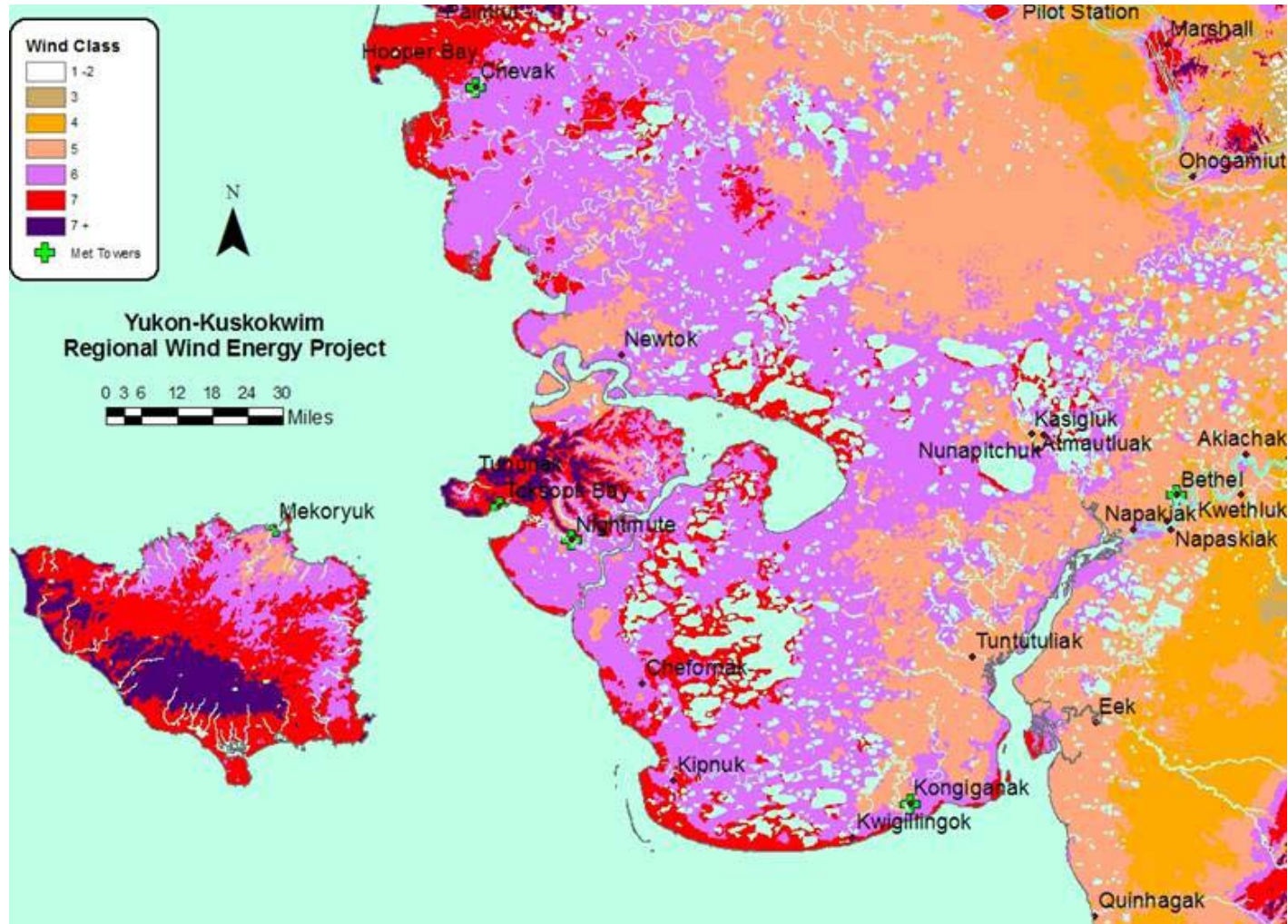


# Wind Map of Y-K Region



Class 6 and 7 Wind Regimes

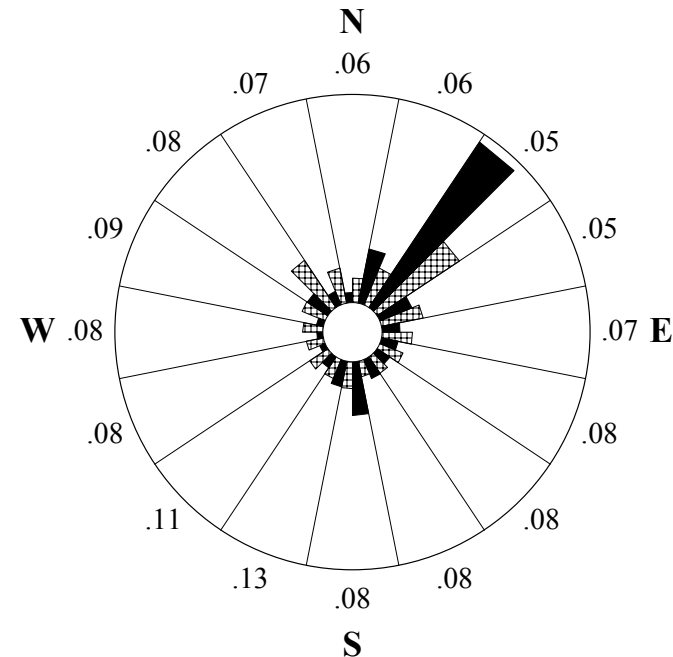
# Bethel Wind Resource



165-foot tower

Installed Dec 2004

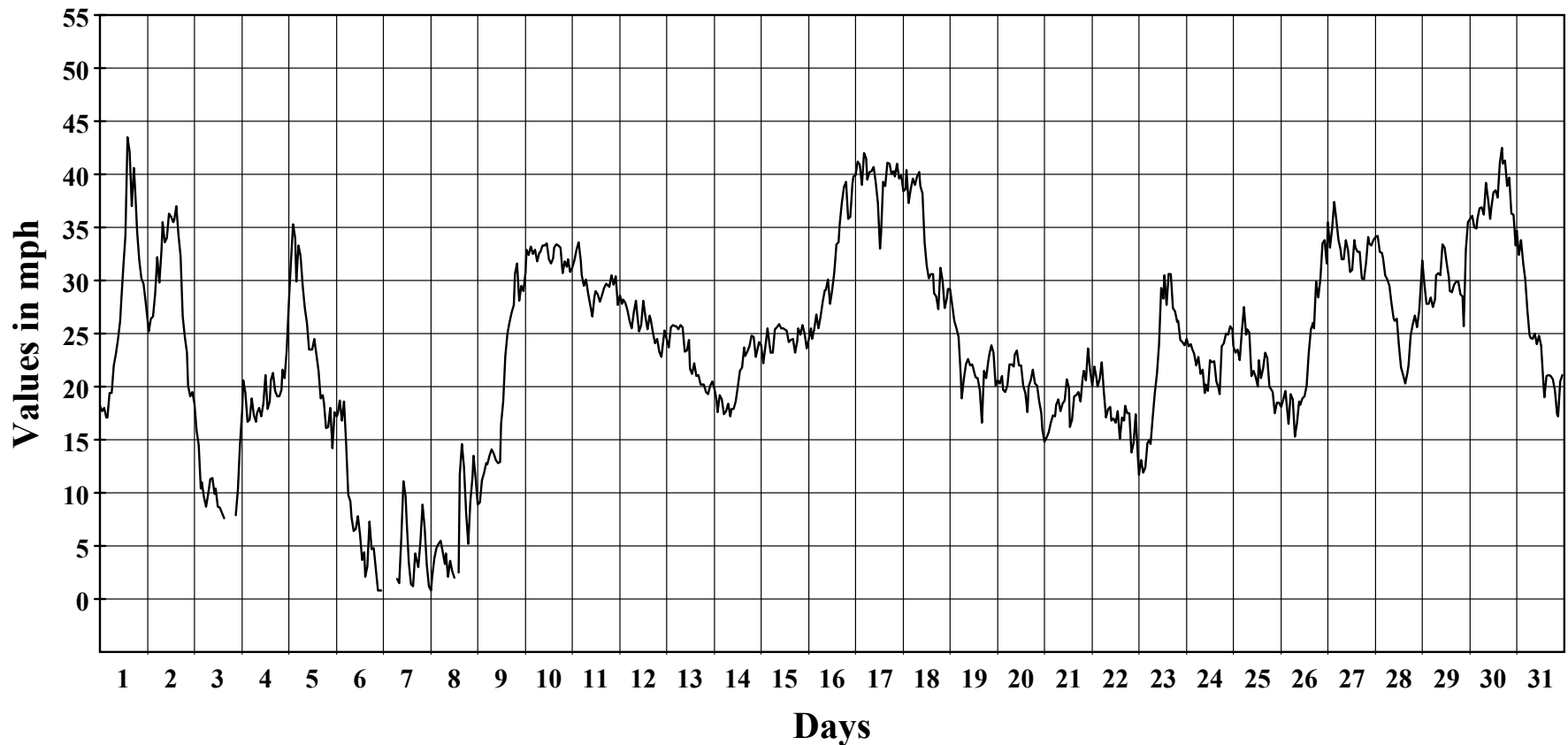
Average = 7.6 m/s (17 mph)



# Bethel Wind Resource

January 2005

Average Hourly Values

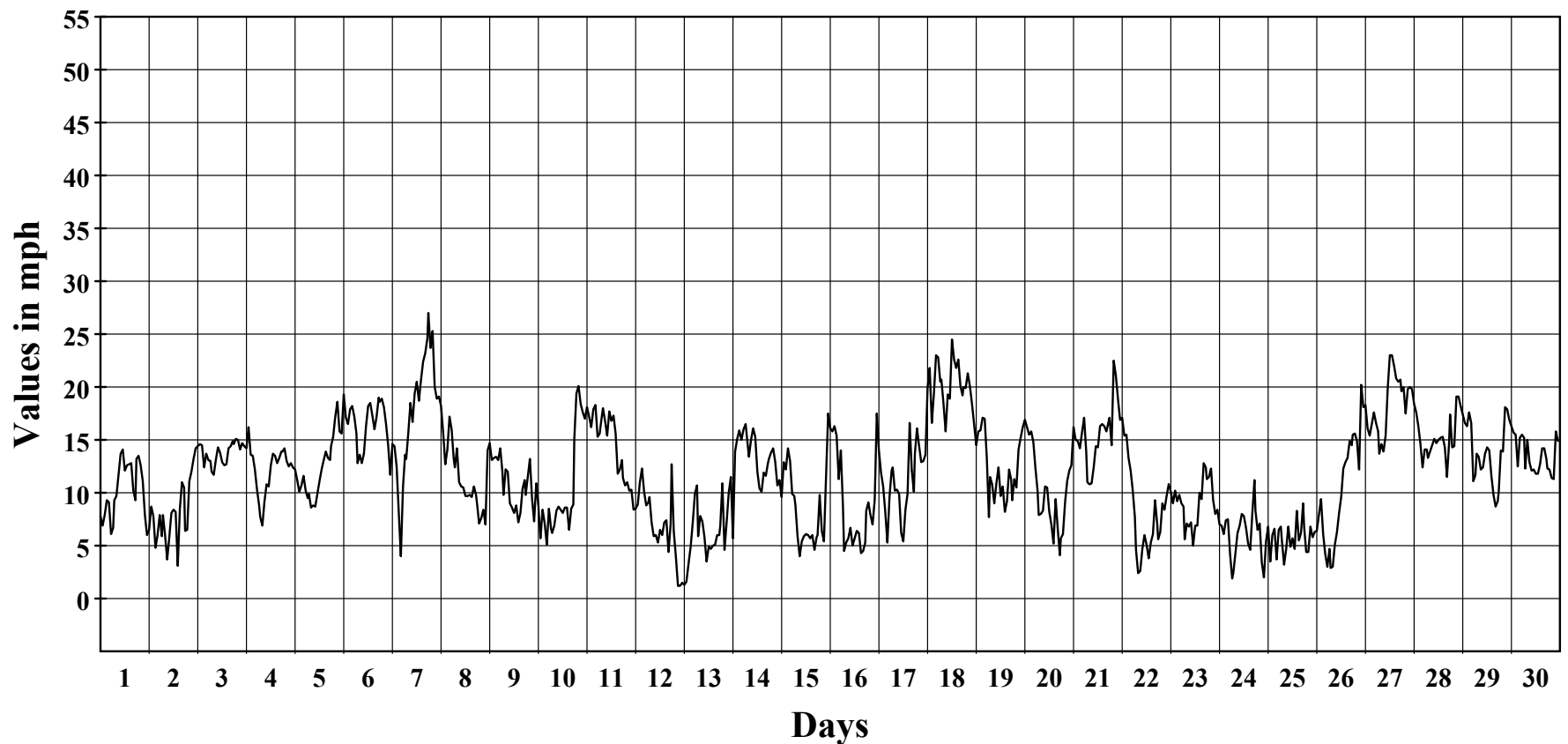


Average Value: 24.1

# Bethel Wind Resource

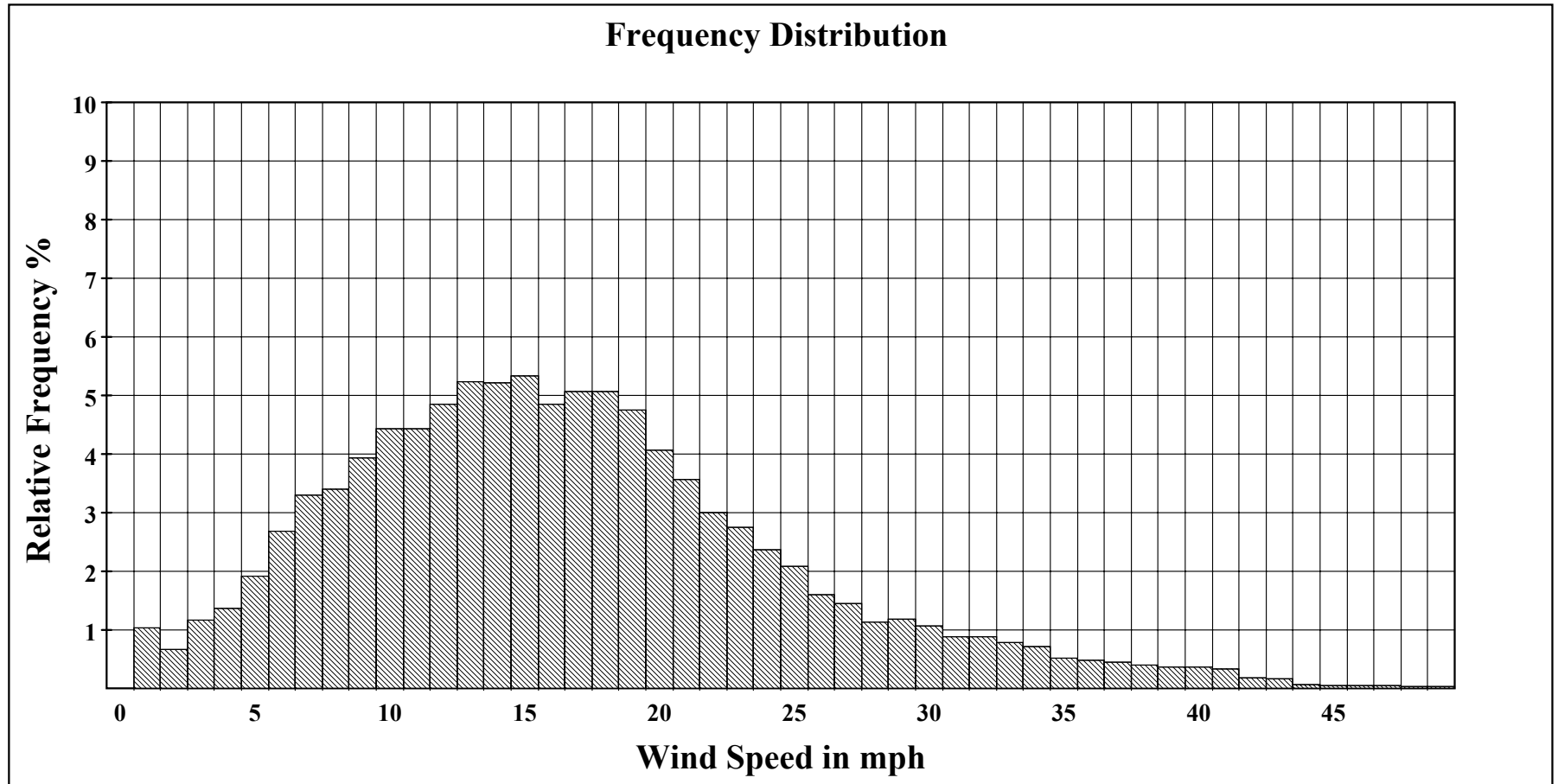
June 2005

Average Hourly Values

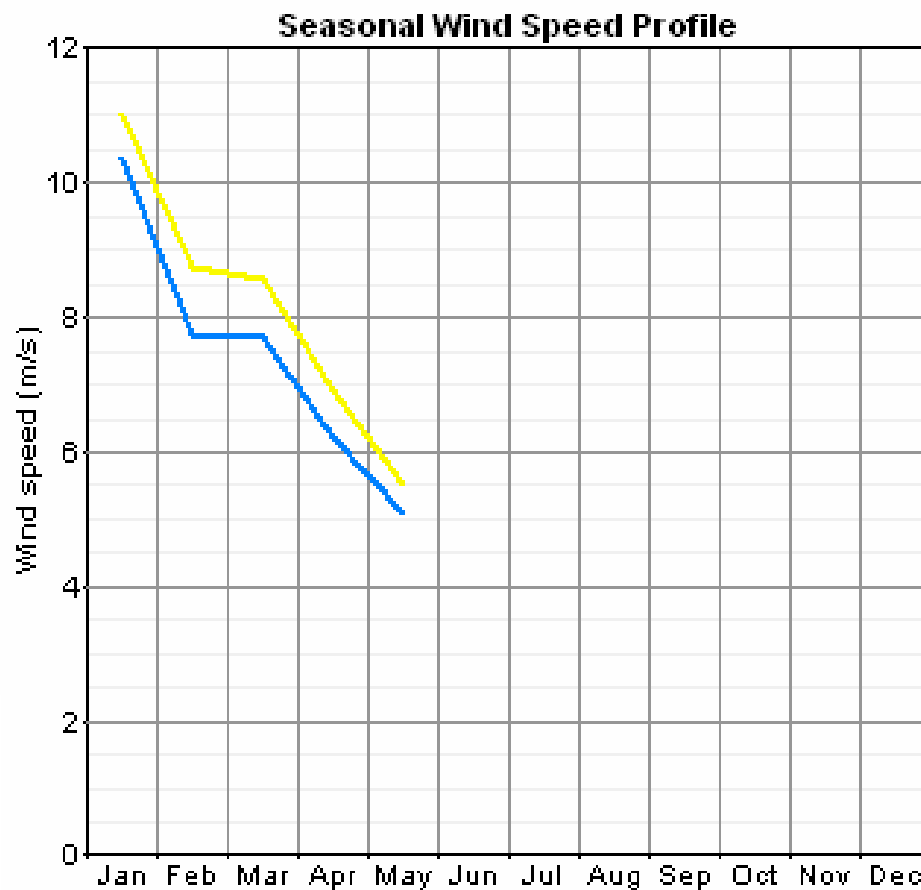
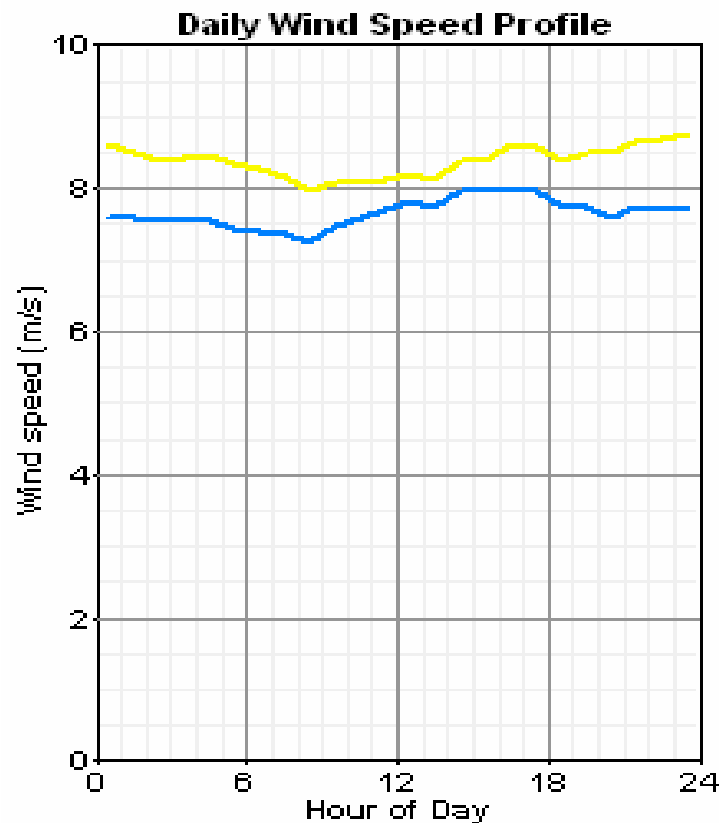


Average Value: 11.7

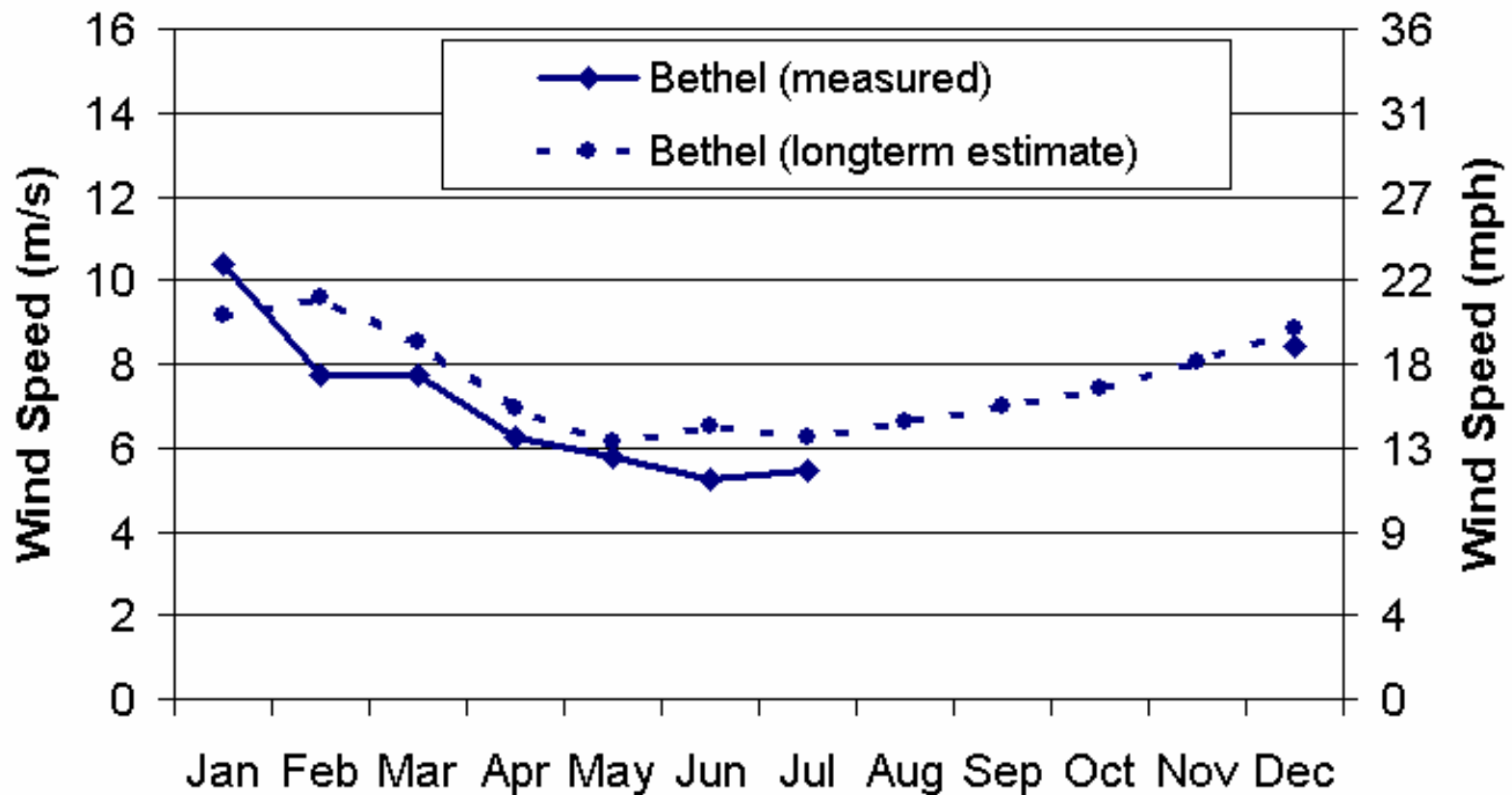
# Bethel Wind Resource



# Bethel Wind Resource



# Bethel Wind Resource





# Regional Wind Summary

| Village     | Average Wind Speed | Wind Power Class |
|-------------|--------------------|------------------|
| Bethel      | 7.6 m/s (17 mph)   | 6                |
| Chevak      | 6.5 m/s (14.4 mph) | 6                |
| Kongiganak  | 8.9 m/s (19.9 mph) | 7                |
| Nightmute   | 7.6 m/s (17 mph)   | 7                |
| Toksook Bay | 6.8 m/s (15.2 mph) | 6                |

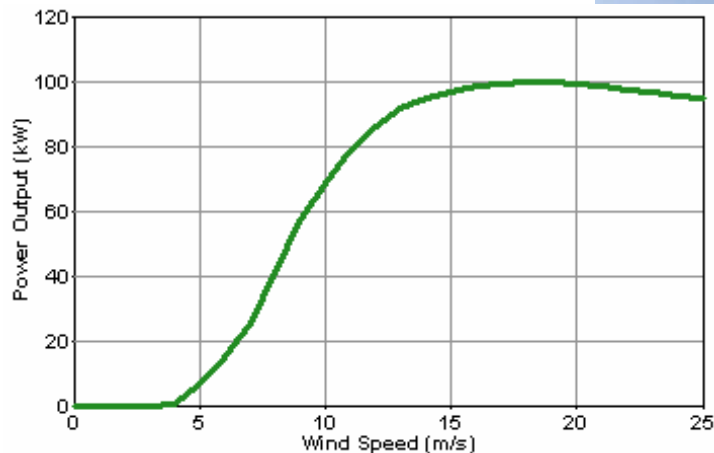
Note: Based on a partial year of data. All figures are at a height of 30 meters.

# Potential Wind Power Production

- Northern Power NW100 Wind Turbine



NW100 in Kotzebue



NW100 power curve



Photo: AVEC

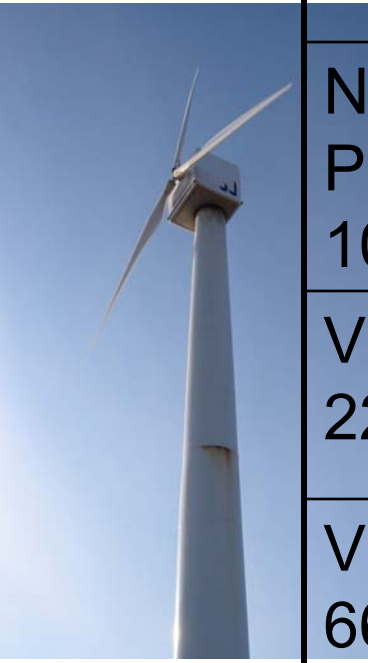
Toksook Bay wind turbine foundation

# Potential Wind Power Production

| Village     | Production from a NW100 Wind Turbine | Capacity Factor | Potential Fuel Savings* per Turbine |
|-------------|--------------------------------------|-----------------|-------------------------------------|
| Bethel      | 315 MWh/yr                           | 42%             | 24,000 gallons                      |
| Chevak      | 220 MWh/yr                           | 25%             | 17,000 gallons                      |
| Kongiganak  | 408 MWh/yr                           | 46%             | 31,000 gallons                      |
| Nightmute   | 295 MWh/yr                           | 33%             | 22,700 gallons                      |
| Toksook Bay | 255 MWh/yr                           | 29%             | 19,600 gallons                      |

\*Assumes diesel generator efficiency of 13 kWh/gallon. Based on a partial year of wind data.

# Potential Performance in Bethel



| Turbine Type          | Annual Production | Capacity Factor | Potential Fuel Savings |
|-----------------------|-------------------|-----------------|------------------------|
| Northern Power 100 kW | 315 MWh           | 42%             | 24,200 gal/yr          |
| Vestas V27 225kW      | 850 MWh           | 43%             | 65,400 gal/yr          |
| Vestas V47 660kW      | 2,940 MWh         | 49%             | 226,000 gal/yr         |

\*Assumes diesel generator efficiency of 13 kWh/gallon. Based on a partial year of wind data.