

Wind Resource Summary for Cavalier Site

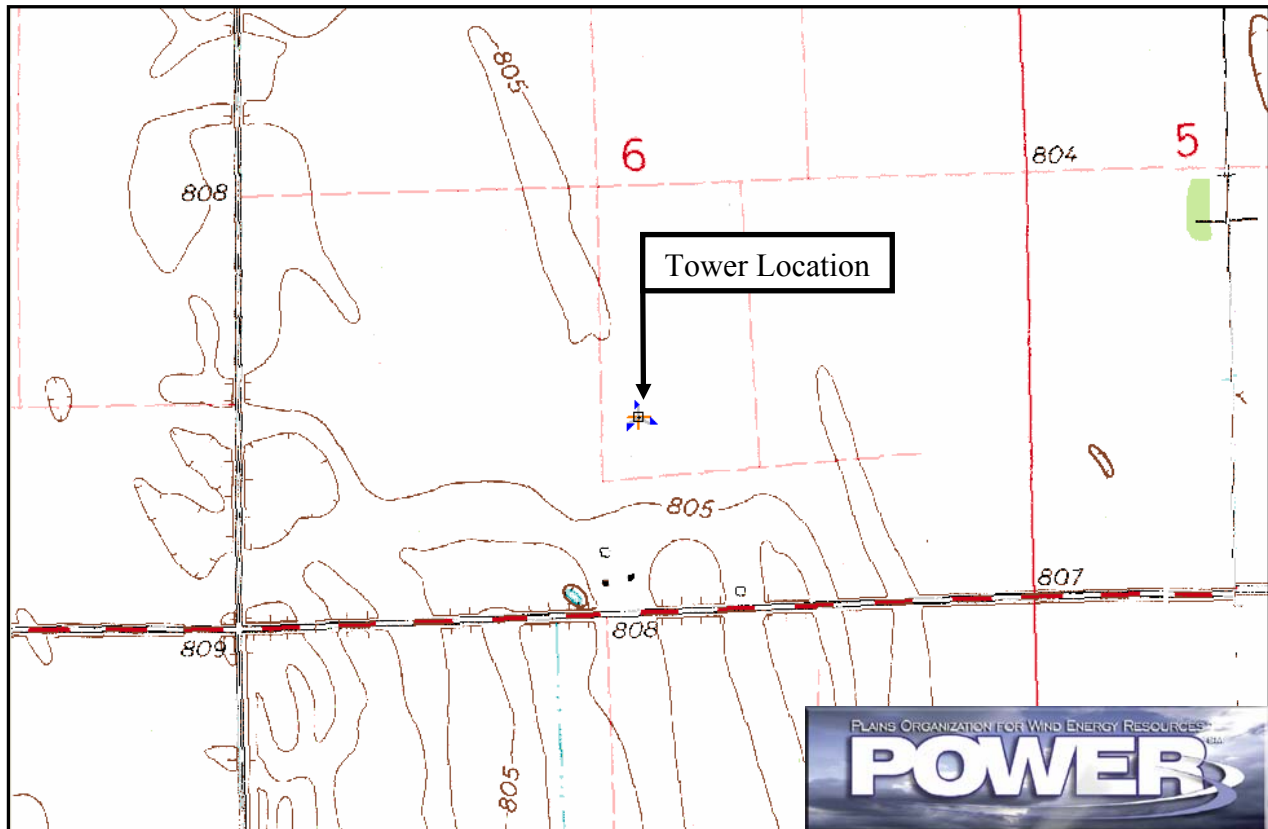
Cavalier Economic Development Corporation

Springs^a 2002, 2003 & 2004

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 ^b	125 ft AGL	164 ft AGL
Mean Wind Speed	12.4 mph	15.9 mph	17.3 mph
Maximum, 60-min Mean Wind Speed	47.6 mph at 164 ft AGL – 5/9/2002 12:00 p.m.		
Estimated Wind Power Class ^c	Class 4 (442 W/m ² at 164 ft AGL)		

^a Data recovery rates at 33, 125, and 164 feet were 96%, 96%, and 74%, respectively.

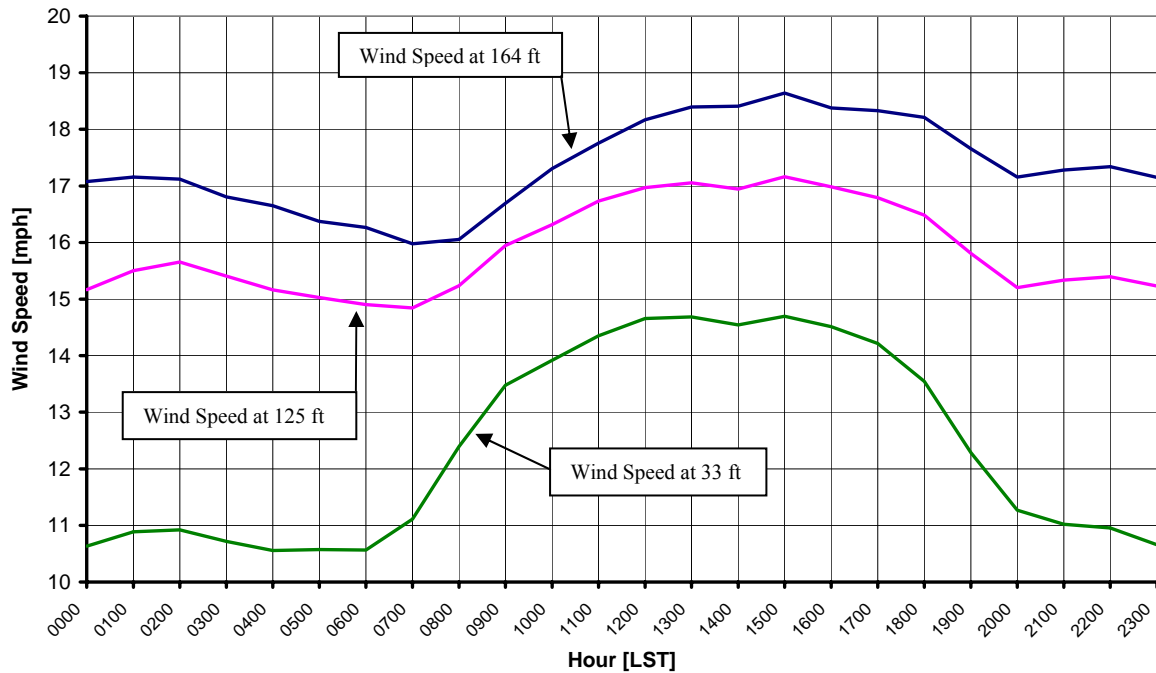
^b Above ground level.

^c Air temperature was not factored into calculations.

Average Hourly Wind Speeds

LST ^d	164 ft AGL		125 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s
0000	17.1	7.63	15.2	6.78	10.6	4.75
0100	17.2	7.67	15.5	6.93	10.9	4.87
0200	17.1	7.65	15.7	7.00	10.9	4.88
0300	16.8	7.51	15.4	6.89	10.7	4.79
0400	16.7	7.44	15.2	6.78	10.6	4.72
0500	16.4	7.32	15.0	6.72	10.6	4.73
0600	16.3	7.27	14.9	6.66	10.6	4.72
0700	16.0	7.14	14.8	6.64	11.1	4.97
0800	16.1	7.18	15.2	6.81	12.4	5.54
0900	16.7	7.46	15.9	7.13	13.5	6.03
1000	17.3	7.74	16.3	7.30	13.9	6.22
1100	17.8	7.94	16.7	7.48	14.4	6.42
1200	18.2	8.12	17.0	7.59	14.7	6.55
1300	18.4	8.22	17.1	7.62	14.7	6.57
1400	18.4	8.23	16.9	7.57	14.5	6.50
1500	18.6	8.33	17.2	7.67	14.7	6.57
1600	18.4	8.22	17.0	7.59	14.5	6.49
1700	18.3	8.19	16.8	7.51	14.2	6.35
1800	18.2	8.14	16.5	7.37	13.5	6.06
1900	17.7	7.89	15.8	7.07	12.3	5.49
2000	17.2	7.67	15.2	6.80	11.3	5.04
2100	17.3	7.73	15.3	6.86	11.0	4.93
2200	17.3	7.75	15.4	6.88	11.0	4.90
2300	17.1	7.67	15.2	6.81	10.7	4.76

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^d Local standard time.



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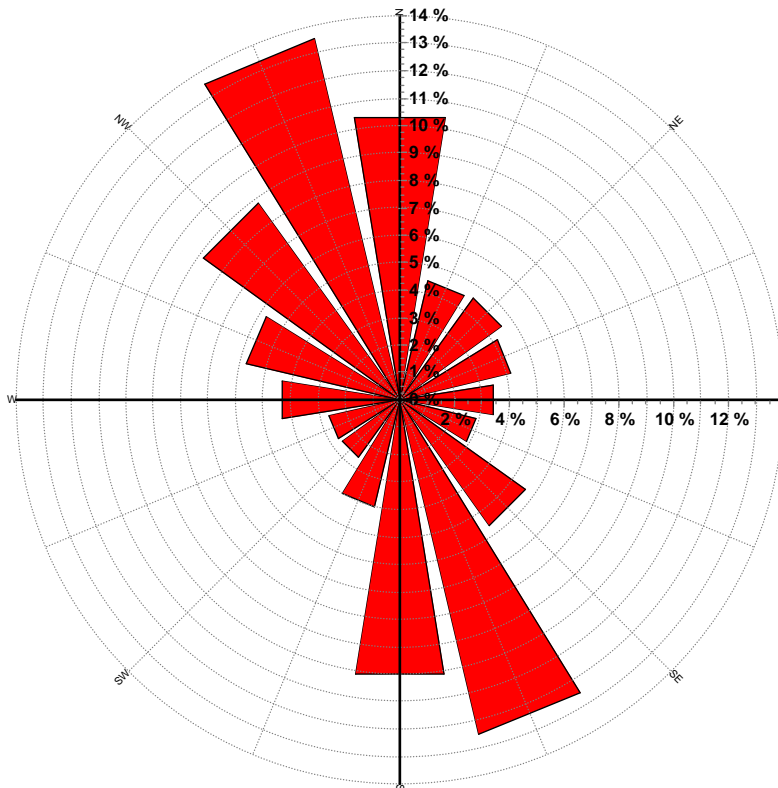
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Wind Directional Frequency

Winds from the... Frequency (%)

NNW	13.5
NW	8.8
WNW	5.8
W	4.3
WSW	2.7
SW	2.6
SSW	4.0
S	10.1
SSE	12.6
SE	5.6
ESE	2.9
E	3.4
ENE	4.2
NE	4.6
NNE	4.5
N	10.4

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Wind Rose for 164 ft AGL
Springs 2002, 2003 & 2004



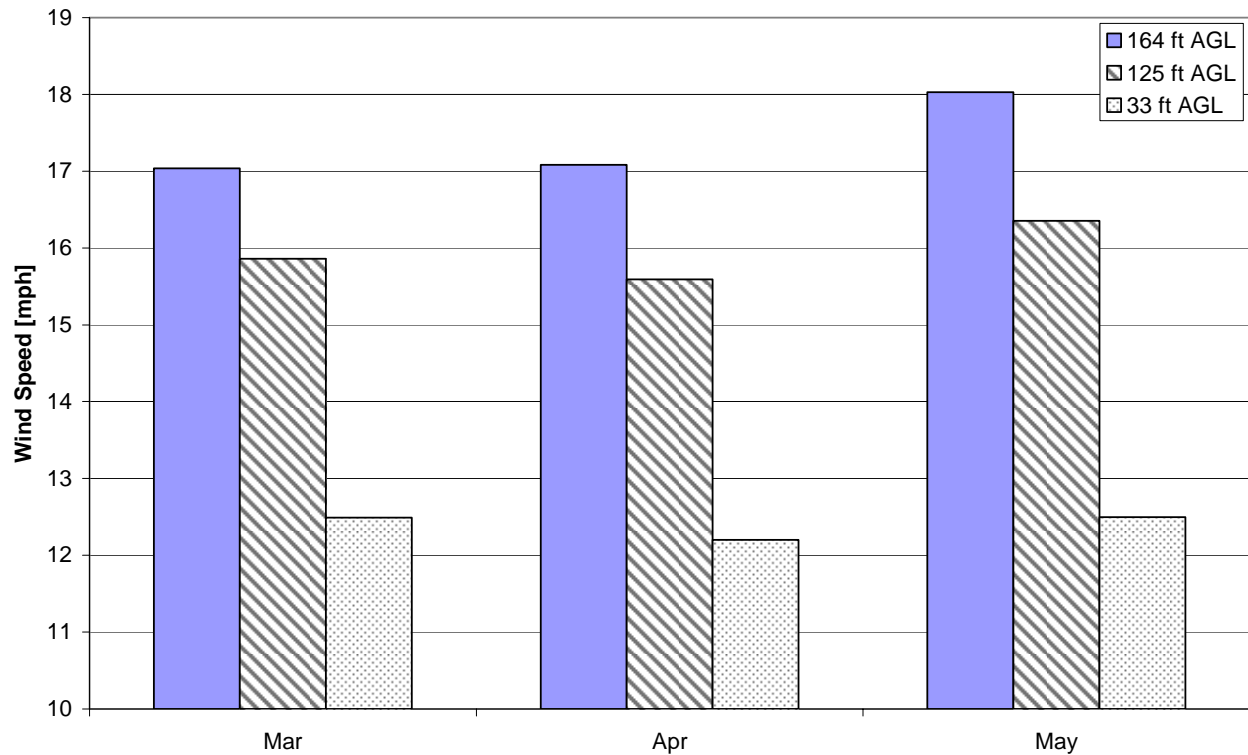
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Monthly Wind Speed Averages

Month	164 ft AGL		125 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s
Mar	17.0	7.62	15.9	7.09	12.5	5.58
Apr	17.1	7.64	15.6	6.97	12.2	5.46
May	18.0	8.06	16.4	7.31	12.5	5.59

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