



# Advanced Wind Site Assessment Report

for Location: Central NY

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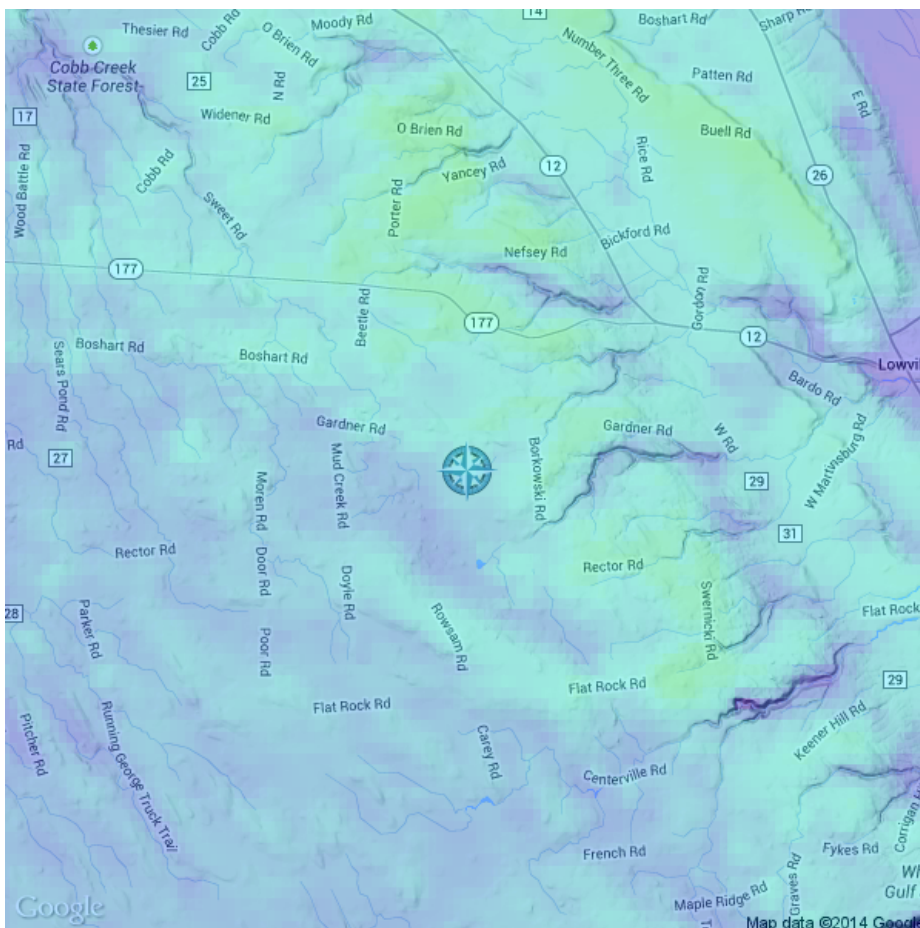
## Executive Summary

This Advanced Wind Site Assessment Report describes the wind resource and energy production potential for Location: Central NY. The estimates contained in this report are based on AWS Truepower's proprietary *MesoMap®* system, available exclusively through the Wind Site Assessment Dashboard.

The site is located at 43.7696, -75.5897, at an elevation of 536.3 m above mean sea level. The site roughness length is approximately 1.13 m. The expected long-term mean wind speed at 30m is 5.21 m/s, with a confidence range of 4.71 to 5.71 m/s. The expected mean wind power density is 141 W/m<sup>2</sup>, and the best-fit Weibull k is 2.35.

The energy production potential of the site was evaluated for 1 turbine model(s): GE 1.5se , GE 1.5se , GE 1.5se . For the first model, the gross energy production of a single turbine is estimated to be 1848.42 MWh, corresponding to a capacity factor of 14.1%. The annual variation in gross power production is estimated to be 0.07. Taking into account estimated losses for a typical wind project, the net production range is 1386.31 to 1571.16 MWh.

## Site Characteristics



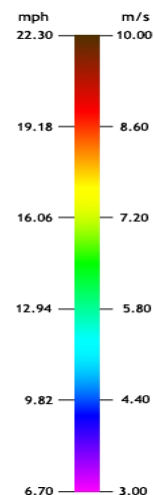
Mean annual wind speed map at 30 m hub height for Location: Central NY.

Latitude: 43.7696

Longitude: -75.5897

Roughness: 1.13 m

Elevation: 536.3 m (1759.6 ft)



## Wind Resource Characteristics

Mean annual Wind Speed:	5.21 m/s (11.65 mph)
Power Density:	141 W/m <sup>2</sup>
Weibull A:	5.89 m/s (13.17 mph)
Weibull k:	2.35
50 Year Max Gust:	32.4 m/s (72.48 mph)
Uncertainty Estimate:	+/- 0.5 m/s (1.12 mph)
Interannual Variation:	0.14

The wind resource estimates are based on AWS Truepower's proprietary atmospheric modeling systems. The effective horizontal resolution of the wind resource data is 200 m. The power density is derived from the site speed frequency distribution and air density. The Weibull function is an analytical curve that describes the wind speed frequency distribution, or number of observations in specific wind speed ranges. Its two adjustable parameters allow a good fit to a wide range of actual distributions. A is a scale parameter related to the mean wind speed while k is dependent on the width of the distribution. Values of k typically range from 1 to 3.5, the higher values indicate a narrower distribution. The inter-annual variation is the standard deviation of annual wind speed values.

## Energy Production

	GE 1.5se	GE 1.5se	GE 1.5se
Rated Capacity	1500 kW	1500 kW	1500 kW
Hub Height	30m	60m	90m
Gross Energy Production	1848.42 MWh	3567.17 MWh	4792.42 MWh
Loss Estimation Range	15% - 25%	15% - 25%	15% - 25%
Net Energy Production	1386.31 MWh - 1571.16 MWh	2675.38 MWh - 3032.1 MWh	3594.31 MWh - 4073.56 MWh

The gross energy production is estimated from the turbine power curve, adjusted for air density, and the site speed frequency distribution. The gross energy is reduced by the range of losses to attain the range of net energy. The losses shown are typical of those experienced by wind projects; actual losses may vary.

The power curves used for calculations of energy are either publicly available or have been provided by the manufacturer and are not available for distribution through AWS Truepower.



# Annual Data For Location: Central NY

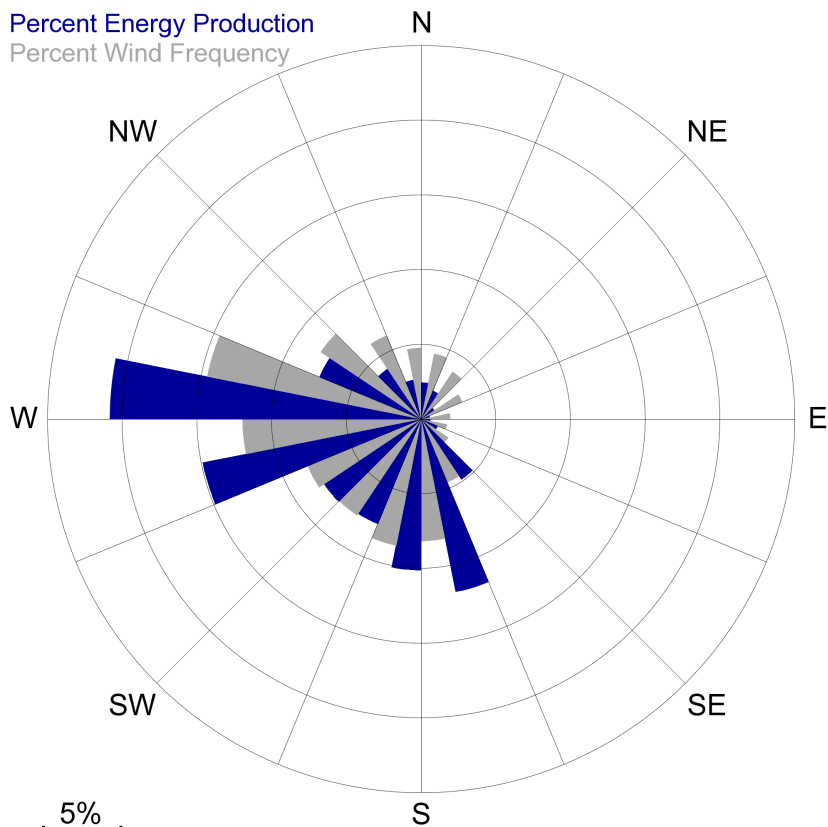


Figure 1: Annual wind frequency and energy content (percent) by direction sector at 30m height.

Table 1: Annual wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	4.5	2.4
NNE	3.8	2.0
NE	3.0	1.1
ENE	2.0	0.6
E	1.8	0.6
ESE	2.2	1.2
SE	4.6	4.9
SSE	8.2	11.8
S	8.6	10.1
SSW	7.8	7.6
SW	8.2	7.8
WSW	12.0	14.9
W	14.6	20.8
WNW	8.1	7.3
NW	6.0	4.0
NNW	4.8	2.7

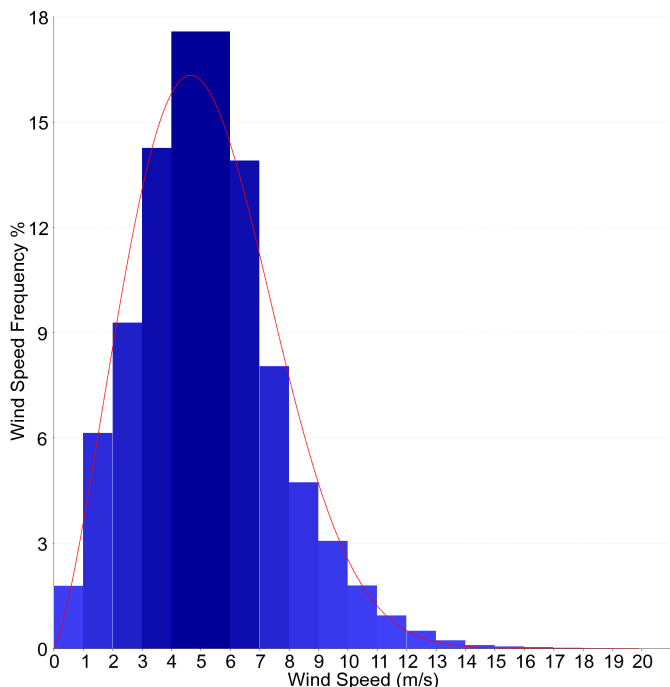


Figure 2: Annual speed frequency distribution at 30m hub height (bars) and Weibull fitted curve (line).

Table 2: Annual speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	1.8	7-8	8.0	14-15	0.1
1-2	6.1	8-9	4.7	15-16	0.1
2-3	9.3	9-10	3.1	16-17	0.0
3-4	14.3	10-11	1.8	17-18	0.0
4-5	17.6	11-12	0.9	18-19	0.0
5-6	17.6	12-13	0.5	19-20	0.0
6-7	13.9	13-14	0.2	>20	0.0

## Annual Data For Location: Central NY

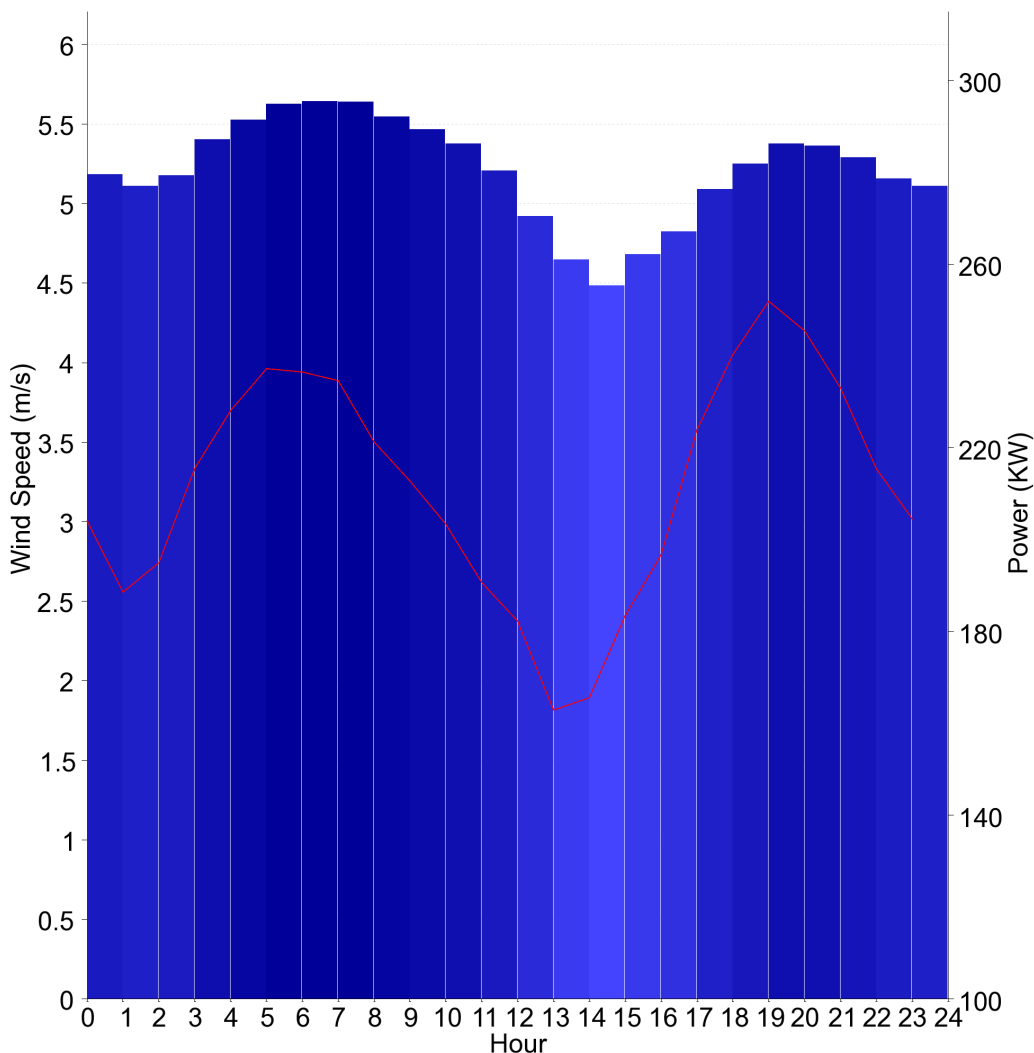


Figure 3: Mean annual wind speed (m/s) and power output (kW)(line) by time of day at 30m height. Times are based on Greenwich Mean Time (GMT).

Table 3: Mean annual wind speed (m/s) and power output (kW) by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	5.18	204.13	9	5.54	221.30	17	4.82	196.72
2	5.11	188.59	10	5.47	212.77	18	5.09	223.91
3	5.18	195.01	11	5.38	203.37	19	5.25	240.32
4	5.40	215.54	12	5.21	190.68	20	5.38	251.95
5	5.53	228.14	13	4.92	182.28	21	5.36	245.48
6	5.63	237.24	14	4.65	162.89	22	5.29	233.04
7	5.64	236.53	15	4.48	165.61	23	5.16	215.45
8	5.64	234.63	16	4.68	183.48	24	5.11	204.53

## Annual Data For Location: Central NY

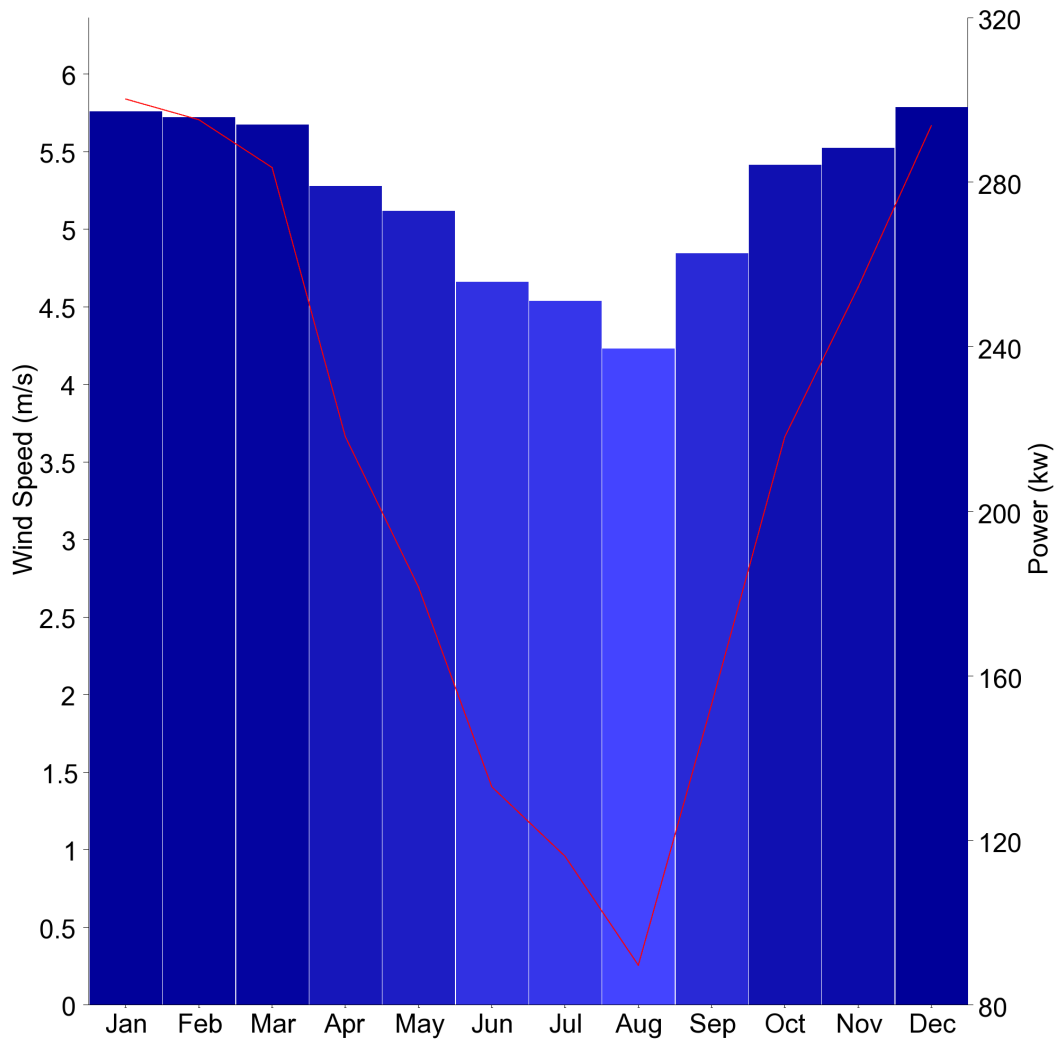


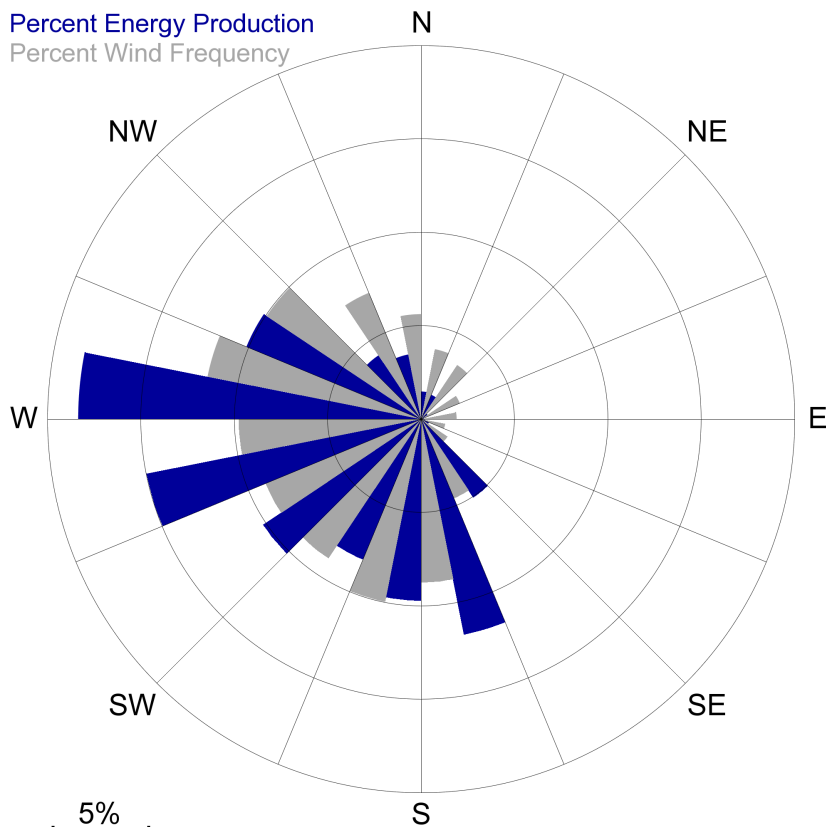
Figure 4: Mean wind speed (m/s) and power output (kW)(line) by month at 30m height.

Table 4: Mean wind speed (m/s) and power output (kW) by month at 30m height.

Month	Spd	Pwr	Month	Spd	Pwr	Month	Spd	Pwr
Jan	5.76	300.21	May	5.12	181.56	Sep	4.85	153.05
Feb	5.72	295.18	Jun	4.66	133.03	Oct	5.42	218.10
Mar	5.67	283.56	Jul	4.54	116.14	Nov	5.52	254.43
Apr	5.28	218.16	Aug	4.23	89.67	Dec	5.79	293.71

# January Data For Location: Central NY

Percent Energy Production  
Percent Wind Frequency



5%

Figure 5: January wind frequency and energy content (percent) by direction sector at 30m height.

Table 5: January wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	3.8	1.5
NNE	3.5	1.4
NE	2.2	0.4
ENE	1.9	0.2
E	1.3	0.2
ESE	1.7	0.4
SE	4.6	5.0
SSE	8.8	11.8
S	10.0	9.7
SSW	9.0	8.2
SW	9.0	10.2
WSW	9.8	15.0
W	11.6	18.3
WNW	9.9	10.1
NW	7.3	4.1
NNW	5.6	3.5

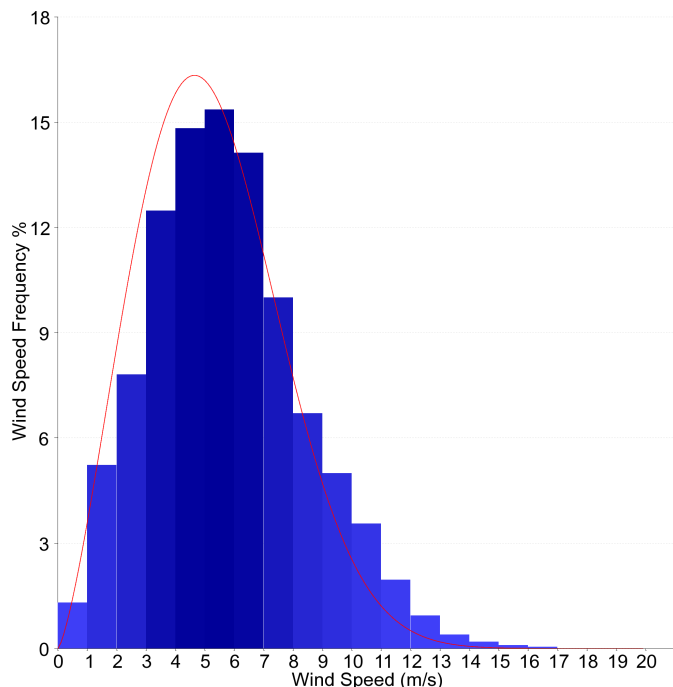


Figure 6: January speed frequency distribution at 30m hub height (bars).

Table 6: January speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	1.3	7-8	10.0	14-15	0.2
1-2	5.2	8-9	6.7	15-16	0.1
2-3	7.8	9-10	5.0	16-17	0.0
3-4	12.5	10-11	3.6	17-18	0.0
4-5	14.8	11-12	2.0	18-19	0.0
5-6	15.4	12-13	0.9	19-20	0.0
6-7	14.1	13-14	0.4	>20	0.0

## January Data For Location: Central NY

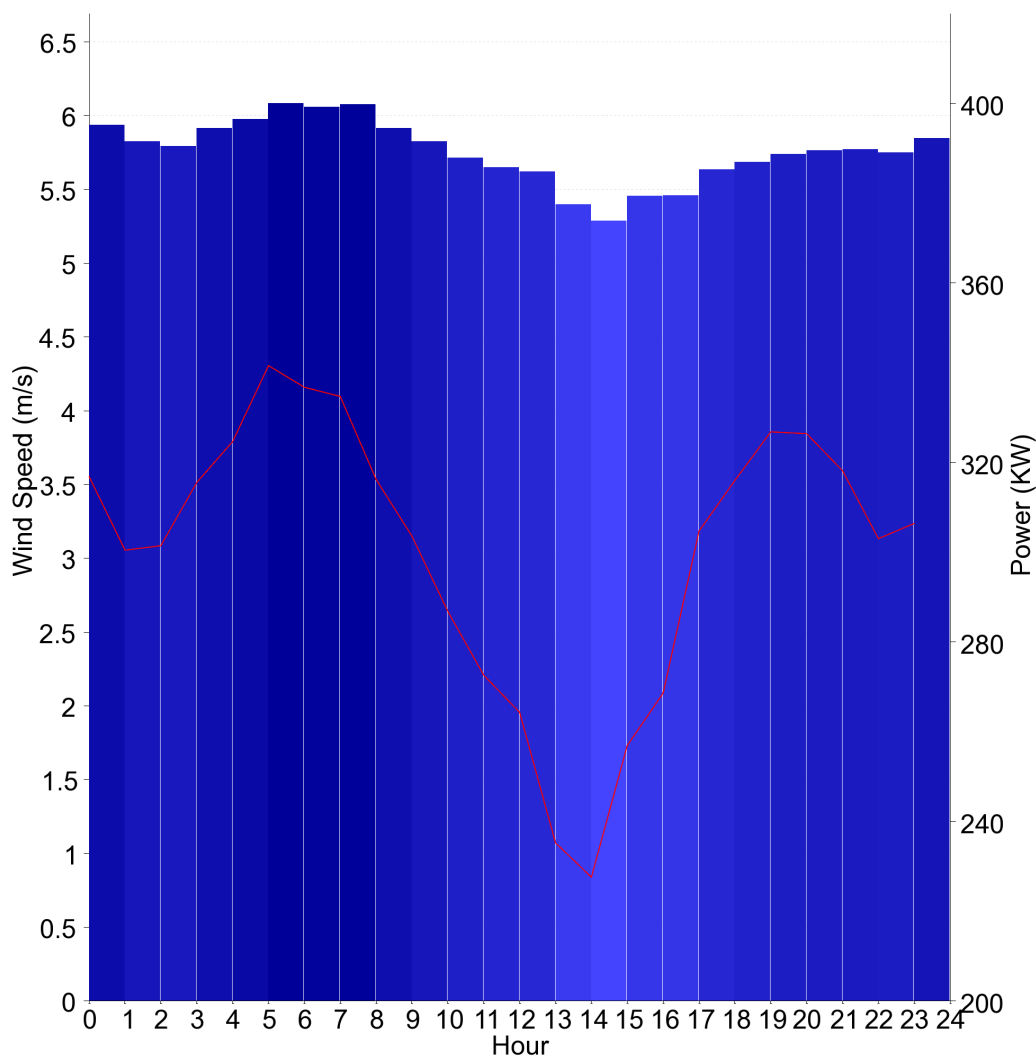


Figure 7: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for January by time of day at 30m height. Times are based on GMT.

Table 7: Mean wind speed (m/s) and power output (kWh) for January by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	5.94	316.82	9	5.92	316.20	17	5.46	268.58
2	5.82	300.45	10	5.82	303.55	18	5.64	304.68
3	5.79	301.45	11	5.72	286.79	19	5.69	315.98
4	5.92	315.52	12	5.65	272.58	20	5.74	326.80
5	5.98	324.64	13	5.62	264.31	21	5.77	326.41
6	6.08	341.56	14	5.40	235.25	22	5.77	318.16
7	6.06	336.74	15	5.29	227.58	23	5.75	303.02
8	6.08	334.70	16	5.46	256.92	24	5.85	306.40

# February Data For Location: Central NY

Percent Energy Production  
Percent Wind Frequency

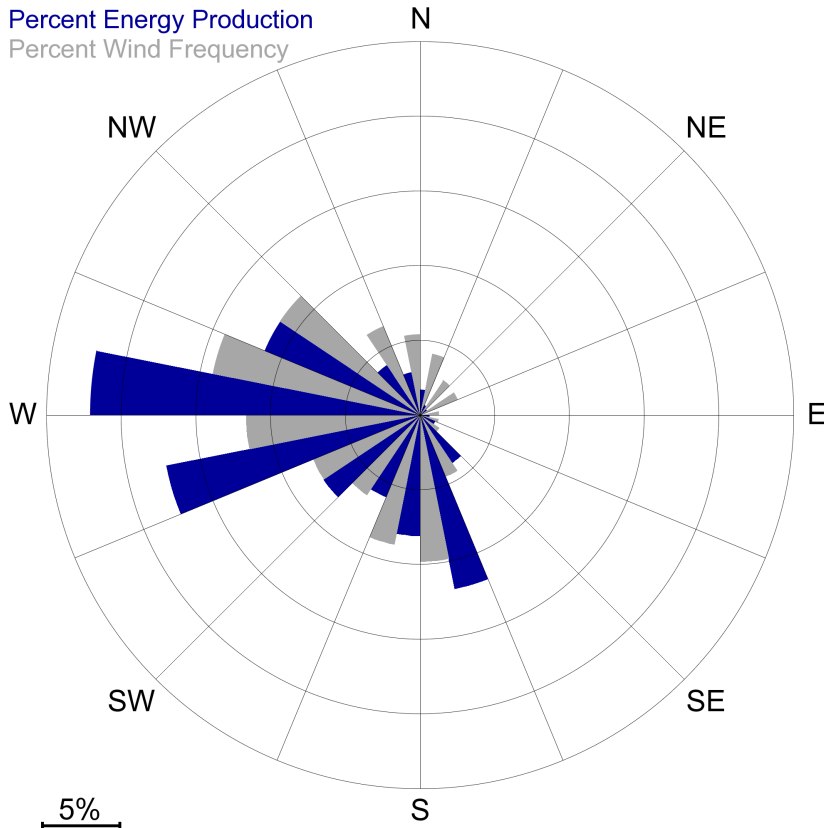


Figure 8: February wind frequency and energy content (percent) by direction sector at 30m height.

Table 8: February wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	4.2	1.7
NNE	2.8	0.7
NE	2.7	0.5
ENE	1.3	0.1
E	1.3	0.6
ESE	1.5	1.1
SE	4.5	3.9
SSE	9.8	11.9
S	8.9	8.1
SSW	6.5	6.0
SW	7.8	7.8
WSW	11.7	17.4
W	14.1	22.1
WNW	11.3	11.2
NW	6.4	4.0
NNW	5.4	2.9

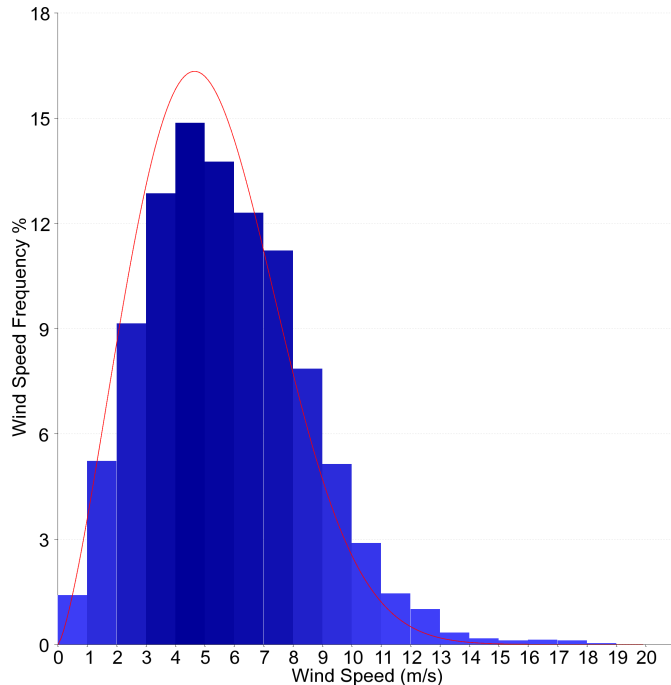


Figure 9: February speed frequency distribution at 30m hub height (bars).

Table 9: February speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	1.4	7-8	11.2	14-15	0.2
1-2	5.2	8-9	7.9	15-16	0.1
2-3	9.1	9-10	5.1	16-17	0.1
3-4	12.9	10-11	2.9	17-18	0.1
4-5	14.9	11-12	1.5	18-19	0.0
5-6	13.8	12-13	1.0	19-20	0.0
6-7	12.3	13-14	0.3	>20	0.0

## February Data For Location: Central NY

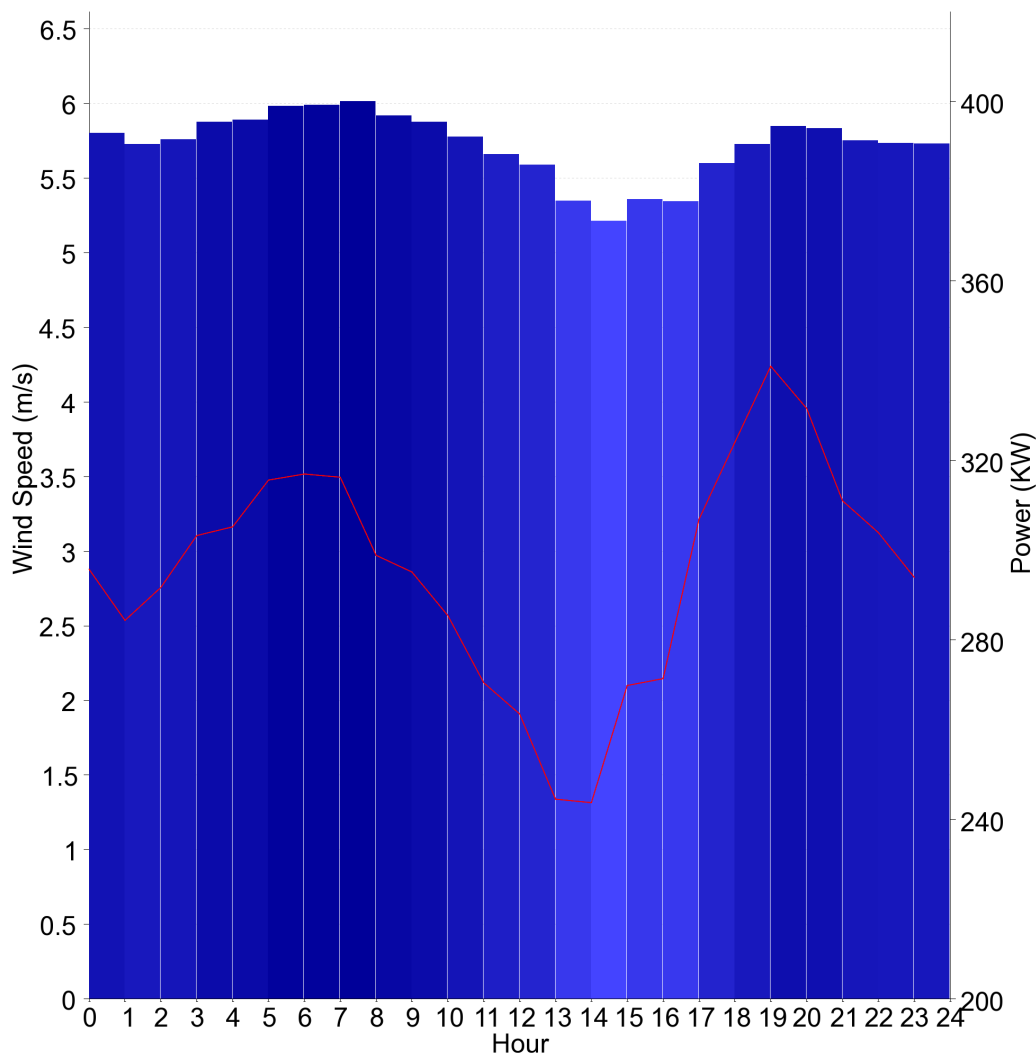


Figure 10: Mean wind speed (m/s) and power density (W/m<sup>2</sup>)(line) for February by time of day at 30m height. Times are based on GMT.

Table 10: Mean wind speed (m/s) and power output (kWh) for February by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	5.80	295.73	9	5.92	298.85	17	5.35	271.39
2	5.73	284.36	10	5.88	295.12	18	5.60	306.87
3	5.76	291.71	11	5.78	285.41	19	5.73	324.03
4	5.88	303.26	12	5.66	270.45	20	5.85	341.00
5	5.89	305.20	13	5.59	263.51	21	5.83	331.59
6	5.98	315.62	14	5.35	244.53	22	5.75	311.01
7	5.99	316.97	15	5.21	243.74	23	5.73	303.92
8	6.01	316.26	16	5.36	269.85	24	5.73	293.97

# March Data For Location: Central NY

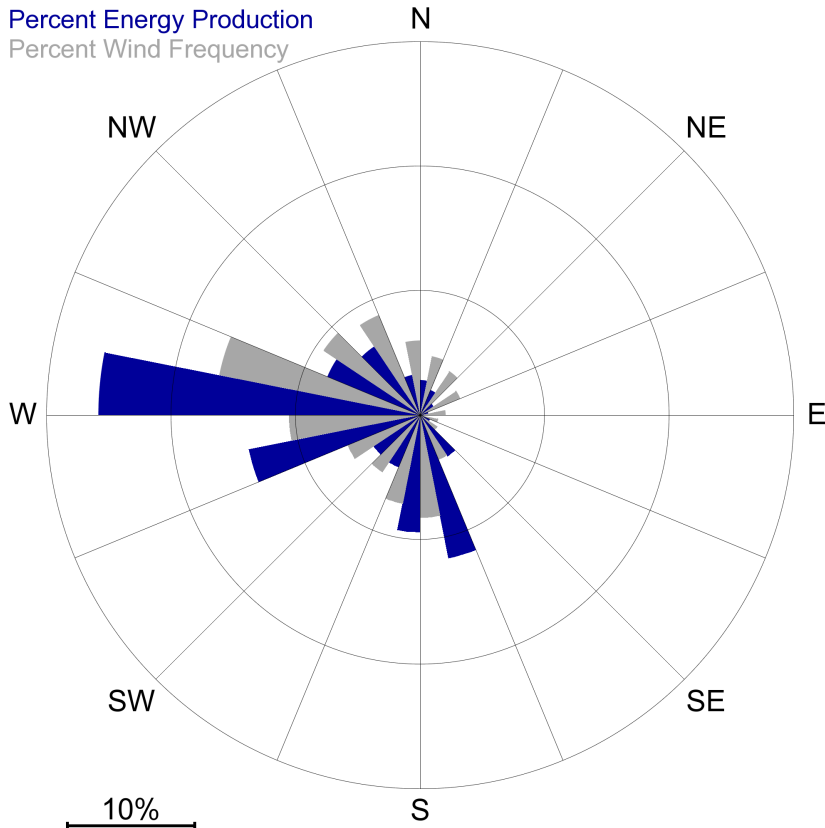


Figure 11: March wind frequency and energy content (percent) by direction sector at 30m height.

Table 11: March wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	4.8	2.8
NNE	4.2	2.2
NE	3.5	1.3
ENE	2.0	0.7
E	1.5	0.2
ESE	1.7	0.8
SE	3.9	4.0
SSE	8.3	11.7
S	7.3	9.4
SSW	5.5	4.6
SW	6.3	4.5
WSW	10.6	14.1
W	16.4	25.8
WNW	9.3	8.0
NW	8.7	6.6
NNW	6.0	3.3

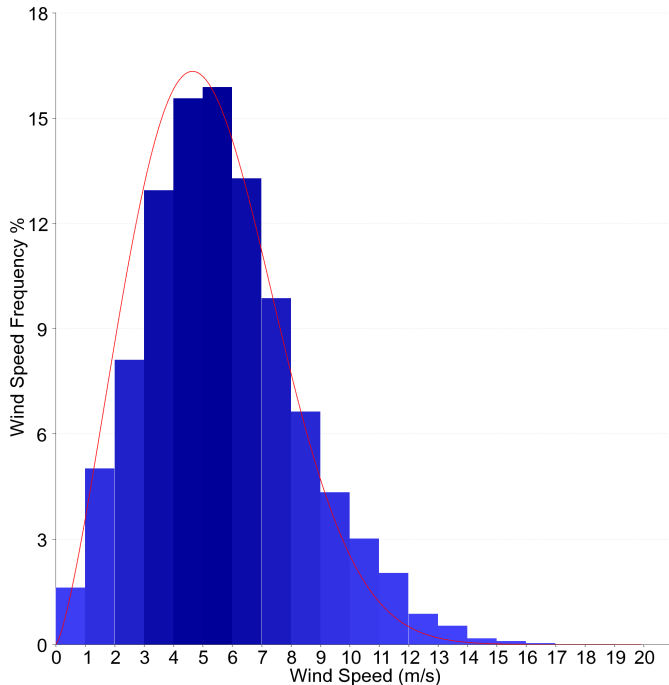


Figure 12: March speed frequency distribution at 30m hub height (bars).

Table 12: March speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	1.6	7-8	9.9	14-15	0.2
1-2	5.0	8-9	6.6	15-16	0.1
2-3	8.1	9-10	4.3	16-17	0.0
3-4	12.9	10-11	3.0	17-18	0.0
4-5	15.6	11-12	2.0	18-19	0.0
5-6	15.9	12-13	0.9	19-20	0.0
6-7	13.3	13-14	0.5	>20	0.0



## March Data For Location: Central NY

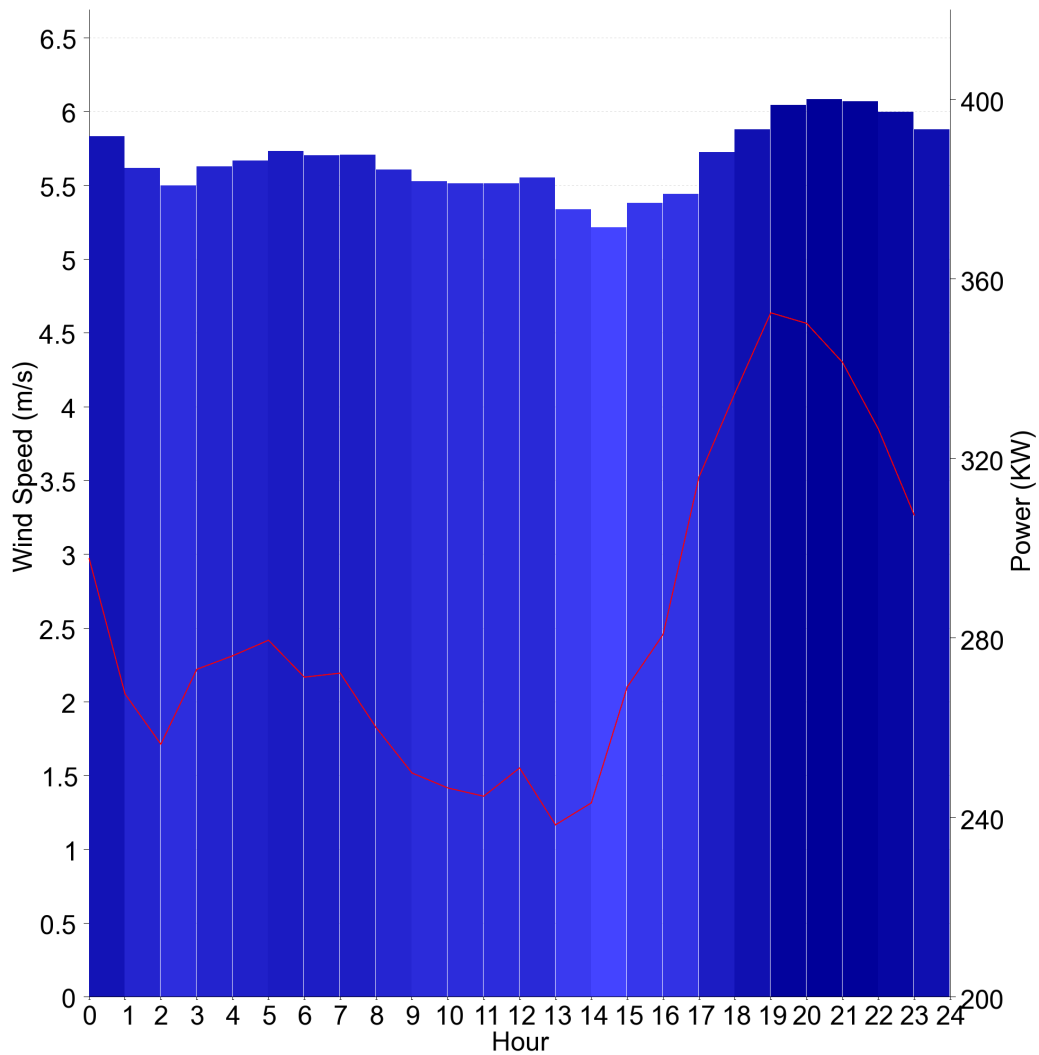


Figure 13: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for March by time of day at 30m height. Times are based on GMT.

Table 13: Mean wind speed (m/s) and power output (kWh) for March by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	5.83	297.72	9	5.61	260.04	17	5.44	280.78
2	5.62	267.53	10	5.53	249.91	18	5.72	315.83
3	5.50	256.32	11	5.51	246.57	19	5.88	334.52
4	5.63	273.01	12	5.51	244.74	20	6.04	352.45
5	5.67	276.02	13	5.55	251.03	21	6.08	350.10
6	5.73	279.49	14	5.34	238.36	22	6.07	341.42
7	5.71	271.27	15	5.21	243.27	23	6.00	326.55
8	5.71	272.16	16	5.38	269.09	24	5.88	307.36

# April Data For Location: Central NY

Percent Energy Production  
Percent Wind Frequency

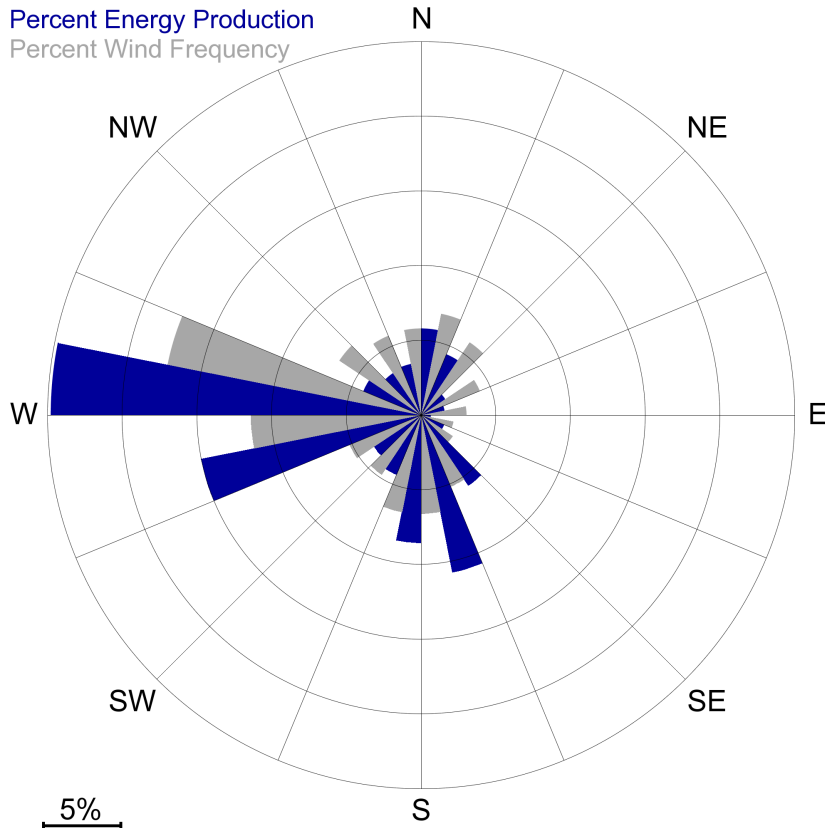


Figure 14: April wind frequency and energy content (percent) by direction sector at 30m height.

Table 14: April wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	6.9	5.8
NNE	5.8	4.4
NE	4.2	1.9
ENE	3.0	1.6
E	2.2	0.6
ESE	2.5	1.7
SE	5.2	5.7
SSE	6.6	10.8
S	6.7	8.6
SSW	4.8	4.3
SW	5.2	3.8
WSW	11.4	15.0
W	17.3	24.8
WNW	6.6	4.2
NW	5.7	3.4
NNW	5.8	3.5

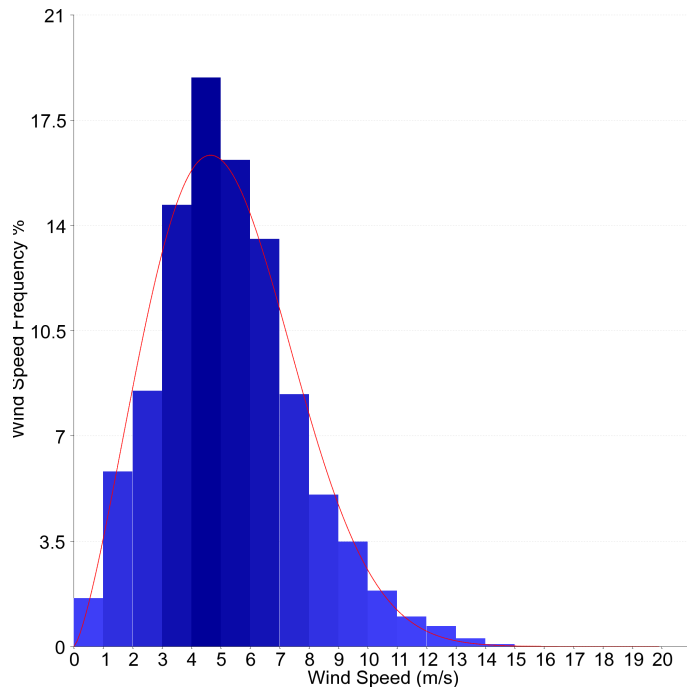


Figure 15: April speed frequency distribution at 30m hub height (bars).

Table 15: April speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	1.6	7-8	8.4	14-15	0.1
1-2	5.8	8-9	5.0	15-16	0.0
2-3	8.5	9-10	3.5	16-17	0.0
3-4	14.7	10-11	1.9	17-18	0.0
4-5	18.9	11-12	1.0	18-19	0.0
5-6	16.2	12-13	0.7	19-20	0.0
6-7	13.5	13-14	0.3	>20	0.0

## April Data For Location: Central NY

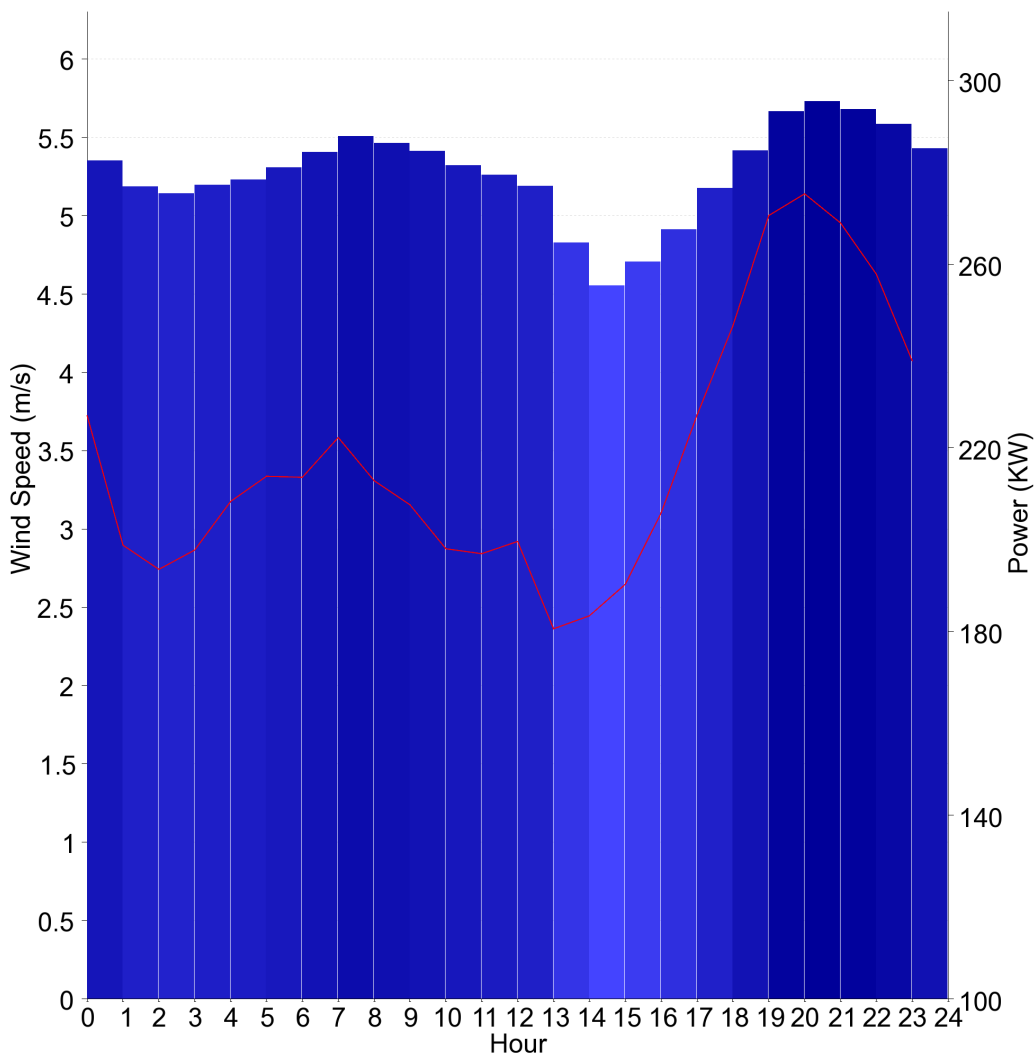


Figure 16: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for April by time of day at 30m height. Times are based on GMT.

Table 16: Mean wind speed (m/s) and power output (kWh) for April by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	5.35	227.04	9	5.46	212.87	17	4.91	205.82
2	5.18	198.81	10	5.41	207.60	18	5.18	227.10
3	5.14	193.55	11	5.32	198.04	19	5.41	246.57
4	5.20	197.77	12	5.26	196.96	20	5.67	270.59
5	5.23	208.34	13	5.19	199.63	21	5.73	275.32
6	5.31	213.82	14	4.83	180.61	22	5.68	268.99
7	5.40	213.60	15	4.55	183.44	23	5.58	257.82
8	5.51	222.26	16	4.71	190.29	24	5.43	238.94

# May Data For Location: Central NY

Percent Energy Production  
Percent Wind Frequency

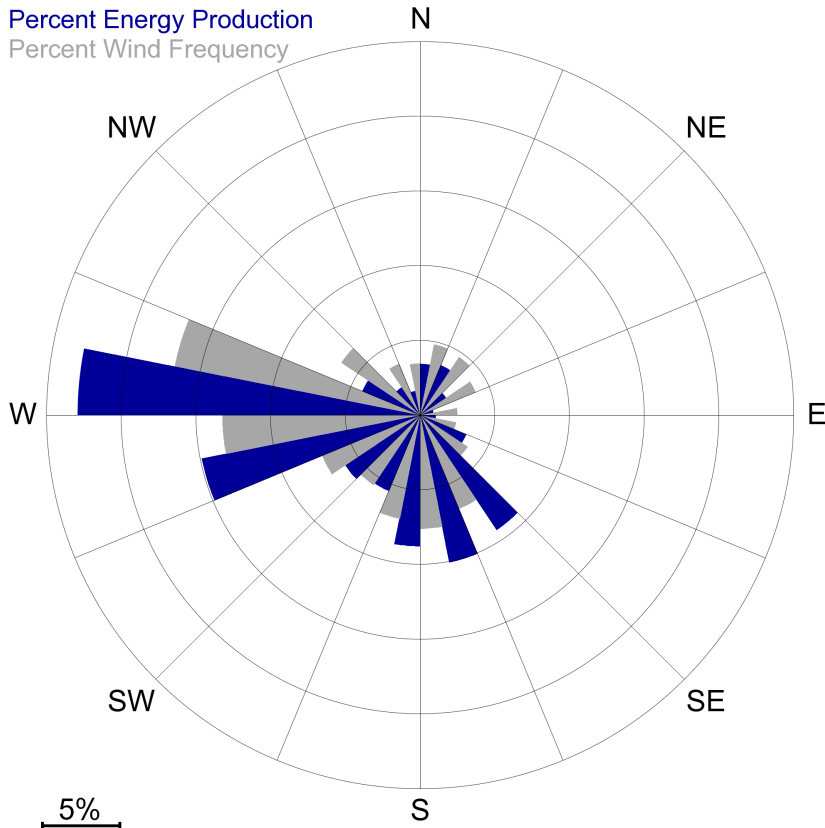


Figure 17: May wind frequency and energy content (percent) by direction sector at 30m height.

Table 17: May wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	4.8	3.4
NNE	4.7	3.6
NE	4.0	2.1
ENE	2.5	0.9
E	2.5	1.1
ESE	3.8	3.4
SE	6.8	9.3
SSE	7.6	10.1
S	7.1	8.8
SSW	5.6	5.5
SW	7.1	6.1
WSW	13.3	14.9
W	16.7	22.9
WNW	6.3	4.2
NW	3.7	2.2
NNW	3.4	1.6

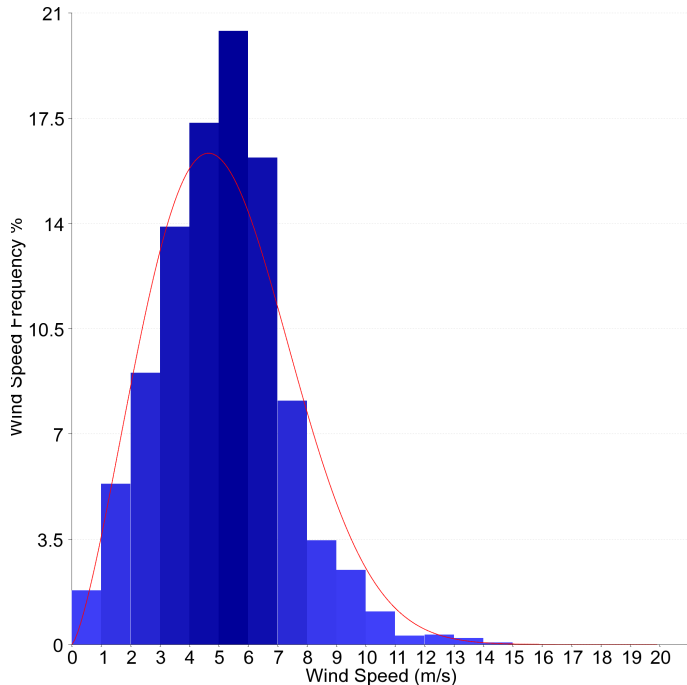


Figure 18: May speed frequency distribution at 30m hub height (bars).

Table 18: May speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	1.8	7-8	8.1	14-15	0.1
1-2	5.3	8-9	3.5	15-16	0.0
2-3	9.0	9-10	2.5	16-17	0.0
3-4	13.9	10-11	1.1	17-18	0.0
4-5	17.3	11-12	0.3	18-19	0.0
5-6	20.4	12-13	0.3	19-20	0.0
6-7	16.2	13-14	0.2	>20	0.0

## May Data For Location: Central NY

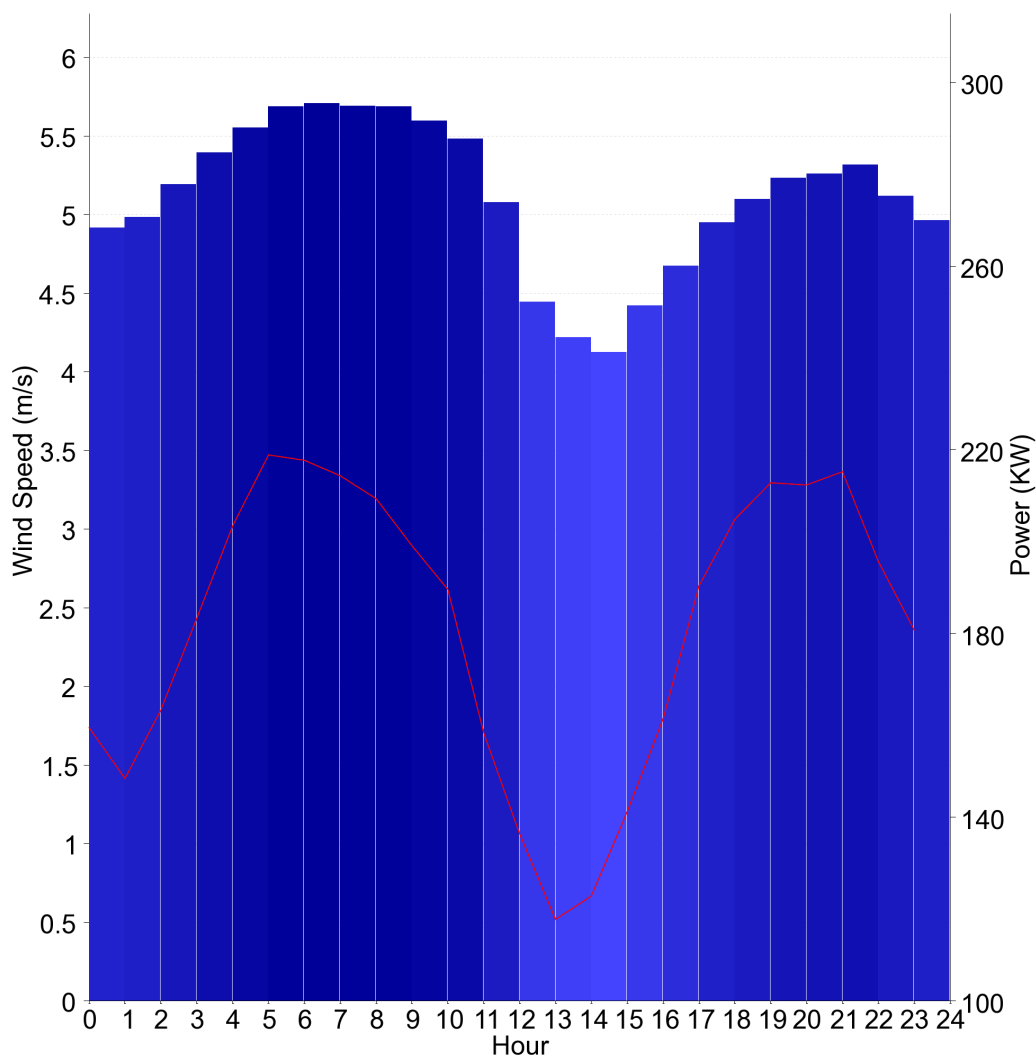


Figure 19: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for May by time of day at 30m height. Times are based on GMT.

Table 19: Mean wind speed (m/s) and power output (kWh) for May by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	4.92	159.53	9	5.69	209.37	17	4.68	161.42
2	4.98	148.45	10	5.60	199.12	18	4.95	190.37
3	5.19	163.40	11	5.48	189.59	19	5.10	204.89
4	5.40	183.33	12	5.08	158.35	20	5.23	212.84
5	5.55	203.45	13	4.44	136.39	21	5.26	212.36
6	5.69	218.90	14	4.22	117.77	22	5.32	215.24
7	5.71	217.73	15	4.13	122.88	23	5.12	195.69
8	5.69	214.36	16	4.42	141.21	24	4.96	180.80

# June Data For Location: Central NY

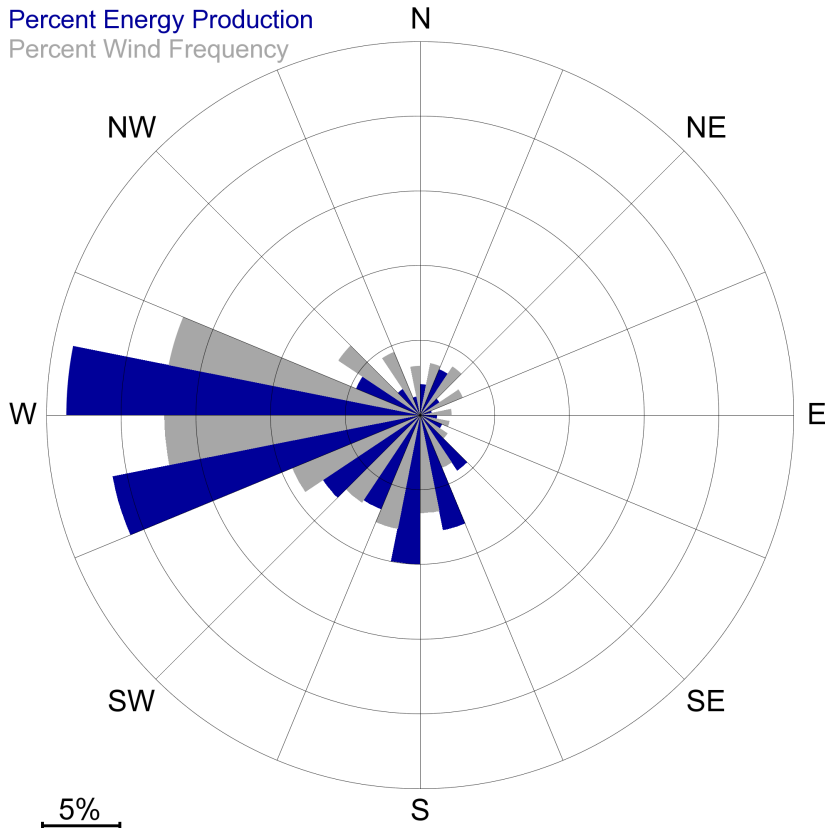


Figure 20: June wind frequency and energy content (percent) by direction sector at 30m height.

Table 20: June wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	3.5	2.1
NNE	3.9	3.3
NE	3.1	1.5
ENE	2.1	0.8
E	2.0	1.1
ESE	2.2	1.6
SE	3.8	4.5
SSE	6.6	7.9
S	7.8	10.0
SSW	7.0	6.8
SW	9.3	7.8
WSW	17.1	21.0
W	17.1	23.7
WNW	6.6	4.6
NW	4.6	2.1
NNW	3.3	1.2

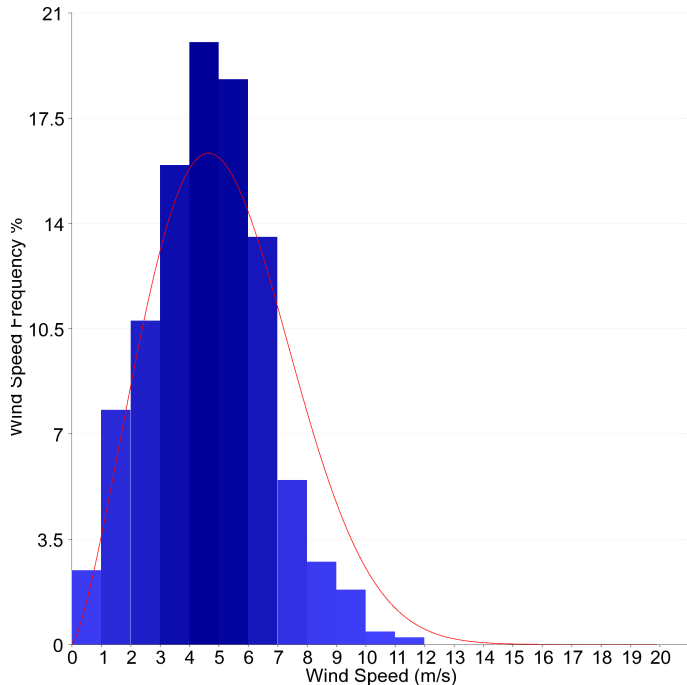


Figure 21: June speed frequency distribution at 30m hub height (bars).

Table 21: June speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	2.5	7-8	5.5	14-15	0.0
1-2	7.8	8-9	2.7	15-16	0.0
2-3	10.8	9-10	1.8	16-17	0.0
3-4	15.9	10-11	0.4	17-18	0.0
4-5	20.0	11-12	0.2	18-19	0.0
5-6	18.8	12-13	0.0	19-20	0.0
6-7	13.5	13-14	0.0	>20	0.0

## June Data For Location: Central NY

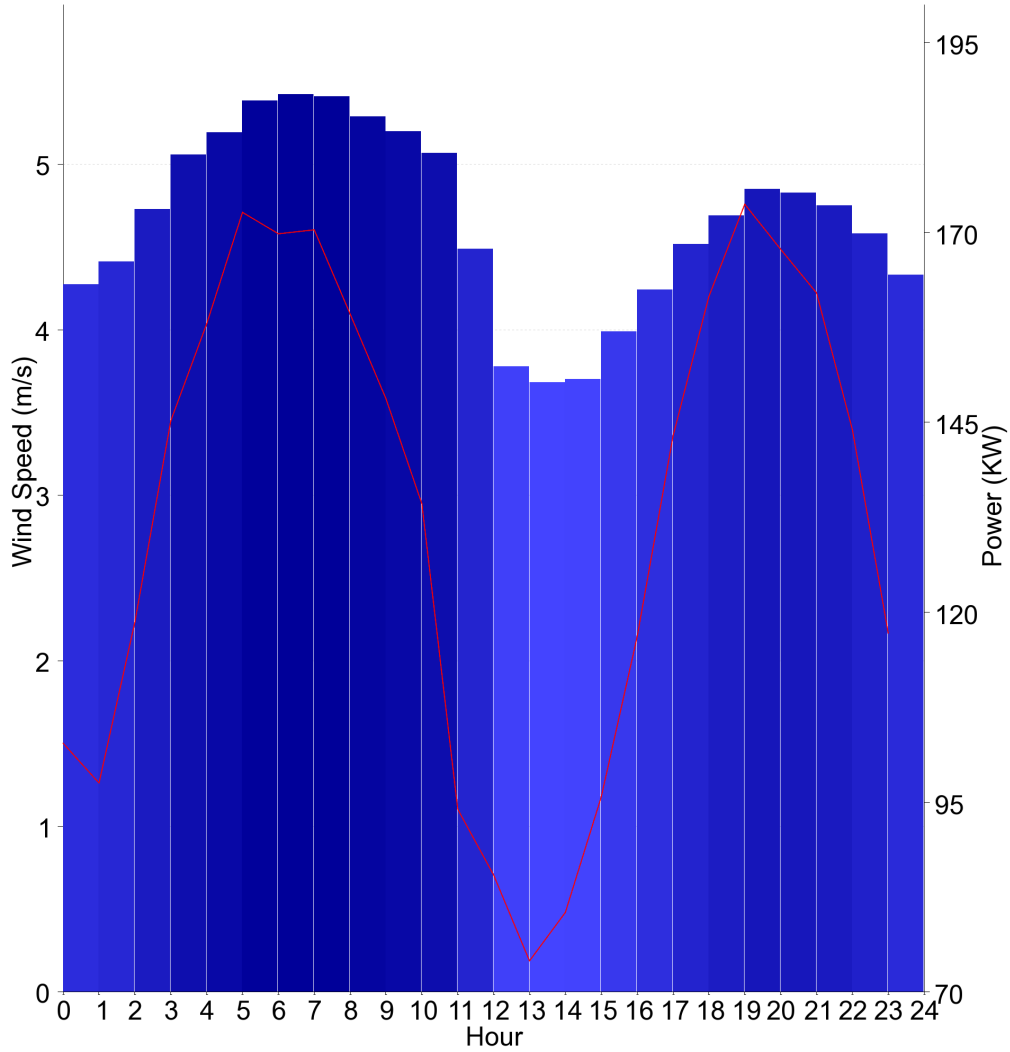


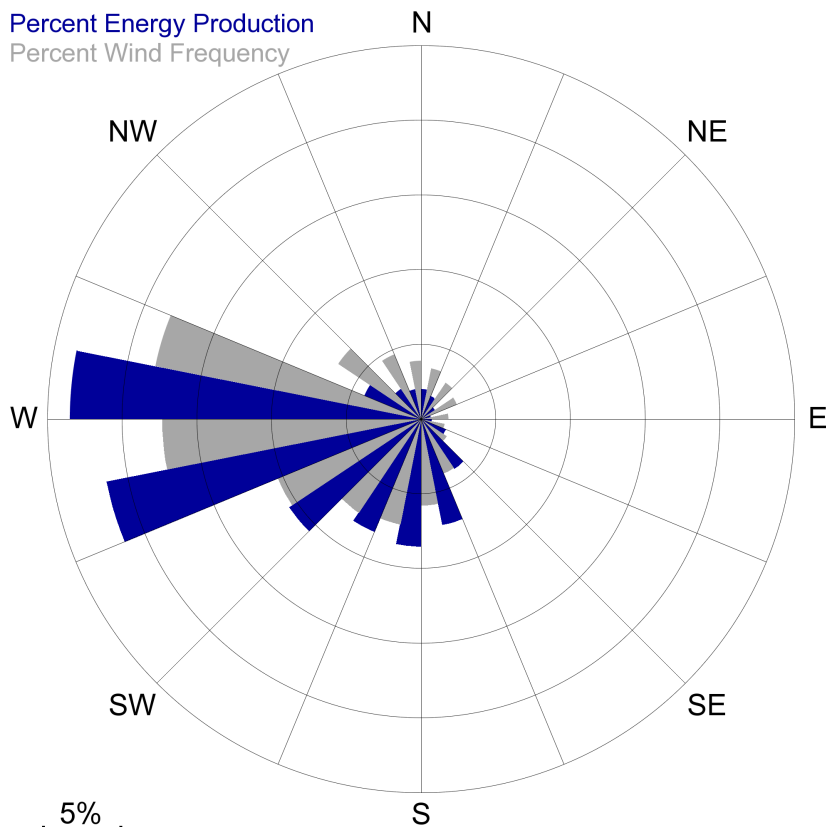
Figure 22: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for June by time of day at 30m height. Times are based on GMT.

Table 22: Mean wind speed (m/s) and power output (kWh) for June by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	4.28	102.76	9	5.29	159.27	17	4.24	116.75
2	4.41	97.51	10	5.20	148.10	18	4.52	143.18
3	4.73	118.72	11	5.07	134.27	19	4.69	161.57
4	5.06	145.20	12	4.49	94.06	20	4.85	173.72
5	5.19	157.95	13	3.78	85.40	21	4.83	167.79
6	5.38	172.65	14	3.68	74.09	22	4.75	162.05
7	5.42	169.83	15	3.70	80.48	23	4.58	144.04
8	5.41	170.35	16	3.99	95.69	24	4.33	117.25

## July Data For Location: Central NY

Percent Energy Production  
Percent Wind Frequency



5%

Figure 23: July wind frequency and energy content (percent) by direction sector at 30m height.

Table 23: July wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	3.4	2.0
NNE	2.9	1.6
NE	2.6	1.1
ENE	1.8	0.6
E	1.6	0.7
ESE	2.1	1.8
SE	4.0	4.0
SSE	5.8	7.2
S	7.2	8.5
SSW	7.5	8.2
SW	10.4	10.6
WSW	17.3	21.5
W	18.1	23.5
WNW	6.6	4.1
NW	4.7	2.4
NNW	3.9	2.0

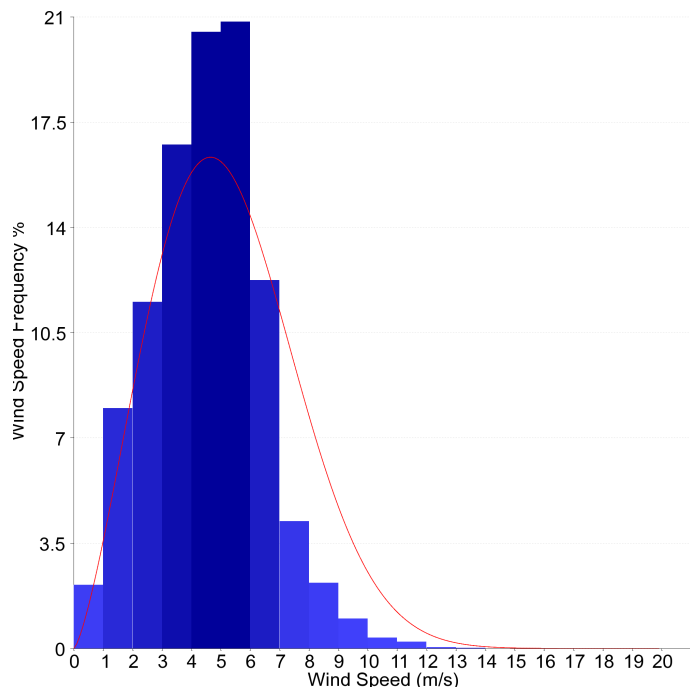


Figure 24: July speed frequency distribution at 30m hub height (bars).

Table 24: July speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	2.1	7-8	4.2	14-15	0.0
1-2	8.0	8-9	2.2	15-16	0.0
2-3	11.5	9-10	1.0	16-17	0.0
3-4	16.7	10-11	0.4	17-18	0.0
4-5	20.5	11-12	0.2	18-19	0.0
5-6	20.8	12-13	0.0	19-20	0.0
6-7	12.2	13-14	0.0	>20	0.0



## July Data For Location: Central NY

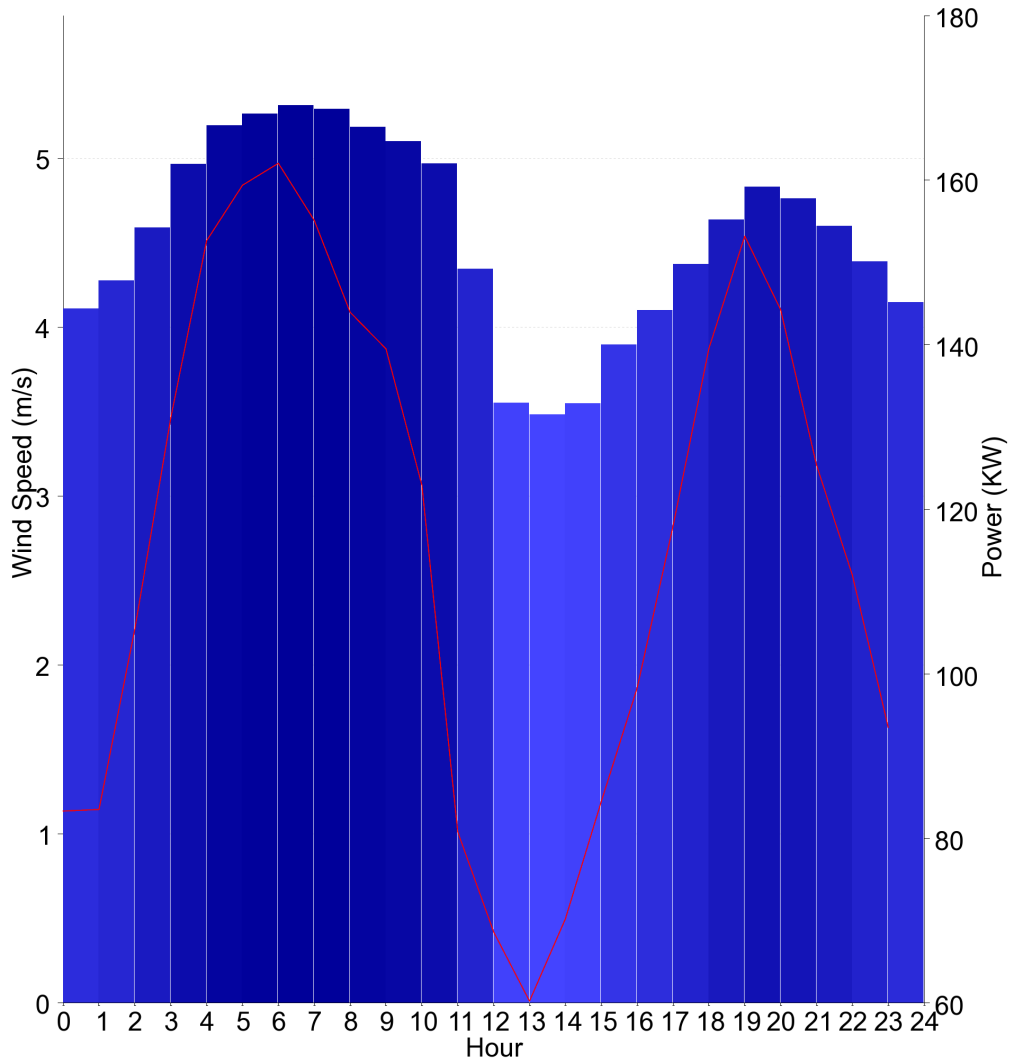


Figure 25: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for July by time of day at 30m height. Times are based on GMT.

Table 25: Mean wind speed (m/s) and power output (kWh) for July by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	4.11	83.33	9	5.18	143.95	17	4.10	98.27
2	4.28	83.52	10	5.10	139.50	18	4.37	117.94
3	4.59	105.50	11	4.97	122.93	19	4.64	139.53
4	4.97	131.10	12	4.35	80.79	20	4.83	153.20
5	5.19	152.64	13	3.55	68.64	21	4.76	144.26
6	5.26	159.39	14	3.48	60.23	22	4.60	125.38
7	5.31	162.05	15	3.55	70.22	23	4.39	111.99
8	5.29	155.12	16	3.90	84.47	24	4.15	93.51

# August Data For Location: Central NY

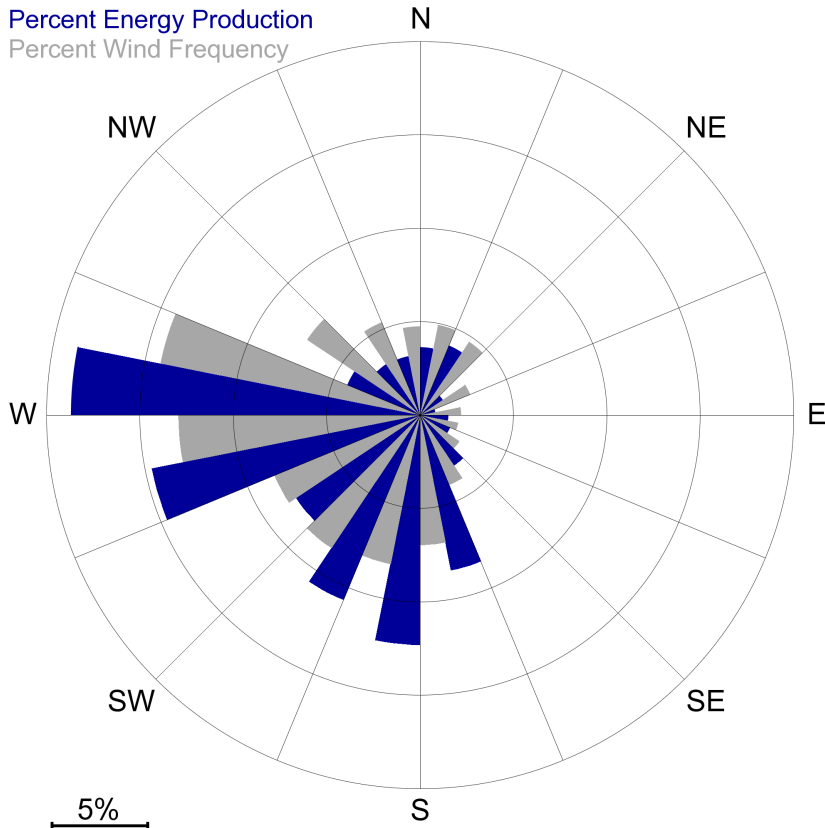


Figure 26: August wind frequency and energy content (percent) by direction sector at 30m height.

Table 26: August wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	4.9	3.6
NNE	4.7	4.0
NE	2.9	1.5
ENE	2.2	0.8
E	2.1	1.5
ESE	2.5	1.7
SE	4.1	3.3
SSE	7.0	8.5
S	8.1	12.3
SSW	8.6	10.7
SW	8.5	8.0
WSW	13.0	14.7
W	14.2	18.7
WNW	7.2	4.2
NW	5.4	3.3
NNW	4.7	3.2

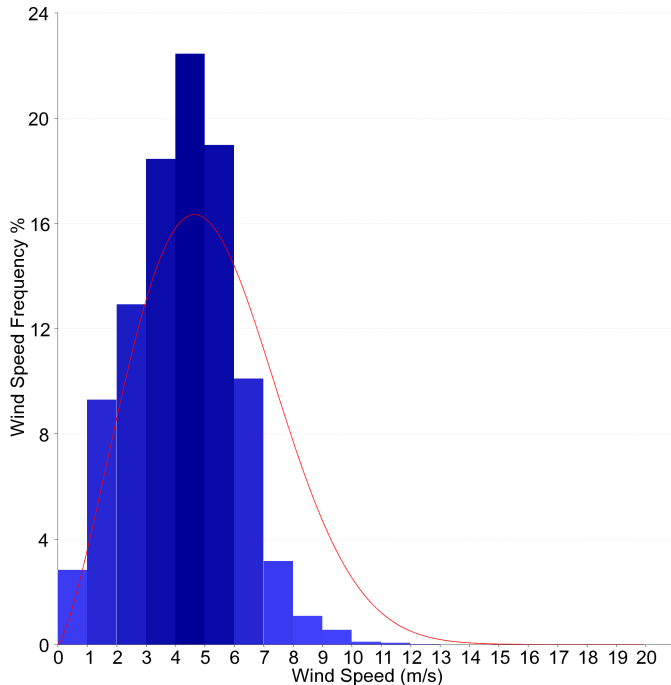


Figure 27: August speed frequency distribution at 30m hub height (bars).

Table 27: August speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	2.8	7-8	3.2	14-15	0.0
1-2	9.3	8-9	1.1	15-16	0.0
2-3	12.9	9-10	0.5	16-17	0.0
3-4	18.4	10-11	0.1	17-18	0.0
4-5	22.4	11-12	0.1	18-19	0.0
5-6	19.0	12-13	0.0	19-20	0.0
6-7	10.1	13-14	0.0	>20	0.0

## August Data For Location: Central NY

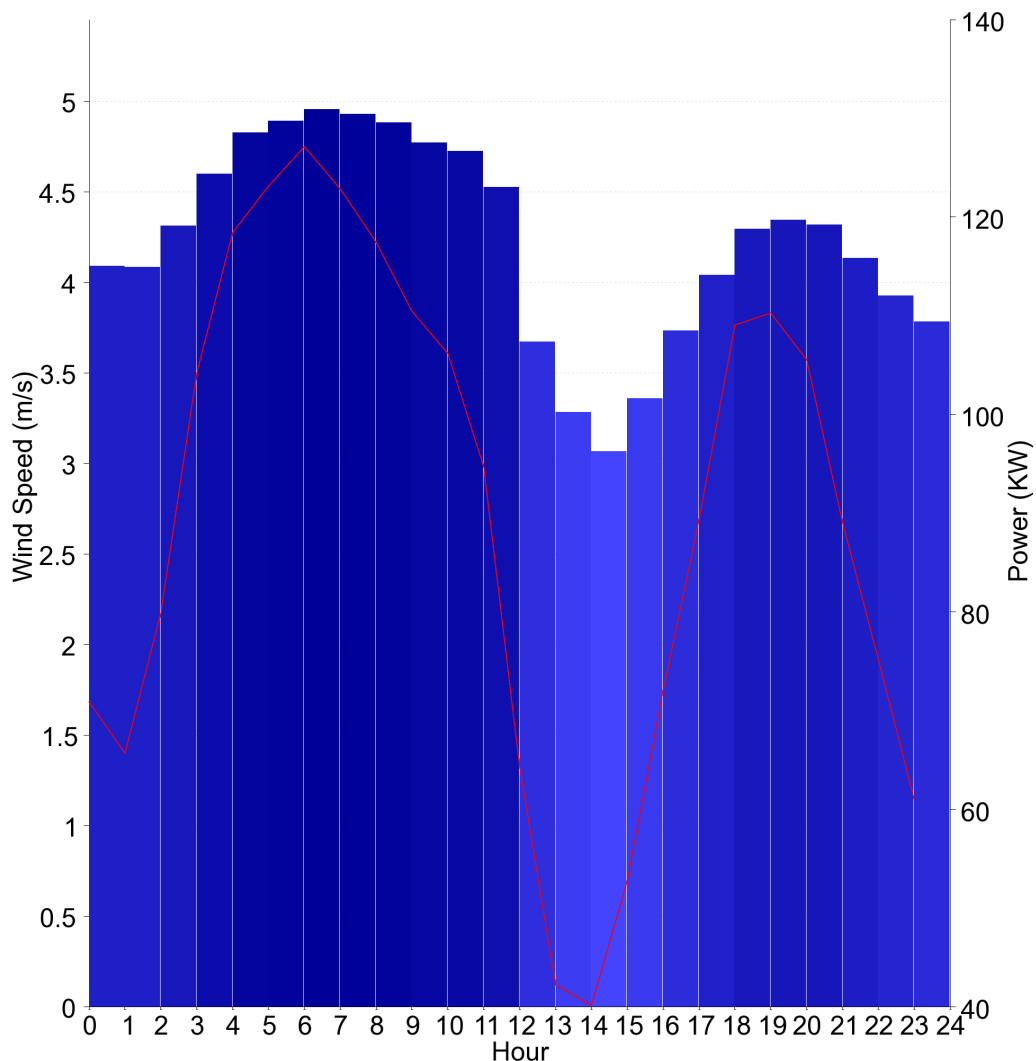


Figure 28: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for August by time of day at 30m height. Times are based on GMT.

Table 28: Mean wind speed (m/s) and power output (kWh) for August by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	4.09	70.90	9	4.88	117.45	17	3.73	72.02
2	4.09	65.70	10	4.77	110.45	18	4.04	89.29
3	4.31	79.95	11	4.72	106.17	19	4.29	109.06
4	4.60	104.23	12	4.53	94.68	20	4.34	110.28
5	4.83	118.43	13	3.67	64.31	21	4.32	105.55
6	4.89	123.14	14	3.28	42.27	22	4.14	89.08
7	4.96	127.12	15	3.07	40.13	23	3.93	75.18
8	4.93	122.85	16	3.36	52.78	24	3.78	61.03

# September Data For Location: Central NY

Percent Energy Production  
Percent Wind Frequency

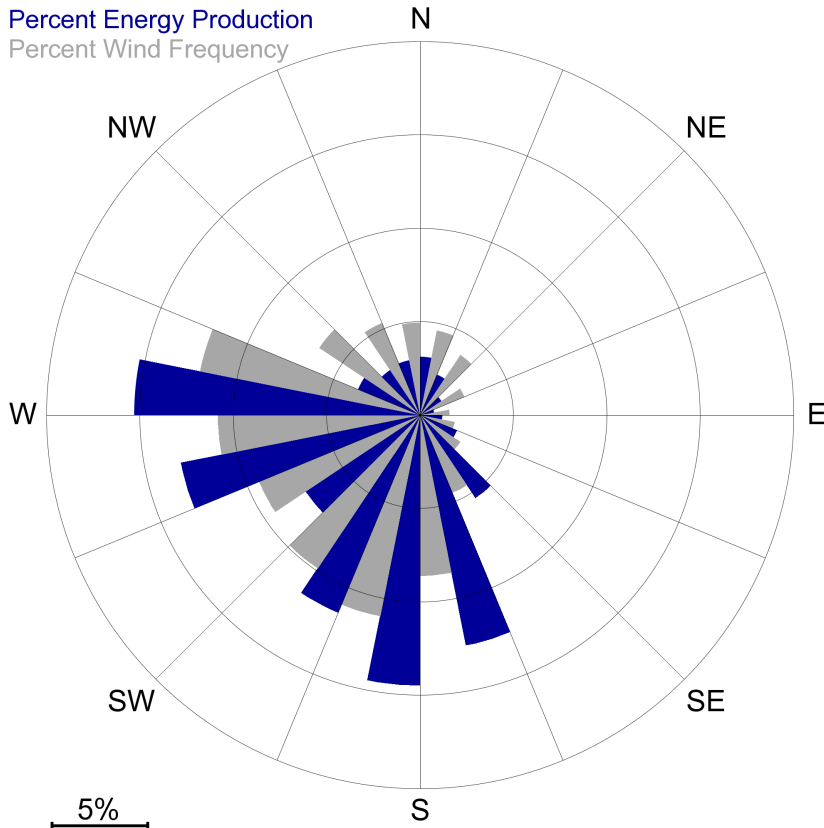


Figure 29: September wind frequency and energy content (percent) by direction sector at 30m height.

Table 29: September wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	4.6	3.1
NNE	3.9	2.3
NE	2.6	1.4
ENE	1.6	0.8
E	1.9	1.2
ESE	2.6	2.1
SE	4.5	5.3
SSE	8.6	12.6
S	11.0	14.5
SSW	9.9	11.5
SW	9.3	7.4
WSW	10.8	13.1
W	12.0	15.3
WNW	6.5	3.6
NW	5.3	2.9
NNW	4.9	3.0

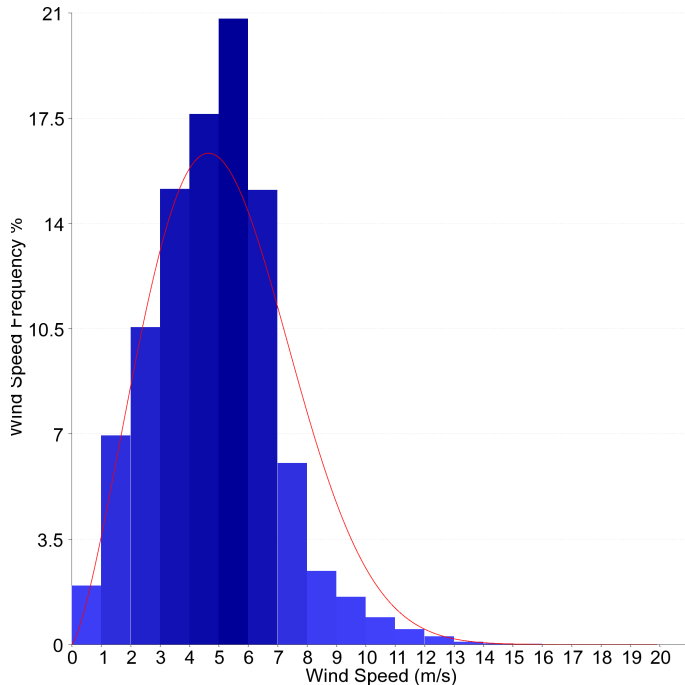


Figure 30: September speed frequency distribution at 30m hub height (bars).

Table 30: September speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	2.0	7-8	6.0	14-15	0.0
1-2	6.9	8-9	2.4	15-16	0.0
2-3	10.5	9-10	1.6	16-17	0.0
3-4	15.1	10-11	0.9	17-18	0.0
4-5	17.6	11-12	0.5	18-19	0.0
5-6	20.8	12-13	0.3	19-20	0.0
6-7	15.1	13-14	0.1	>20	0.0

## September Data For Location: Central NY

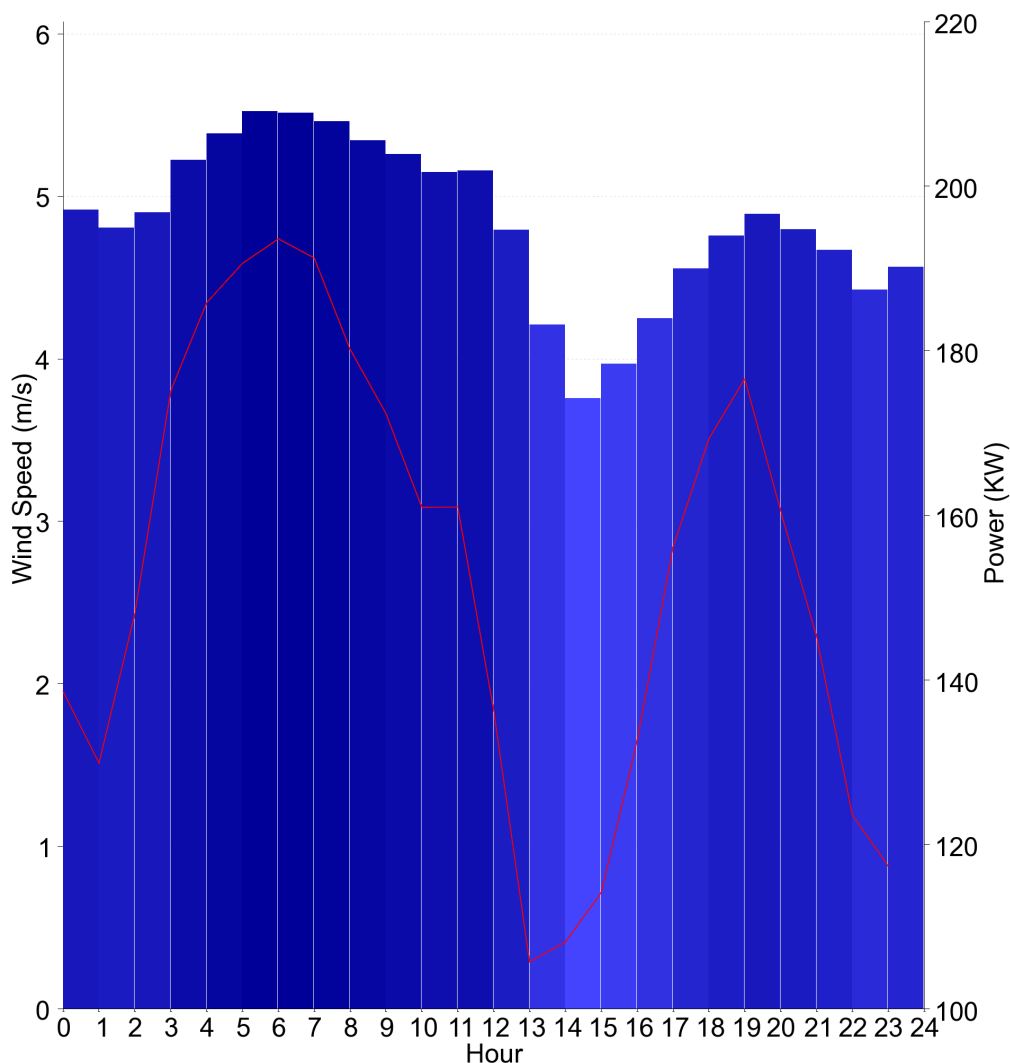


Figure 31: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for September by time of day at 30m height. Times are based on GMT.

Table 31: Mean wind speed (m/s) and power output (kWh) for September by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	4.92	138.61	9	5.35	180.18	17	4.25	132.58
2	4.81	129.87	10	5.26	172.36	18	4.56	156.08
3	4.90	148.09	11	5.15	160.96	19	4.76	169.29
4	5.22	175.15	12	5.16	161.01	20	4.89	176.60
5	5.39	185.83	13	4.79	136.35	21	4.80	160.53
6	5.52	190.61	14	4.21	105.73	22	4.67	145.28
7	5.51	193.59	15	3.76	108.14	23	4.43	123.57
8	5.46	191.27	16	3.97	114.14	24	4.57	117.37

# October Data For Location: Central NY

Percent Energy Production  
Percent Wind Frequency

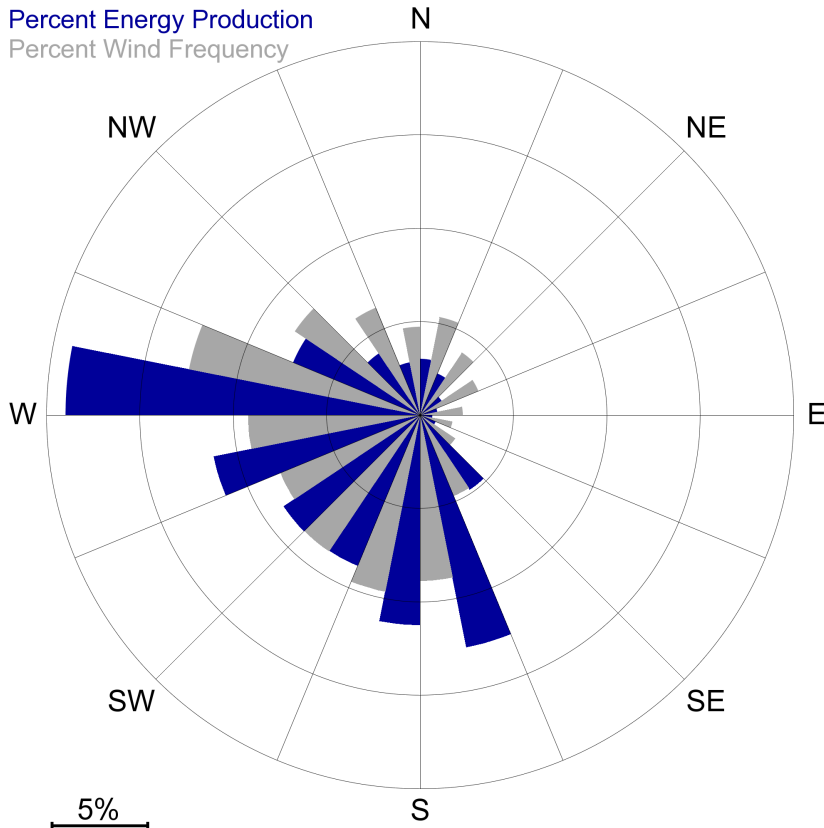


Figure 32: October wind frequency and energy content (percent) by direction sector at 30m height.

Table 32: October wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	5.3	3.0
NNE	4.0	2.4
NE	3.4	1.4
ENE	2.3	0.9
E	1.8	0.7
ESE	2.3	0.9
SE	4.7	4.8
SSE	8.9	12.7
S	9.7	11.3
SSW	8.8	8.8
SW	8.1	8.8
WSW	9.2	11.3
W	12.6	19.0
WNW	8.1	7.3
NW	6.2	4.0
NNW	4.7	2.9

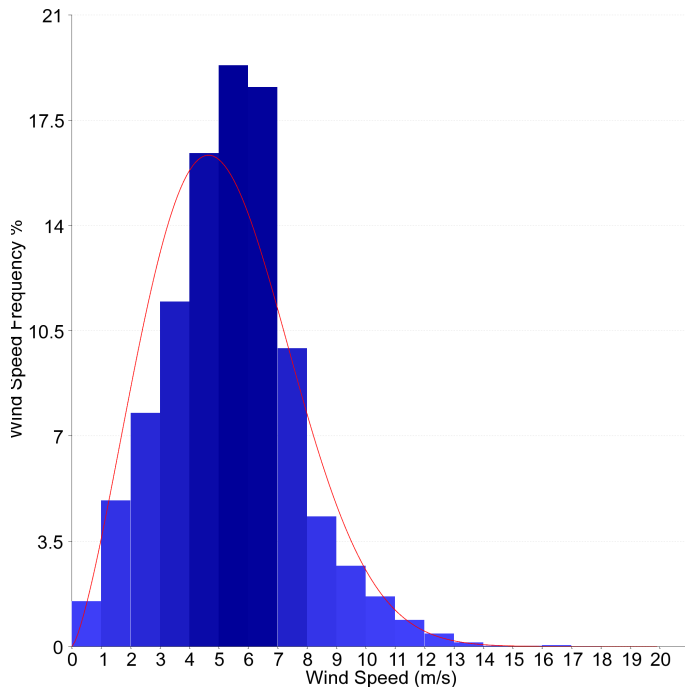


Figure 33: October speed frequency distribution at 30m hub height (bars).

Table 33: October speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	1.5	7-8	9.9	14-15	0.0
1-2	4.8	8-9	4.3	15-16	0.0
2-3	7.8	9-10	2.7	16-17	0.0
3-4	11.5	10-11	1.7	17-18	0.0
4-5	16.4	11-12	0.9	18-19	0.0
5-6	19.3	12-13	0.4	19-20	0.0
6-7	18.6	13-14	0.1	>20	0.0

## October Data For Location: Central NY

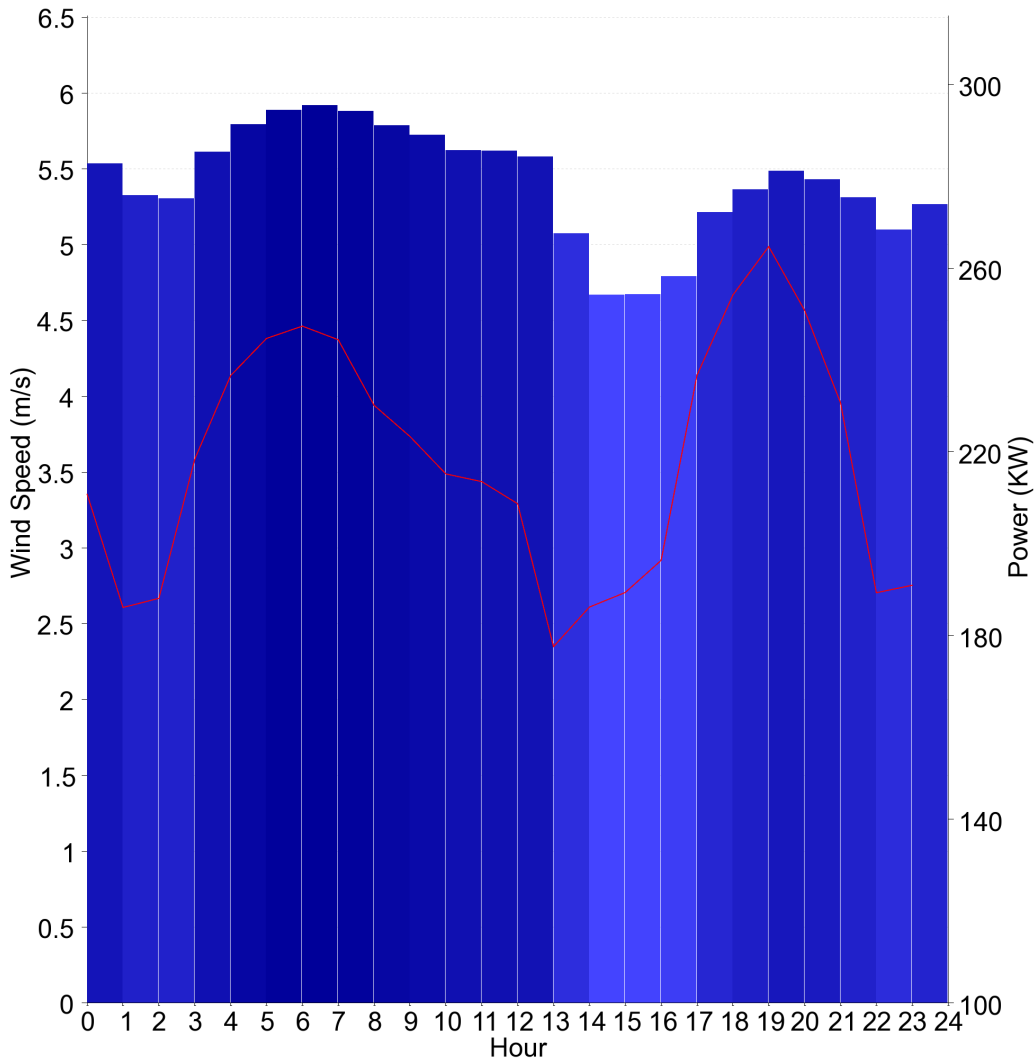


Figure 34: Mean wind speed (m/s) and power density (W/m<sup>2</sup>)(line) for October by time of day at 30m height. Times are based on GMT.

Table 34: Mean wind speed (m/s) and power output (kWh) for October by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	5.54	210.79	9	5.79	230.13	17	4.79	196.37
2	5.33	186.12	10	5.72	223.34	18	5.22	236.68
3	5.31	188.12	11	5.62	215.20	19	5.36	254.16
4	5.61	218.43	12	5.62	213.53	20	5.49	264.71
5	5.79	236.61	13	5.58	208.72	21	5.43	250.80
6	5.89	244.70	14	5.08	177.59	22	5.31	230.69
7	5.92	247.38	15	4.67	186.21	23	5.10	189.33
8	5.88	244.42	16	4.67	189.38	24	5.27	190.96

# November Data For Location: Central NY

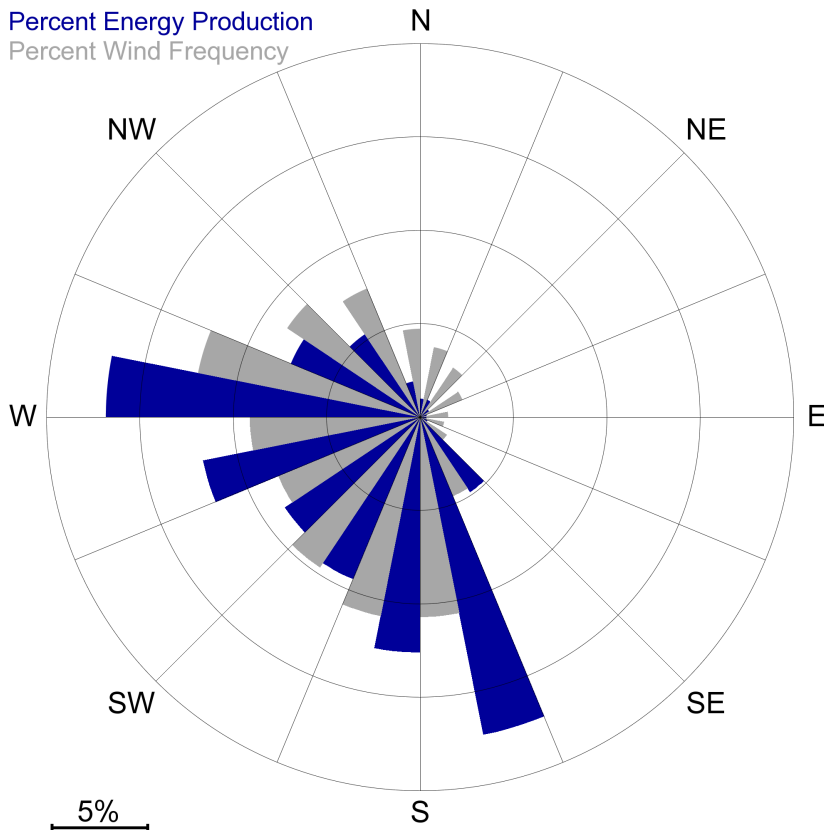


Figure 35: November wind frequency and energy content (percent) by direction sector at 30m height.

Table 35: November wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	3.8	1.0
NNE	3.2	1.0
NE	2.4	0.6
ENE	1.5	0.4
E	1.3	0.3
ESE	1.7	0.4
SE	4.6	4.8
SSE	10.7	17.3
S	10.9	12.6
SSW	9.7	9.4
SW	8.2	8.7
WSW	9.1	11.9
W	12.1	16.8
WNW	8.5	7.5
NW	7.4	5.3
NNW	4.7	1.9

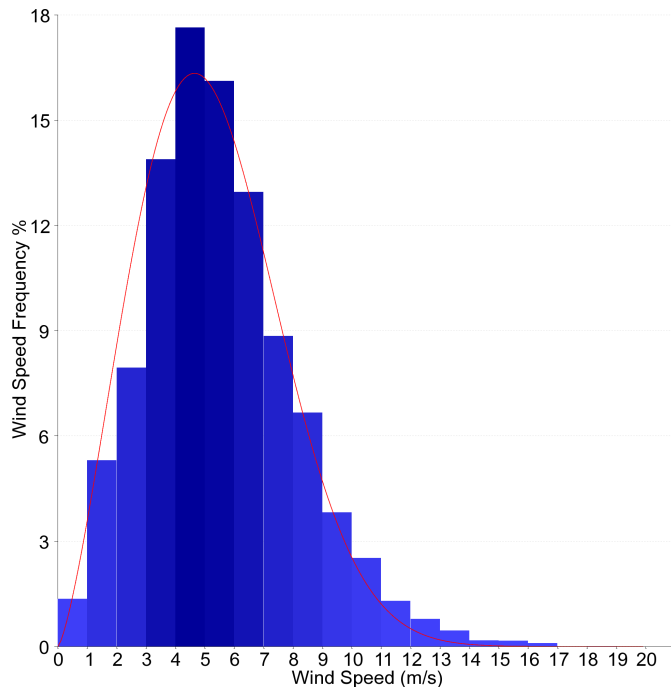


Figure 36: November speed frequency distribution at 30m hub height (bars).

Table 36: November speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	1.4	7-8	8.8	14-15	0.2
1-2	5.3	8-9	6.7	15-16	0.2
2-3	7.9	9-10	3.8	16-17	0.1
3-4	13.9	10-11	2.5	17-18	0.0
4-5	17.6	11-12	1.3	18-19	0.0
5-6	16.1	12-13	0.8	19-20	0.0
6-7	13.0	13-14	0.5	>20	0.0



## November Data For Location: Central NY

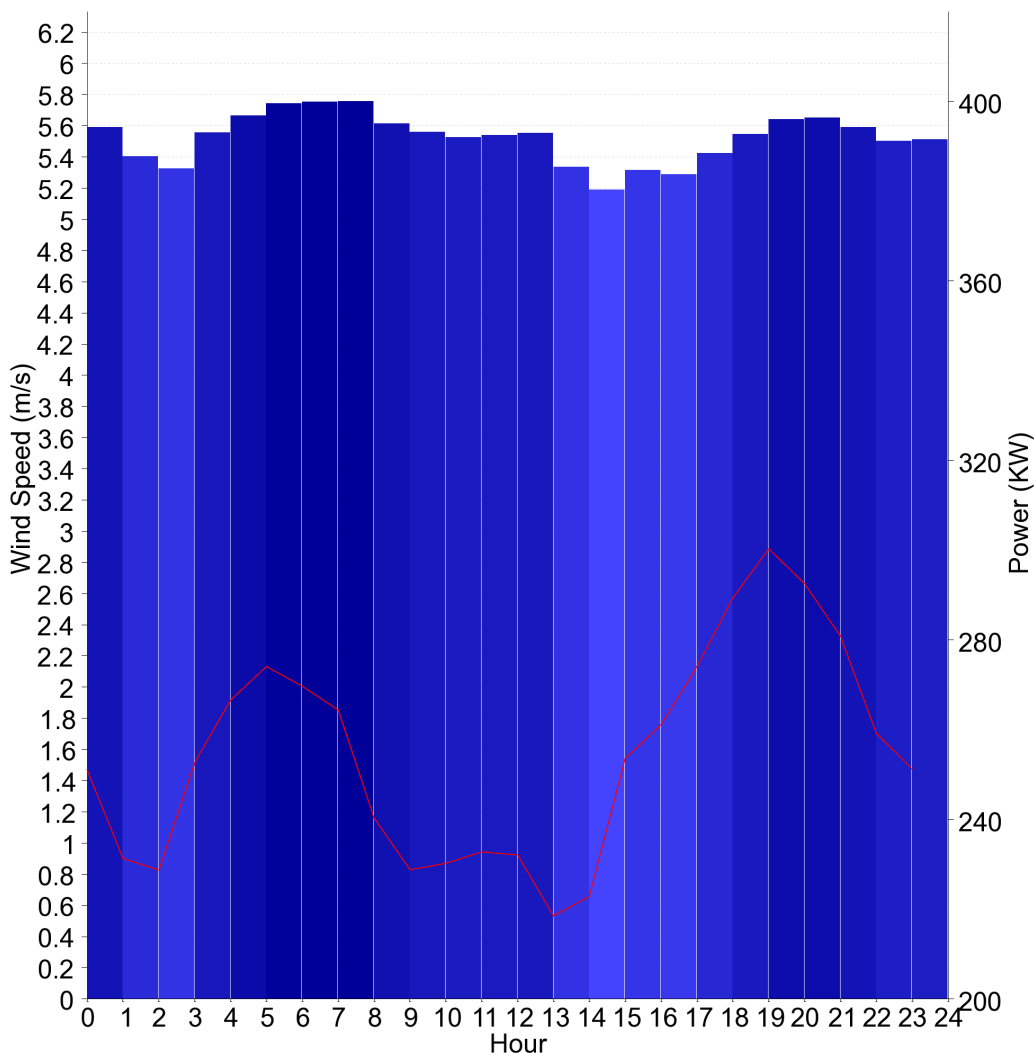


Figure 37: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for November by time of day at 30m height. Times are based on GMT.

Table 37: Mean wind speed (m/s) and power output (kWh) for November by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	5.59	251.06	9	5.61	240.33	17	5.29	261.12
2	5.40	231.32	10	5.56	228.80	18	5.43	274.05
3	5.33	228.73	11	5.53	230.22	19	5.55	289.37
4	5.56	252.70	12	5.54	232.79	20	5.64	300.30
5	5.66	266.62	13	5.55	232.07	21	5.65	292.53
6	5.74	274.09	14	5.34	218.53	22	5.59	280.80
7	5.75	269.67	15	5.19	222.90	23	5.50	259.19
8	5.76	264.40	16	5.32	253.61	24	5.51	251.22

# December Data For Location: Central NY

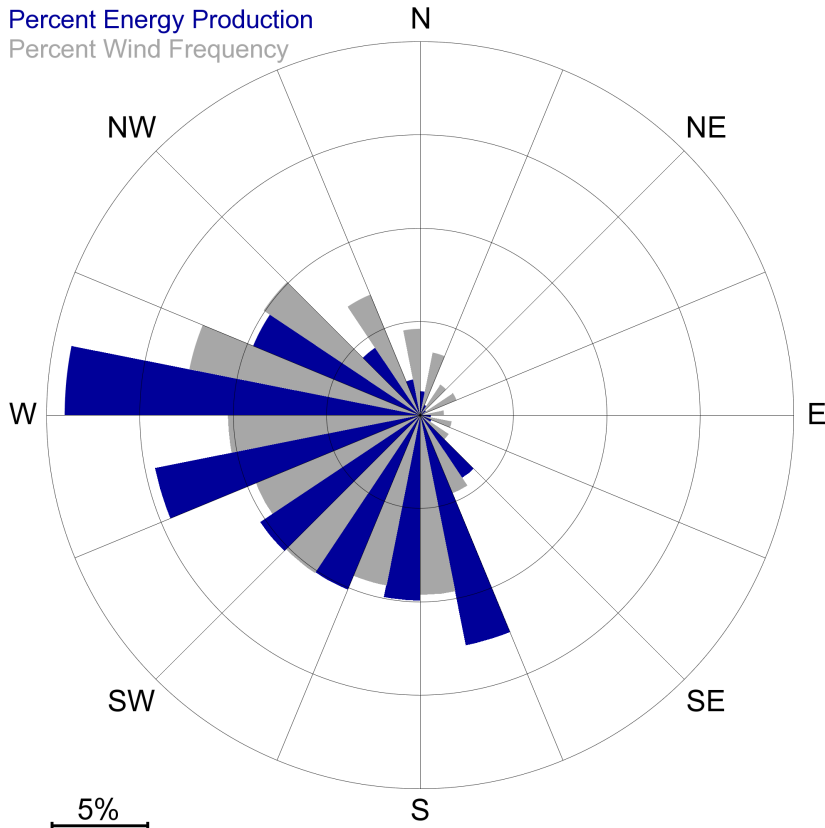


Figure 38: December wind frequency and energy content (percent) by direction sector at 30m height.

Table 38: December wind frequency and energy content (percent) by direction sector at 30m height.

Sector	Freq	Pct Energy
N	3.4	1.3
NNE	1.9	0.6
NE	2.1	0.4
ENE	1.3	0.2
E	1.7	0.6
ESE	1.8	0.7
SE	4.5	4.1
SSE	9.6	12.6
S	9.3	9.9
SSW	10.2	10.1
SW	9.5	10.3
WSW	10.3	14.5
W	12.6	19.0
WNW	10.1	9.7
NW	7.0	4.3
NNW	4.6	1.9

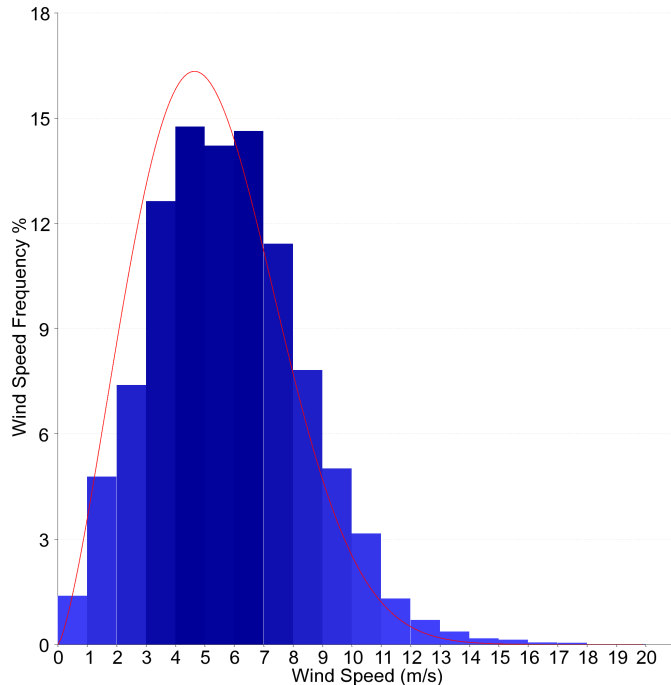


Figure 39: December speed frequency distribution at 30m hub height (bars).

Table 39: December speed frequency distribution at 30m height. Wind speed bin values are m/s.

Spd	Freq	Spd	Freq	Spd	Freq
0-1	1.4	7-8	11.4	14-15	0.2
1-2	4.8	8-9	7.8	15-16	0.1
2-3	7.4	9-10	5.0	16-17	0.1
3-4	12.6	10-11	3.2	17-18	0.0
4-5	14.8	11-12	1.3	18-19	0.0
5-6	14.2	12-13	0.7	19-20	0.0
6-7	14.6	13-14	0.4	>20	0.0

## December Data For Location: Central NY

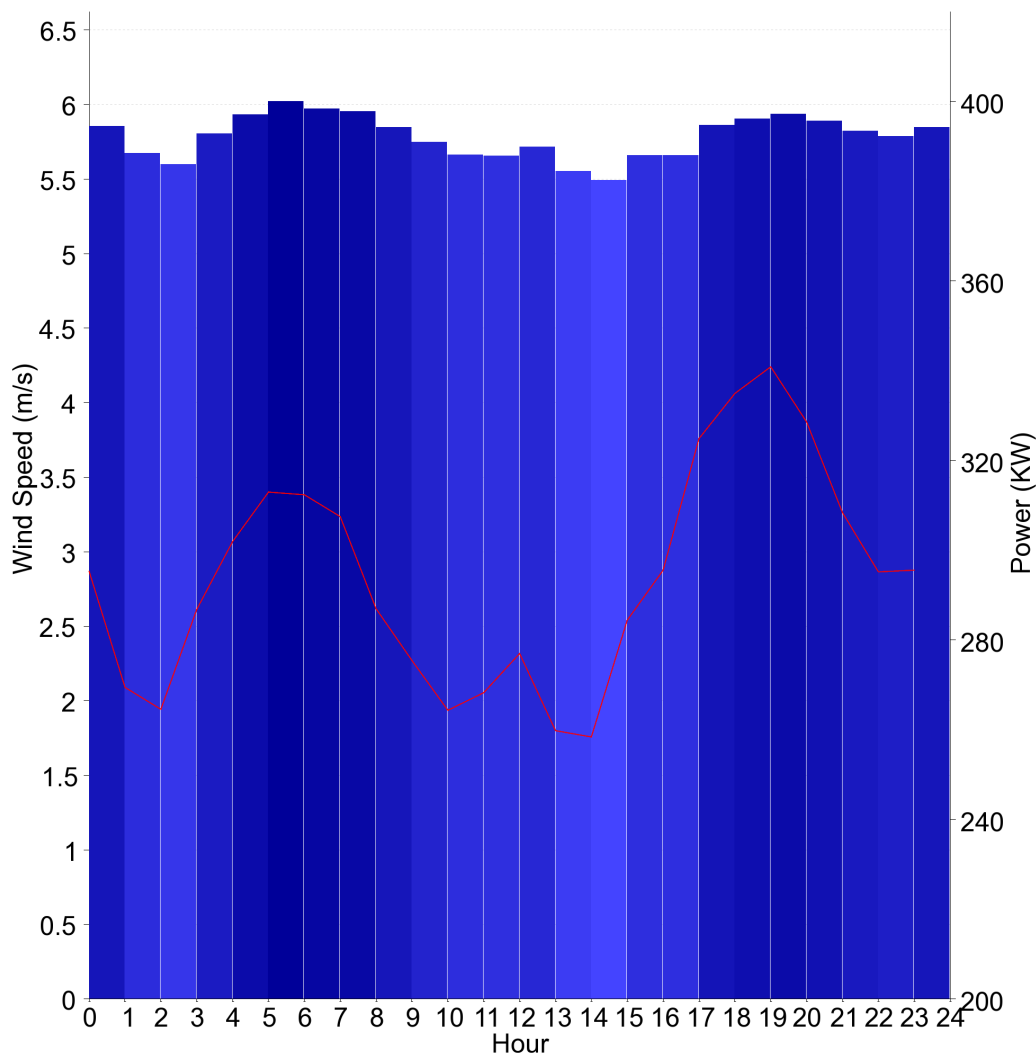


Figure 40: Mean wind speed (m/s) and power density ( $W/m^2$ )(line) for December by time of day at 30m height. Times are based on GMT.

Table 40: Mean wind speed (m/s) and power output (kWh) for December by time of day at 30m height. Times are based on GMT.

Hour	Spd	Pwr	Hour	Spd	Pwr	Hour	Spd	Pwr
1	5.86	295.30	9	5.85	286.94	17	5.66	295.54
2	5.67	269.43	10	5.75	275.41	18	5.86	324.86
3	5.60	264.55	11	5.67	264.32	19	5.91	334.92
4	5.81	286.81	12	5.66	268.26	20	5.94	340.86
5	5.93	301.94	13	5.72	276.98	21	5.89	328.56
6	6.02	312.95	14	5.55	259.79	22	5.82	308.36
7	5.97	312.35	15	5.49	258.39	23	5.79	295.16
8	5.96	307.48	16	5.66	284.40	24	5.85	295.55