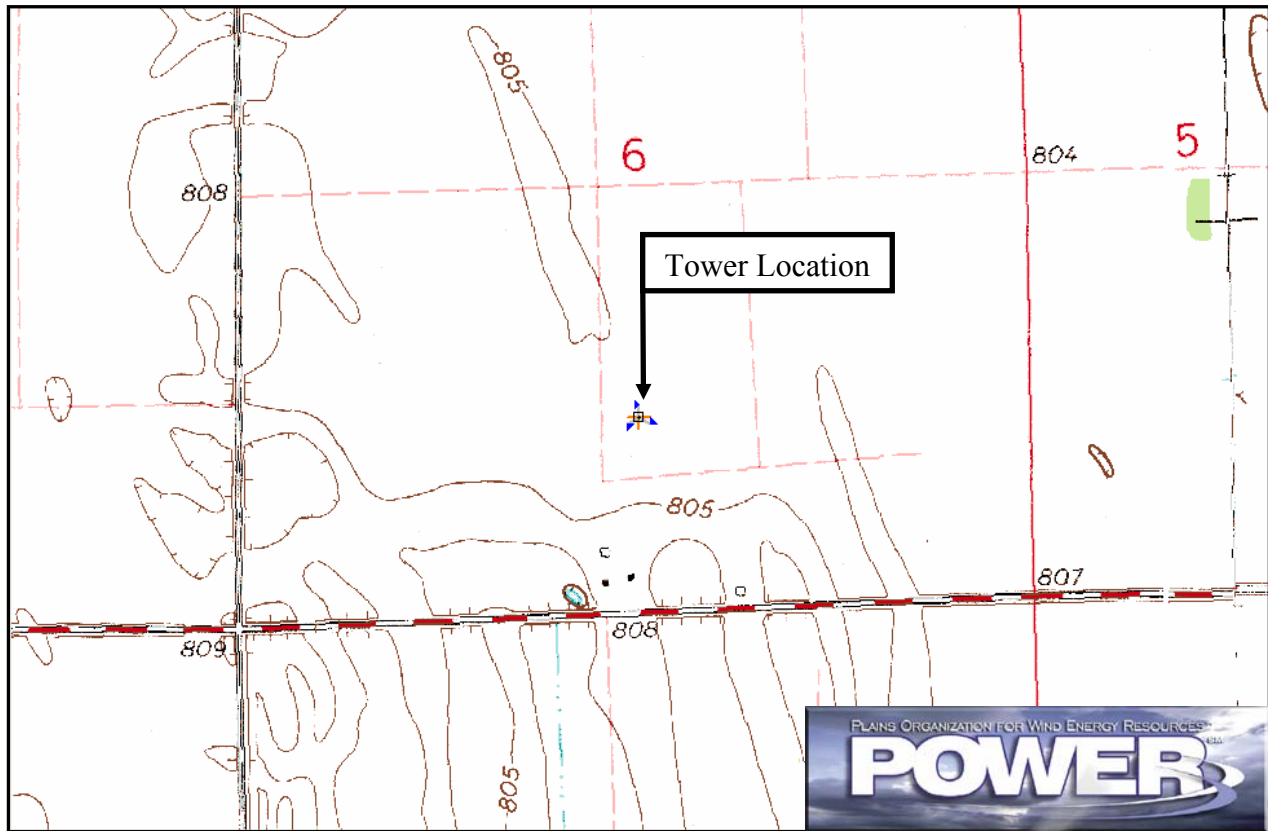
## Cavalier Economic Development Corporation

### Winters<sup>a</sup> 2001, 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	11.7 mph	15.0 mph	16.4 mph
Maximum, 60-min Mean Wind Speed	50.8 mph at 164 ft AGL – 2/11/2001 3:00 p.m.		
Estimated Wind Power Class <sup>c</sup>	Class 3 (369 W/m <sup>2</sup> at 164 ft AGL)		

<sup>a</sup> Data recovery rates at 33, 125, and 164 feet were 96%, 95%, and 95%, respectively.

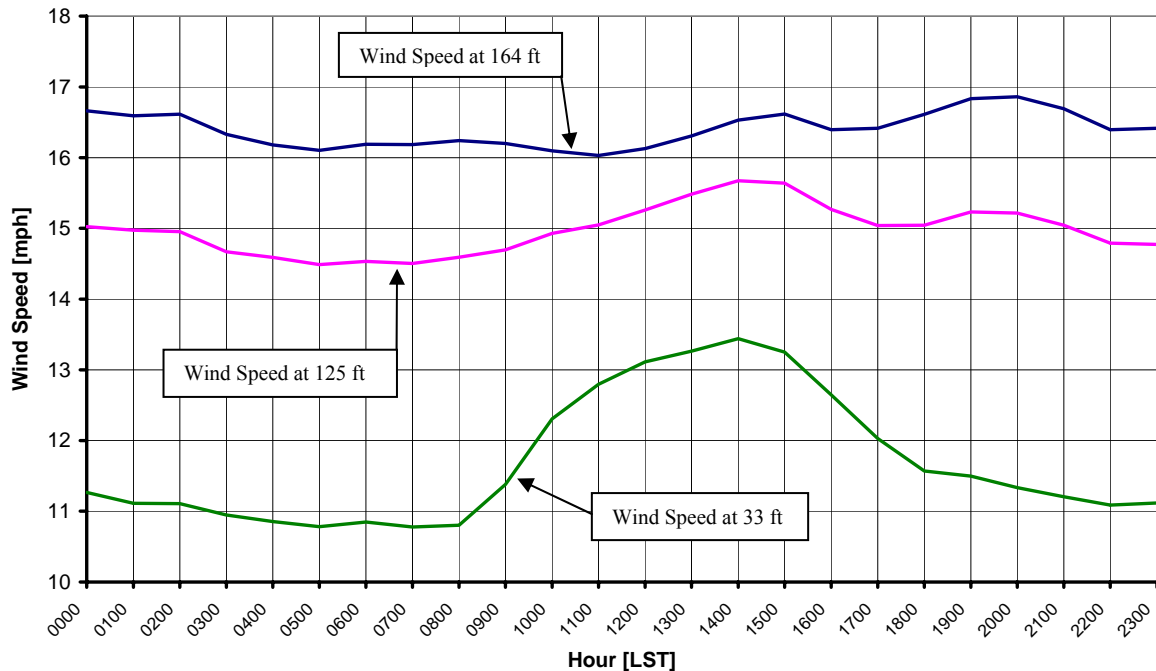
<sup>b</sup> Above ground level.

<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	16.7	7.45	15.0	6.72	11.3	5.04
0100	16.6	7.42	15.0	6.69	11.1	4.97
0200	16.6	7.43	15.0	6.68	11.1	4.97
0300	16.3	7.30	14.7	6.56	10.9	4.89
0400	16.2	7.23	14.6	6.52	10.9	4.85
0500	16.1	7.20	14.5	6.48	10.8	4.82
0600	16.2	7.24	14.5	6.50	10.8	4.85
0700	16.2	7.24	14.5	6.48	10.8	4.82
0800	16.2	7.26	14.6	6.52	10.8	4.83
0900	16.2	7.24	14.7	6.57	11.4	5.09
1000	16.1	7.20	14.9	6.67	12.3	5.50
1100	16.0	7.17	15.0	6.73	12.8	5.72
1200	16.1	7.21	15.3	6.82	13.1	5.86
1300	16.3	7.29	15.5	6.92	13.3	5.93
1400	16.5	7.39	15.7	7.01	13.4	6.01
1500	16.6	7.43	15.6	6.99	13.3	5.92
1600	16.4	7.33	15.3	6.82	12.6	5.65
1700	16.4	7.34	15.0	6.72	12.0	5.38
1800	16.6	7.43	15.0	6.73	11.6	5.17
1900	16.8	7.53	15.2	6.81	11.5	5.14
2000	16.9	7.54	15.2	6.80	11.3	5.07
2100	16.7	7.46	15.0	6.73	11.2	5.01
2200	16.4	7.33	14.8	6.61	11.1	4.96
2300	16.4	7.34	14.8	6.60	11.1	4.97

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



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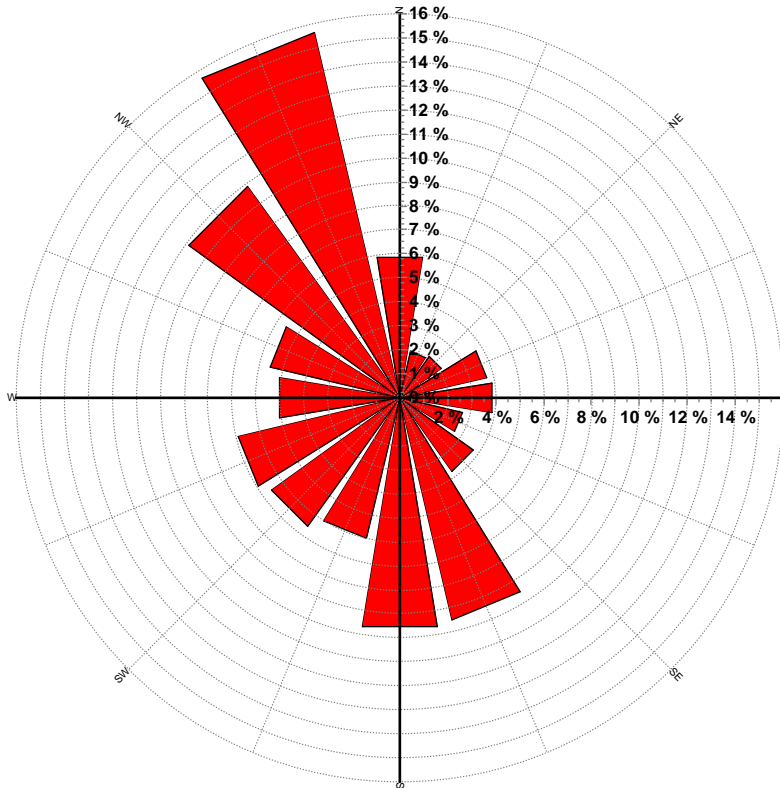
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## Wind Directional Frequency

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

NNW	15.7
NW	10.9
WNW	5.6
W	5.1
WSW	7.0
SW	6.6
SSW	6.0
S	9.7
SSE	9.5
SE	3.7
ESE	2.7
E	3.9
ENE	3.7
NE	2.1
NNE	2.0
N	5.9

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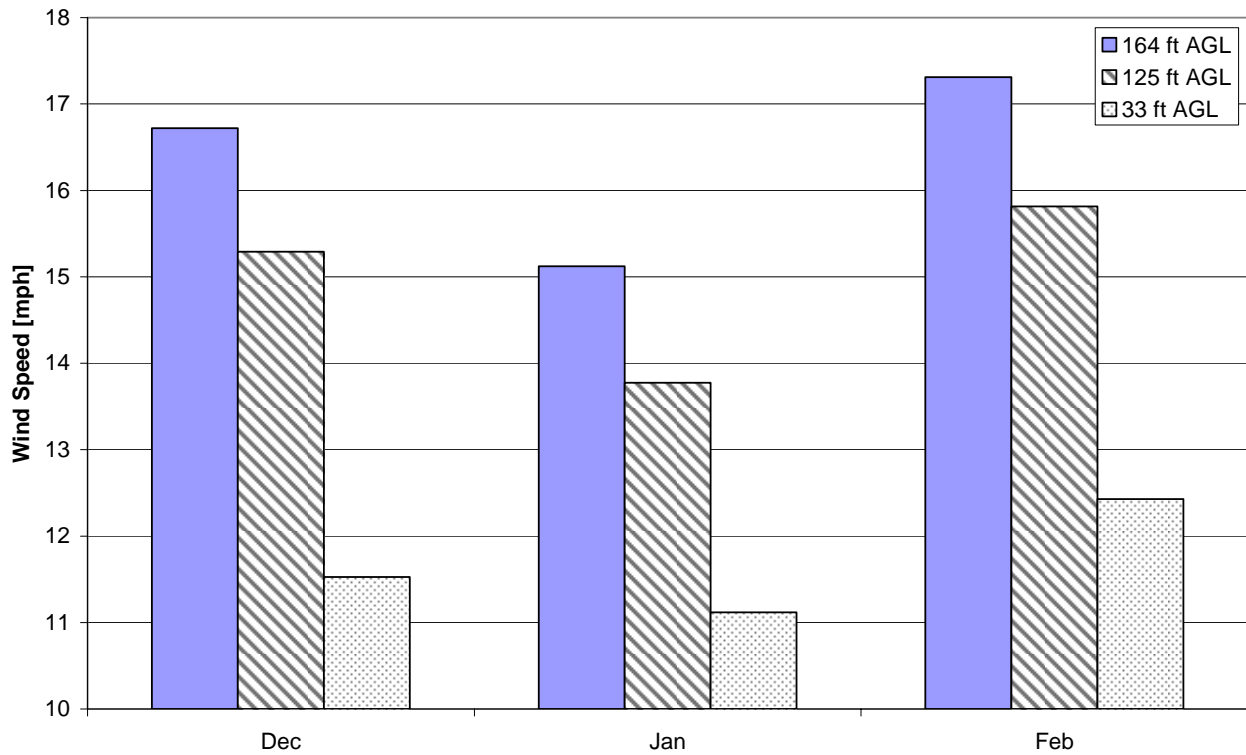
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## Monthly Wind Speed Averages

Month	164 ft AGL		125 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s
Dec	16.7	7.47	15.3	6.84	11.5	5.15
Jan	15.1	6.76	13.8	6.16	11.1	4.97
Feb	17.3	7.74	15.8	7.07	12.4	5.56

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