

# Wind Resource Summary for Fort Yates Site

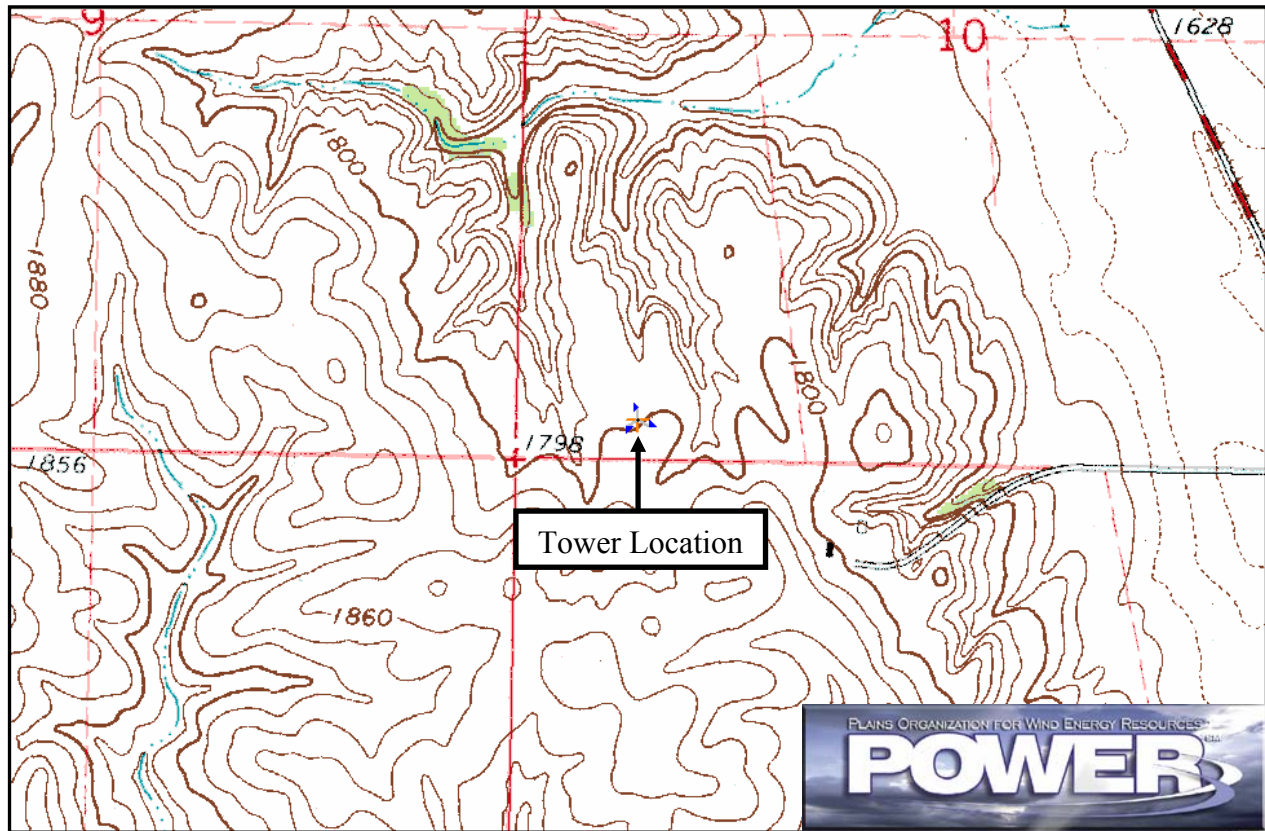
## Standing Rock Sioux Tribe

### Winter<sup>a</sup> 1996

#### Site Description:

Latitude: N 46° 5' 20"	Township: 130 N
Longitude: W 100° 41' 15"	Range: 80 W
Elevation: 1800 feet	Section: 34
Tower Type: NRG Tilt-Up	Tower Height: 131 feet

The monitoring site was 2.8 miles west of the town of Fort Yates, North Dakota. The tower was instrumented at three levels: 33 ft (10 m), 98 ft (30 m), and 131 ft (40 m). Slaughter House Bay of Lake Oahe is approximately 1 mile to the northeast. The landscape is very rugged with numerous ravines and hills. The vegetation is predominantly native grasses.



Summary Wind Data:	33 ft AGL <sup>b</sup>	98 ft AGL	131 ft AGL
Mean Wind Speed	10.7 mph	12.5 mph	14.3 mph
Maximum, 60-min Mean Wind Speed	51.0 mph at 131 ft AGL – 12/16/1996 9:00 a.m.		
Estimated Wind Power Class <sup>c</sup>	Class 3 (338 W/m <sup>2</sup> at 131 ft AGL)		

<sup>a</sup> Winter is defined as the months of December, January, and February. Winter 1996 begins with December 1996.

Data recovery rates at 33, 98, and 131 feet were 68%, 63%, and 63%, respectively.

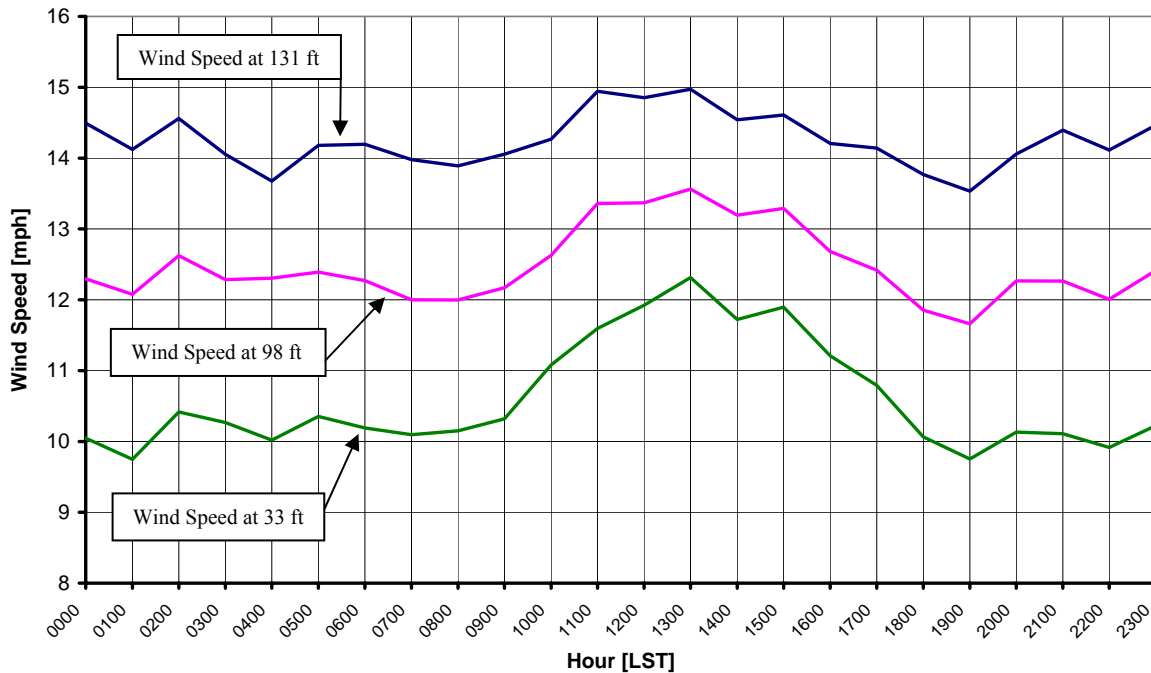
<sup>b</sup> Above ground level.

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

## Average Hourly Wind Speeds

LST <sup>d</sup>	131 ft AGL		98 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s
0000	14.5	6.48	12.3	5.50	10.0	4.49
0100	14.1	6.31	12.1	5.40	9.7	4.36
0200	14.6	6.51	12.6	5.64	10.4	4.66
0300	14.1	6.28	12.3	5.49	10.3	4.59
0400	13.7	6.11	12.3	5.50	10.0	4.48
0500	14.2	6.34	12.4	5.54	10.4	4.63
0600	14.2	6.35	12.3	5.48	10.2	4.56
0700	14.0	6.25	12.0	5.36	10.1	4.51
0800	13.9	6.21	12.0	5.36	10.1	4.54
0900	14.1	6.28	12.2	5.44	10.3	4.61
1000	14.3	6.38	12.6	5.65	11.1	4.95
1100	14.9	6.68	13.4	5.97	11.6	5.18
1200	14.8	6.64	13.4	5.98	11.9	5.33
1300	15.0	6.69	13.6	6.06	12.3	5.51
1400	14.5	6.50	13.2	5.90	11.7	5.24
1500	14.6	6.53	13.3	5.94	11.9	5.32
1600	14.2	6.35	12.7	5.67	11.2	5.01
1700	14.1	6.32	12.4	5.55	10.8	4.82
1800	13.8	6.15	11.9	5.30	10.1	4.50
1900	13.5	6.05	11.7	5.21	9.8	4.36
2000	14.1	6.28	12.3	5.48	10.1	4.53
2100	14.4	6.43	12.3	5.48	10.1	4.52
2200	14.1	6.31	12.0	5.37	9.9	4.43
2300	14.5	6.47	12.4	5.55	10.2	4.57

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



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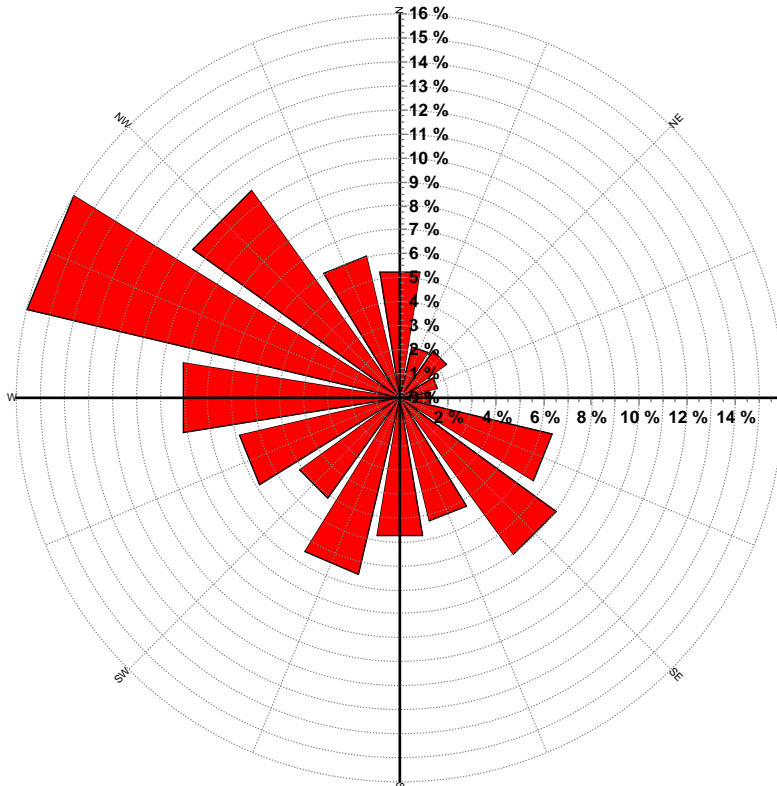
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## Wind Directional Frequency

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

NNW	6.1
NW	10.6
WNW	16.0
W	9.2
WSW	6.9
SW	5.1
SSW	7.6
S	5.8
SSE	5.3
SE	8.1
ESE	6.5
E	1.3
ENE	1.6
NE	2.4
NNE	2.2
N	5.3

**Standing Rock Sioux Tribe – Fort Yates Site  
Wind Rose for 131 ft AGL  
Winter 1996**



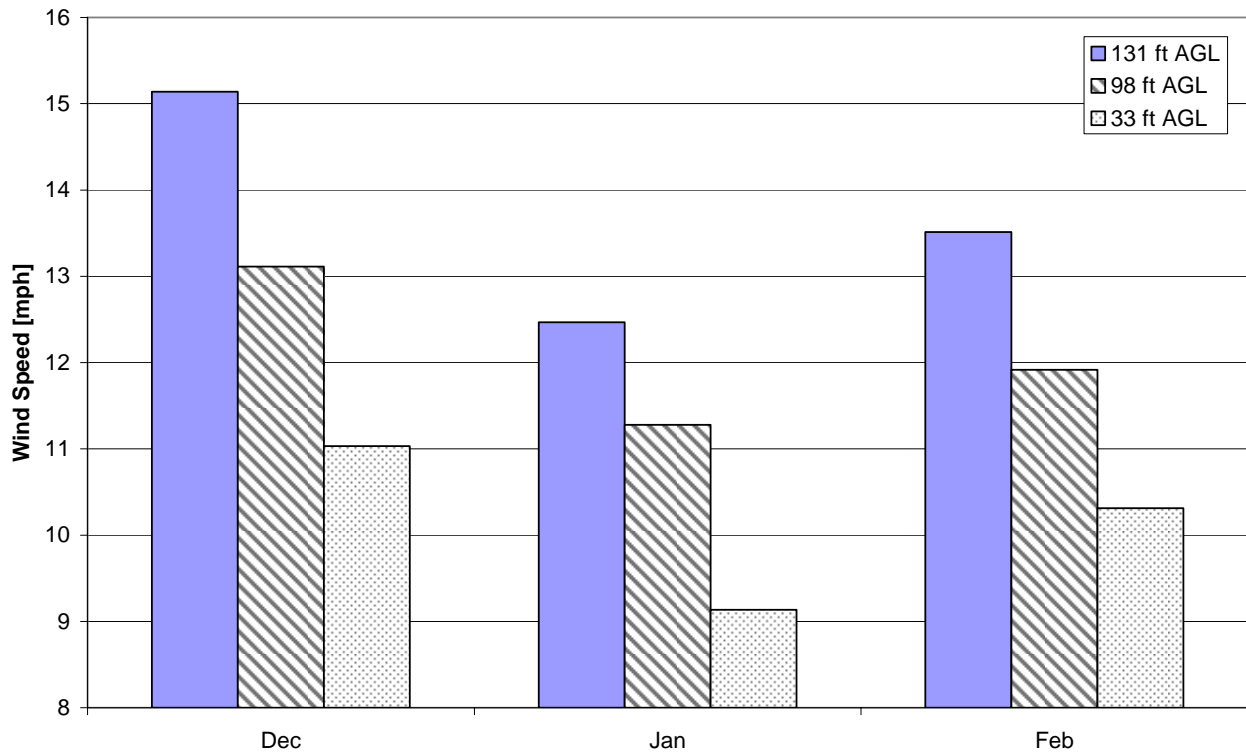
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## Monthly Wind Speed Averages

Month	131 ft AGL		98 ft AGL		33 ft AGL	
	mph	m/s	mph	m/s	mph	m/s
Dec	15.1	6.77	13.1	5.86	11.0	4.93
Jan	12.5	5.57	11.3	5.04	9.1	4.08
Feb	13.5	6.04	11.9	5.33	10.3	4.61

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