

# Wind Resource Summary for Bismarck Site

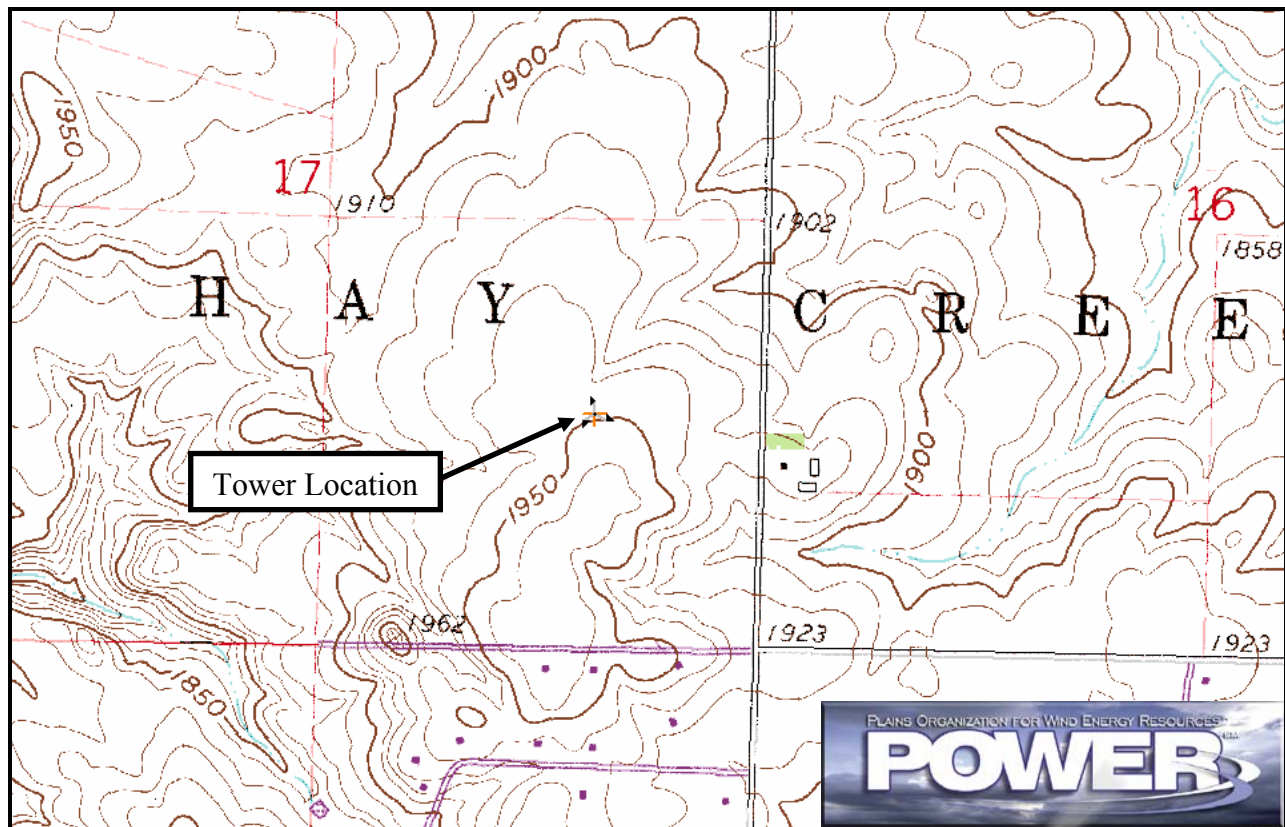
North Dakota Anemometer Loan Program – Site ALP0502

Monitoring Period<sup>a</sup>: 10/20/2005 – 5/21/2007

## Site Description:

Latitude: N 46° 51' 23"	Township: 139 N
Longitude: W 100° 47' 52"	Range: 80 W
Elevation: 1950 feet	Section: 17
Tower Type: NRG Tilt-Up	Tower Height: 66 feet

The monitoring system was installed for the Bismarck Public School District. The tower is located on the grounds of Horizon Middle School. School buildings are southwest of the tower roughly 1000 feet. A football field and track lie on the west side. Vegetation around the site is predominately grass. The tower has good exposure to the wind.



Summary Wind Data	66 ft AGL <sup>b</sup>
Mean Wind Speed	13.2 mph
Maximum, 10-min Mean Wind Speed	48.0 mph – 1/8/2007 7:40 p.m.
Estimated Wind Power Class <sup>c</sup>	Class 3 (232 W/m <sup>2</sup> )

<sup>a</sup> Data recovery rate was 98%.

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

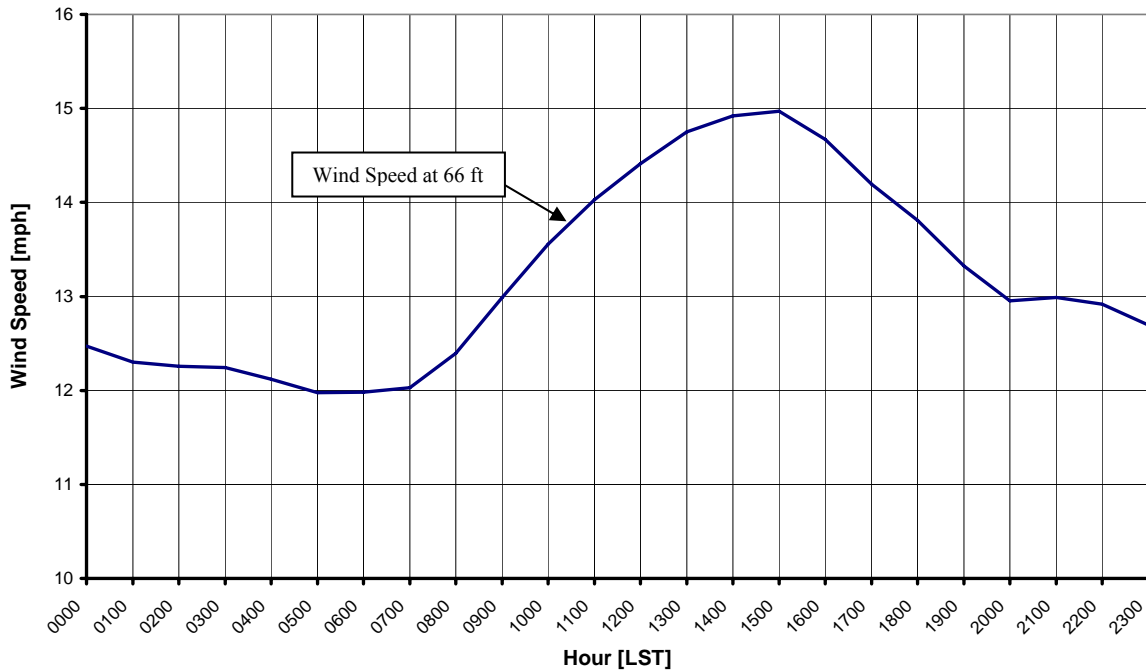
<sup>c</sup> Air temperature was not factored into calculation.

## Average Hourly Wind Speeds

66 ft AGL

LST <sup>d</sup>	mph	m/s
0000	12.5	5.57
0100	12.3	5.50
0200	12.3	5.48
0300	12.2	5.47
0400	12.1	5.42
0500	12.0	5.35
0600	12.0	5.35
0700	12.0	5.38
0800	12.4	5.54
0900	13.0	5.81
1000	13.6	6.06
1100	14.0	6.27
1200	14.4	6.44
1300	14.7	6.59
1400	14.9	6.67
1500	15.0	6.69
1600	14.7	6.56
1700	14.2	6.34
1800	13.8	6.17
1900	13.3	5.96
2000	13.0	5.79
2100	13.0	5.81
2200	12.9	5.78
2300	12.7	5.67

**North Dakota 2005 ALP Site – Bismarck (ALP 0502)**  
10/20/2005 – 5/21/2007



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



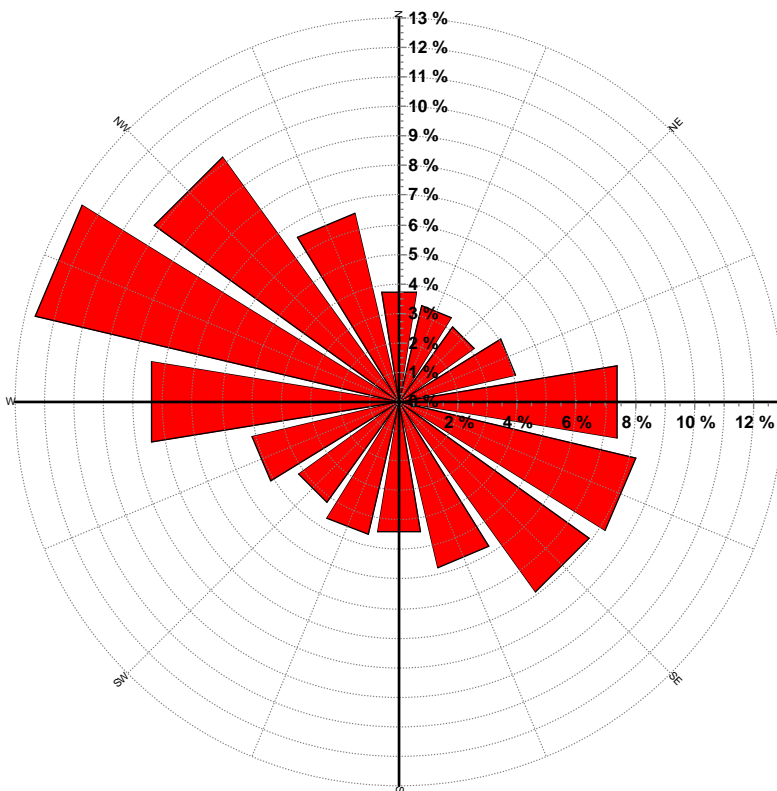
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Creation Date: 6/29/2007

## Wind Directional Frequency

Winds from the...	Frequency (%)
NNW	6.6
NW	10.2
WNW	12.6
W	8.5
WSW	5.1
SW	4.2
SSW	4.6
S	4.5
SSE	5.8
SE	7.9
ESE	8.2
E	7.5
ENE	4.0
NE	3.1
NNE	3.4
N	3.8

North Dakota 2005 ALP Site – Bismarck (ALP 0502)  
 Wind Rose for 66 ft AGL  
 10/20/2005 – 5/21/2007



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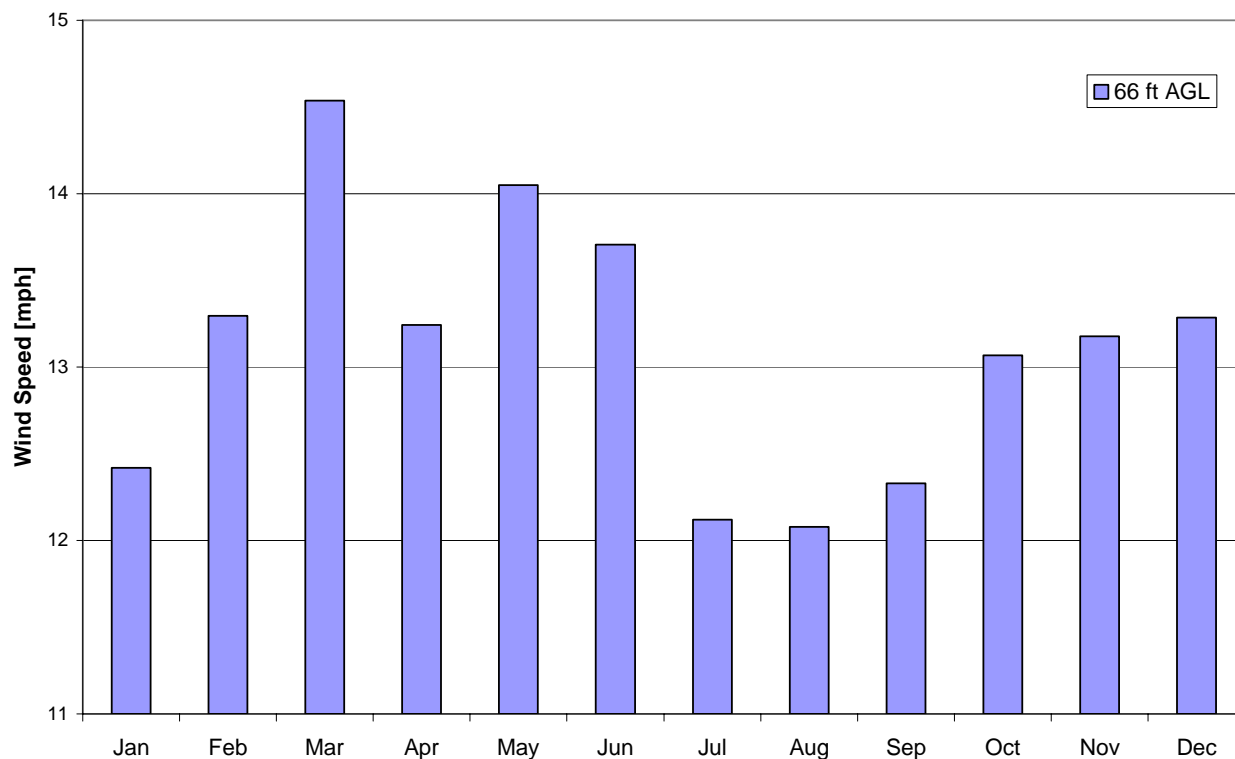
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## Monthly Wind Speed Averages

66 ft AGL

Month	mph	m/s
Jan	12.4	5.55
Feb	13.3	5.94
Mar	14.5	6.50
Apr	13.2	5.92
May	14.1	6.28
Jun	13.7	6.13
Jul	12.1	5.42
Aug	12.1	5.40
Sep	12.3	5.51
Oct	13.1	5.84
Nov	13.2	5.89
Dec	13.3	5.94

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