

Wind Resource Summary for Luverne Site

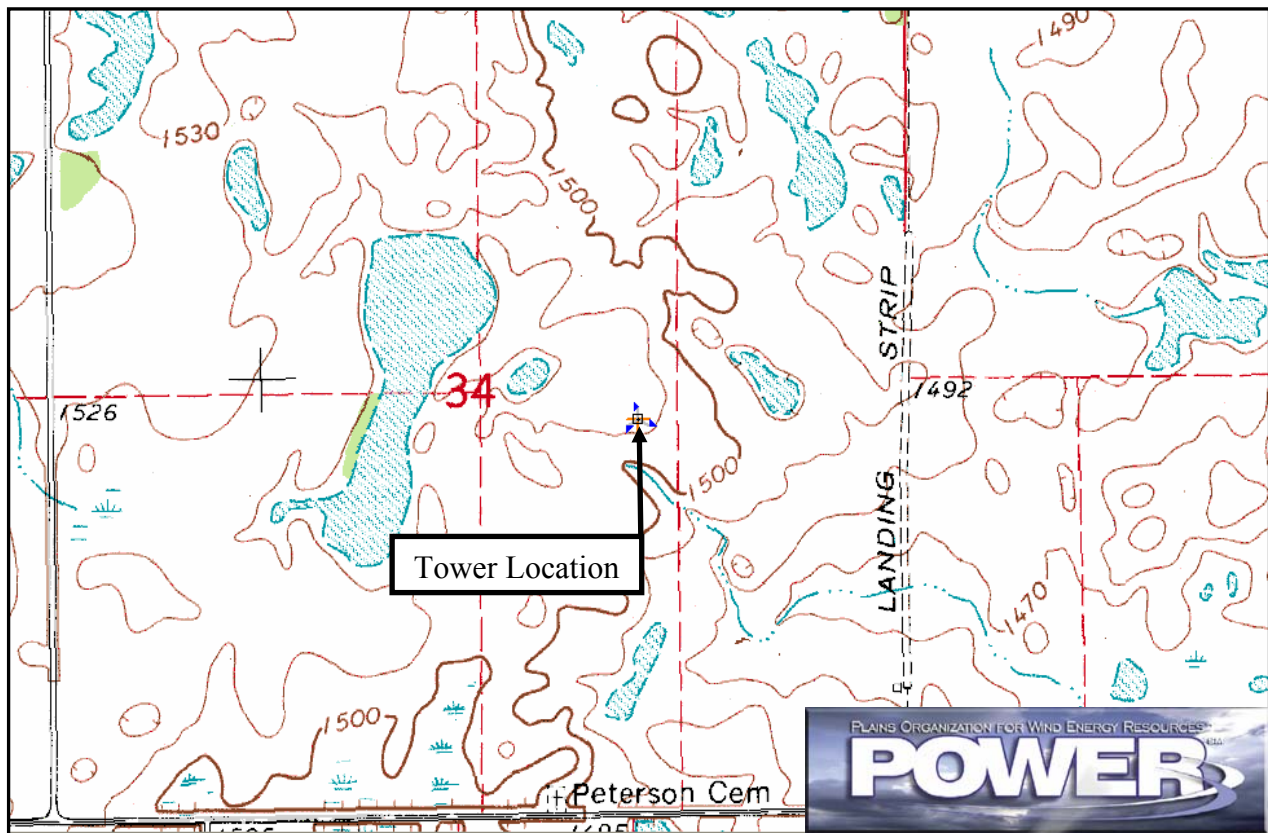
Griggs/Steele Wind Development Group LLC

Winters^a 2000, 2001, 2002 & 2003

Site Description:

Latitude: N 47° 19' 57"	Township: 145 N
Longitude: W 97° 54' 27"	Range: 57 W
Elevation: 1510 feet	Section: 34
Tower Type: NRG Tilt-up	Tower Height: 131 feet

The monitoring site is 5.7 miles north-northeast of the town of Luverne, North Dakota. The tower is instrumented at three levels: 33 ft (10 m), 98 ft (30 m), and 131 ft (40 m). The site is 3.2 miles east of the Sheyenne River on the Pembina Escarpment. The land around the site is primarily cultivated fields with many small ponds and lakes in the area.



Summary Wind Data:	33 ft AGL ^b	98 ft AGL	131 ft AGL
Mean Wind Speed	14.2 mph	16.8 mph	19.3 mph
Maximum, 60-min Mean Wind Speed	52.3 mph at 131 ft AGL – 2/11/2002 3:00 pm		
Estimated Wind Power Class ^c	Class 5 (517 W/m ² at 131 ft AGL)		

^a Winter is defined as the months of December, January, and February. Winter 2000 begins with December 2000. Data recovery rates at 33, 98, and 131 feet were 93%, 88%, and 75%, respectively.

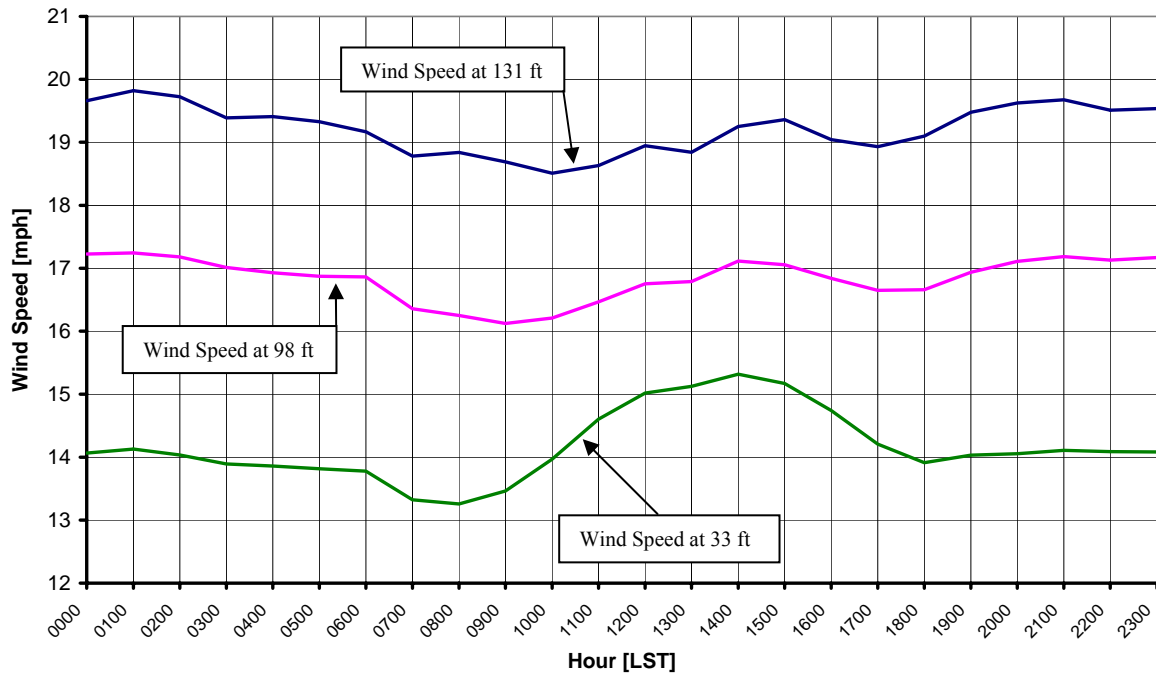
^b Above ground level.

^c Air temperature was not factored into calculations.

Average Hourly Wind Speeds

LST ^d	131 ft AGL		98 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s
0000	19.7	8.79	17.2	7.70	14.1	6.29
0100	19.8	8.86	17.2	7.71	14.1	6.32
0200	19.7	8.82	17.2	7.68	14.0	6.27
0300	19.4	8.67	17.0	7.61	13.9	6.21
0400	19.4	8.68	16.9	7.57	13.9	6.20
0500	19.3	8.64	16.9	7.54	13.8	6.18
0600	19.2	8.57	16.9	7.54	13.8	6.16
0700	18.8	8.40	16.4	7.31	13.3	5.96
0800	18.8	8.42	16.2	7.26	13.3	5.93
0900	18.7	8.35	16.1	7.21	13.5	6.02
1000	18.5	8.27	16.2	7.25	14.0	6.24
1100	18.6	8.33	16.5	7.36	14.6	6.53
1200	18.9	8.47	16.8	7.49	15.0	6.71
1300	18.8	8.42	16.8	7.51	15.1	6.76
1400	19.3	8.61	17.1	7.65	15.3	6.85
1500	19.4	8.66	17.1	7.63	15.2	6.78
1600	19.0	8.51	16.8	7.53	14.7	6.59
1700	18.9	8.46	16.7	7.44	14.2	6.35
1800	19.1	8.54	16.7	7.45	13.9	6.22
1900	19.5	8.71	16.9	7.57	14.0	6.27
2000	19.6	8.77	17.1	7.65	14.1	6.28
2100	19.7	8.79	17.2	7.68	14.1	6.31
2200	19.5	8.72	17.1	7.66	14.1	6.30
2300	19.5	8.73	17.2	7.67	14.1	6.30

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^d Local standard time.



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Creation Date: 4/4/2005

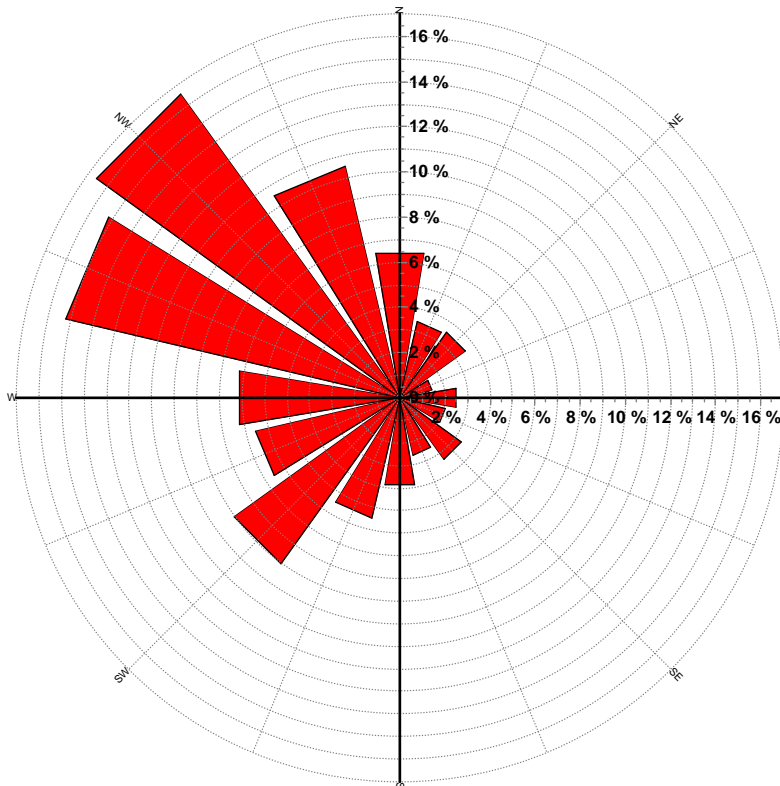
Wind Directional Frequency

Winds from the... Frequency (%)

NNW	10.5
NW	16.6
WNW	15.2
W	7.2
WSW	6.6
SW	9.1
SSW	5.5
S	3.9
SSE	2.6
SE	3.4
ESE	2.1
E	2.5
ENE	1.4
NE	3.6
NNE	3.4
N	6.5

* Wind direction data only available for the winter of 2000.

Griggs/Steele Wind Development Group LLC – Luverne Site
Wind Rose for 131 ft AGL
Winter 2000



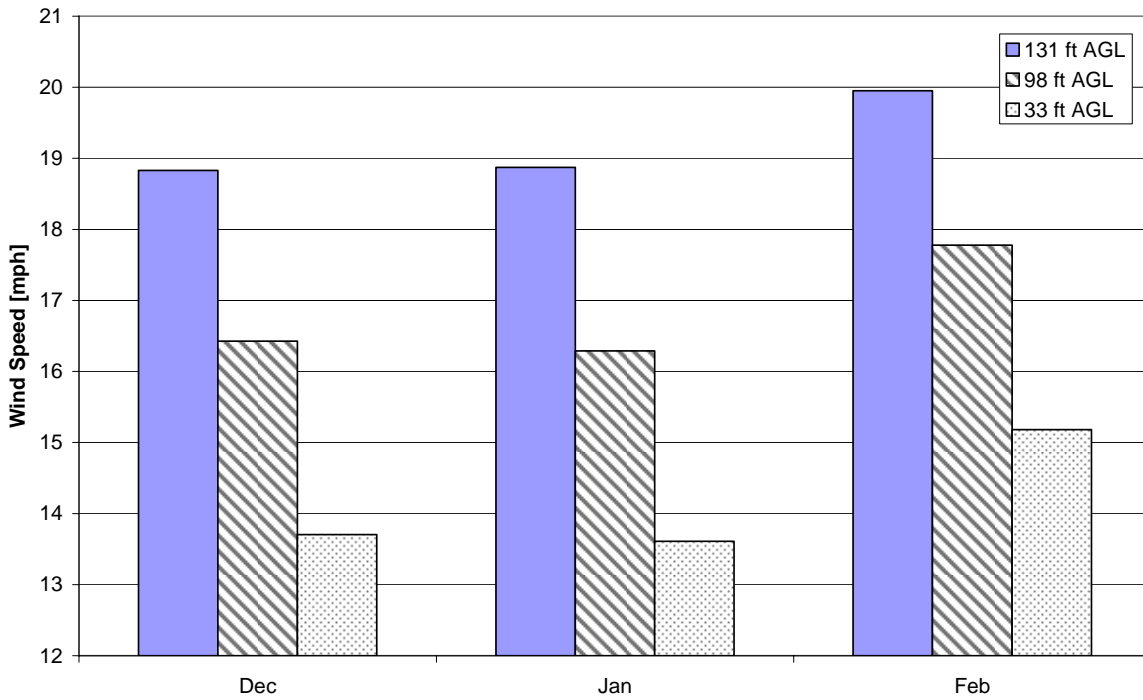
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Monthly Wind Speed Averages

Month	131 ft AGL		98 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s
Dec	18.8	8.42	16.4	7.34	13.7	6.13
Jan	18.9	8.44	16.3	7.28	13.6	6.08
Feb	19.9	8.92	17.8	7.95	15.2	6.79

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