

Wind Resource Summary for Green River Site

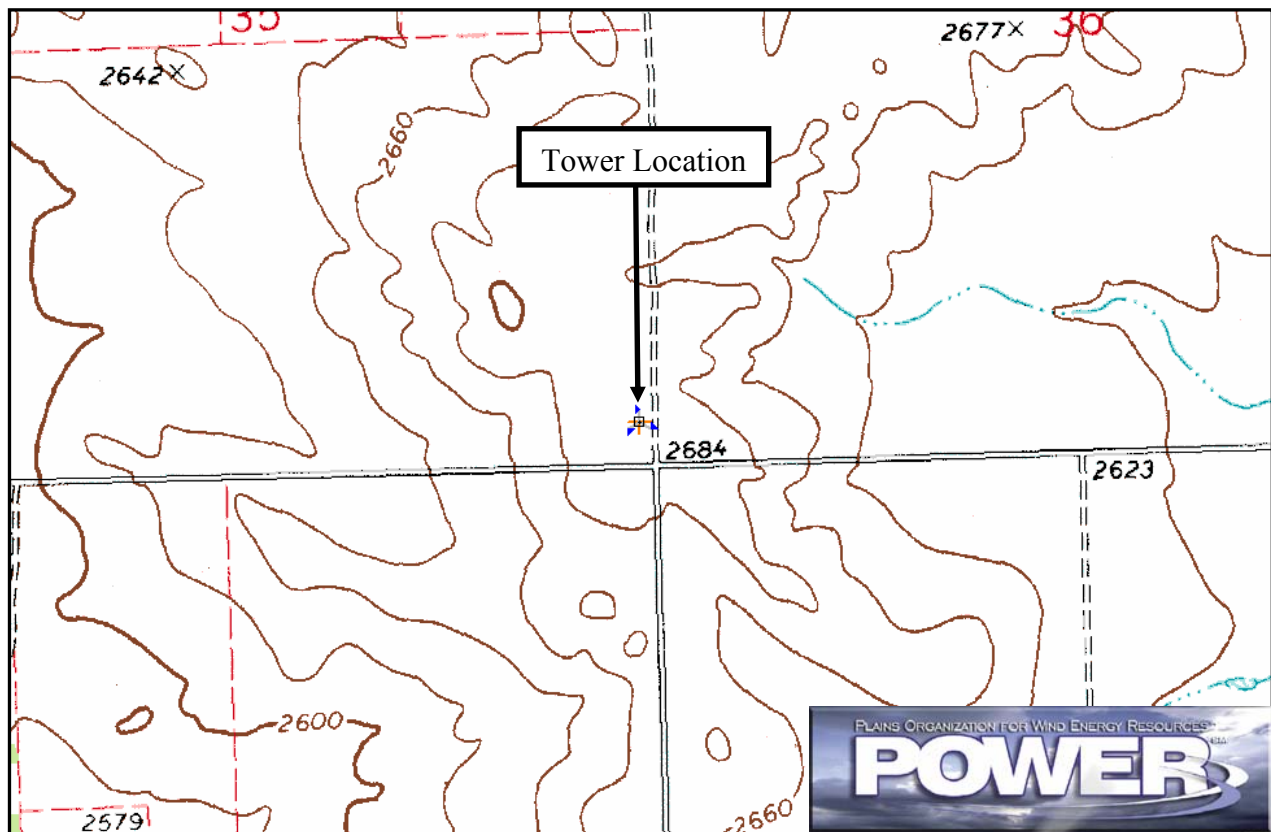
North Dakota Utility Study

Summers^a 1995, 1996 & 1997

Site Description:

Latitude: N 47° 4' 5"	Township: 142 N
Longitude: W 102° 55' 38"	Range: 97 W
Elevation: 2684 feet	Section: 18
Tower Type: Lattice Tower	Tower Height: 271 feet

The monitoring site was 14.3 miles north-northeast of the town of South Heart, North Dakota. An existing tower was used and instrumented at four levels: 33 ft (10 m), 82 ft (25 m), 131 ft (40 m), and 180 ft (55 m). The tower is located on a top of a small hill with good exposure to the wind in all directions. Cultivated fields characterize the area's landscape.



Summary Wind Data:	33 ft AGL^b	82 ft AGL	131 ft AGL	180 ft AGL
Mean Wind Speed	11.1 mph	12.9 mph	14.5 mph	15.4 mph
Maximum, 60-min Mean Wind Speed	46.9 mph at 180 ft AGL – 7/11/1996 1:00 p.m.			
Estimated Wind Power Class^c	Class 2 (290 W/m ² at 180 ft AGL)			

^a Summer is defined as the months of June, July, and August. Summer 1995 begins with June 1995. Data recovery rates at 33, 82, 131 and 180 feet were 88%, 87%, 88% and 79%, respectively.

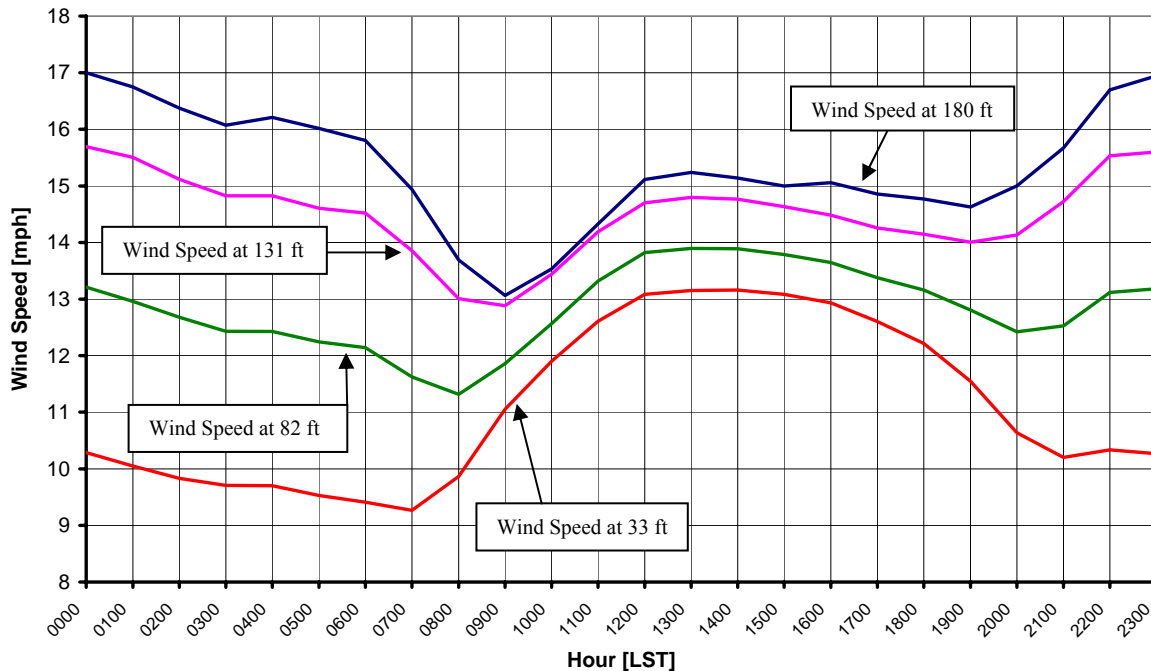
^b Above ground level.

^c Air temperature was not factored into calculations.

Average Hourly Wind Speeds

LST ^d	180 ft AGL		131 ft AGL		82 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s	mph	m/s
0000	17.0	7.60	15.7	7.02	13.2	5.91	10.3	4.60
0100	16.7	7.49	15.5	6.93	13.0	5.79	10.0	4.49
0200	16.4	7.32	15.1	6.76	12.7	5.67	9.8	4.40
0300	16.1	7.19	14.8	6.63	12.4	5.56	9.7	4.34
0400	16.2	7.25	14.8	6.63	12.4	5.56	9.7	4.34
0500	16.0	7.16	14.6	6.53	12.2	5.47	9.5	4.26
0600	15.8	7.07	14.5	6.49	12.1	5.43	9.4	4.21
0700	14.9	6.68	13.9	6.19	11.6	5.20	9.3	4.14
0800	13.7	6.12	13.0	5.81	11.3	5.06	9.9	4.41
0900	13.1	5.84	12.9	5.76	11.9	5.30	11.1	4.94
1000	13.5	6.05	13.4	6.01	12.6	5.62	11.9	5.32
1100	14.3	6.41	14.2	6.34	13.3	5.95	12.6	5.64
1200	15.1	6.76	14.7	6.57	13.8	6.18	13.1	5.85
1300	15.2	6.81	14.8	6.62	13.9	6.21	13.2	5.88
1400	15.1	6.77	14.8	6.60	13.9	6.21	13.2	5.88
1500	15.0	6.71	14.6	6.54	13.8	6.16	13.1	5.85
1600	15.1	6.73	14.5	6.48	13.6	6.10	12.9	5.78
1700	14.9	6.64	14.3	6.37	13.4	5.98	12.6	5.63
1800	14.8	6.60	14.1	6.32	13.2	5.88	12.2	5.46
1900	14.6	6.54	14.0	6.26	12.8	5.73	11.5	5.16
2000	15.0	6.71	14.1	6.32	12.4	5.55	10.6	4.76
2100	15.7	7.01	14.7	6.58	12.5	5.60	10.2	4.56
2200	16.7	7.47	15.5	6.94	13.1	5.86	10.3	4.62
2300	16.9	7.58	15.6	6.97	13.2	5.89	10.3	4.59

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^d Local standard time.



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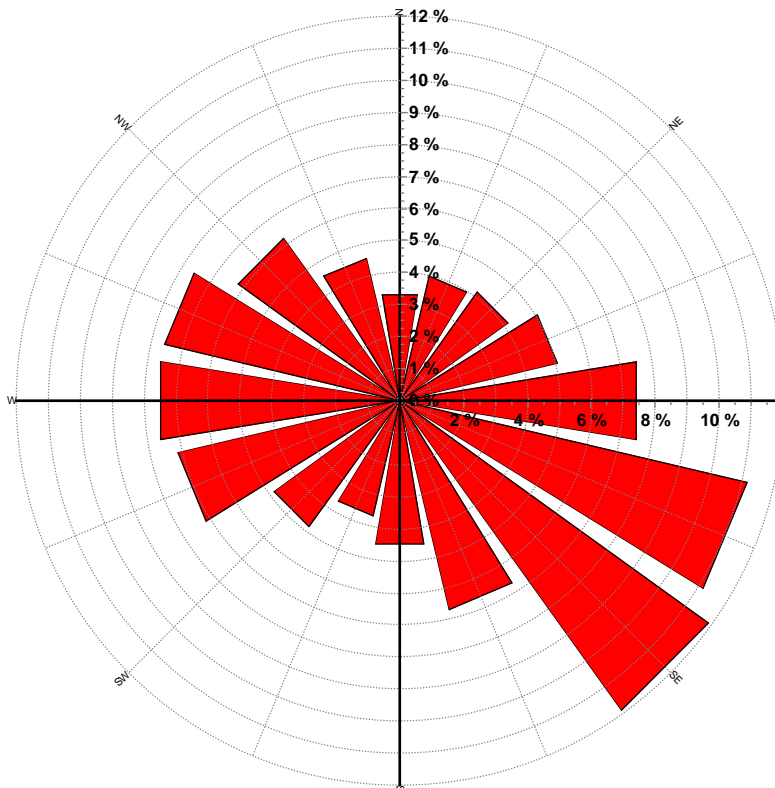
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Wind Directional Frequency

Winds from the... Frequency (%)

NNW	4.6
NW	6.2
WNW	7.6
W	7.6
WSW	7.1
SW	4.9
SSW	3.7
S	4.6
SSE	6.7
SE	11.9
ESE	11.2
E	7.5
ENE	5.1
NE	4.2
NNE	4.0
N	3.4

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Wind Rose for 180 ft AGL
Summers 1995, 1996 & 1997



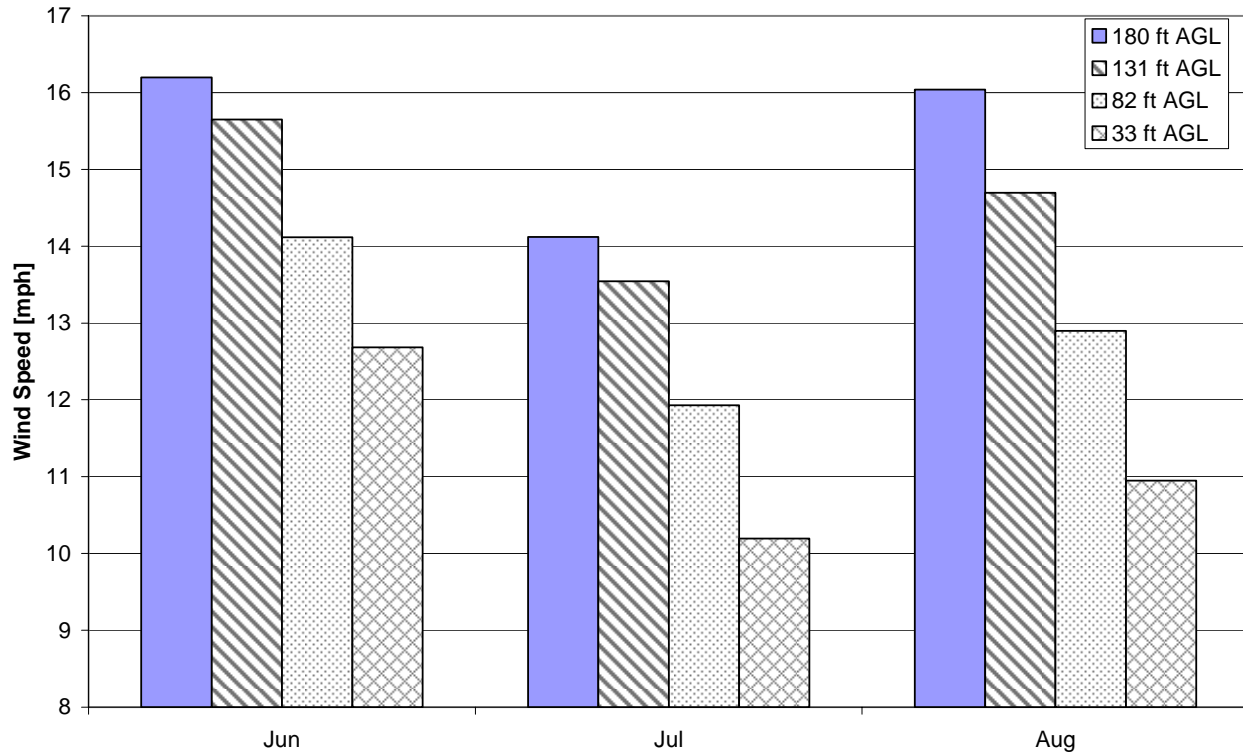
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Monthly Wind Speed Averages

Month	180 ft AGL		131 ft AGL		82 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s	mph	m/s
Jun	16.2	7.24	15.6	7.00	14.1	6.31	12.7	5.67
Jul	14.1	6.31	13.5	6.06	11.9	5.33	10.2	4.56
Aug	16.0	7.17	14.7	6.57	12.9	5.77	10.9	4.89

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