

Projected Monthly Capacity Factor Distribution for an Average Annual Capacity Factor of 25%

Muskegon, MI Airport Figures from 1997, 2000, and 2003

<u>Month</u>	<u>Weighted Average</u>		<u>Weighted</u>		<u>Weighted Capacity Factor</u>	
	<u>Windspeed</u>	<u>Windspeed</u>	<u>On-peak</u>	<u>Off-peak</u>		
January	11.29	11.51	8.19	40.13	33.45	37.90
February	10.89	11.23	7.70	38.43	27.26	34.70
March	10.09	10.68	6.72	33.72	18.52	28.65
April	10.07	10.60	6.81	32.31	19.34	27.98
May	9.73	10.59	6.05	33.75	13.02	26.84
June	8.52	9.51	4.92	25.83	7.00	19.55
July	7.87	8.92	4.37	21.40	4.89	15.90
August	7.40	8.42	4.05	18.00	4.08	13.36
September	8.79	9.50	5.55	25.01	10.37	20.13
October	8.71	9.07	6.03	21.50	13.69	18.90
November	10.17	10.62	6.98	31.80	21.17	28.26
December	10.19	10.41	7.36	29.67	24.15	27.83
Total	9.48	10.09	6.23	29.29	16.41	25.00

Notes:

Multiplier yielding 25% Average Annual Capacity Factor = **0.02609511**

a) $Windspeed^3 * .02609511 = Capacity\ Factor$

b) On/Off-Peak does not consider weekends

Wind speed is in miles per hour

on peak hours are from 7am until 11pm

Hourly Wind Speeds (Miles/Hour)

<u>Time</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Average</u>
100	10.32	10.29	9.10	9.10	8.10	6.30	5.45	5.26	7.08	8.21	9.02	9.83	8.17
200	10.63	10.02	9.25	8.84	7.87	5.99	6.30	5.53	7.52	8.03	9.10	9.64	8.23
300	10.29	10.37	9.25	8.79	7.79	6.11	5.84	5.33	7.56	8.25	9.14	9.79	8.21
400	11.29	9.94	8.76	9.30	8.41	6.65	5.45	5.26	7.03	7.98	9.18	9.30	8.21
500	11.17	10.40	8.61	8.90	8.41	6.83	5.50	5.56	7.26	7.64	8.87	9.60	8.23
600	11.17	10.33	8.56	8.99	8.26	6.91	5.76	5.03	7.41	7.52	9.41	10.02	8.28
700	11.17	10.83	8.79	9.22	8.99	7.57	6.80	5.22	7.70	7.45	9.10	10.40	8.60
800	11.17	10.86	9.45	10.17	10.17	8.64	7.75	6.88	8.52	7.60	9.33	10.22	9.23
900	11.29	11.14	10.75	10.40	11.06	9.48	9.37	7.91	9.64	9.18	9.91	10.63	10.06
1000	11.44	11.90	11.55	10.45	11.17	10.29	9.64	9.30	10.84	10.06	11.29	10.40	10.69
1100	12.44	12.52	11.87	10.75	12.33	10.60	10.10	9.71	11.39	10.91	11.26	11.09	11.25
1200	12.10	12.64	11.98	11.49	12.67	11.49	10.25	10.17	11.71	11.44	11.78	10.79	11.54
1300	12.28	12.67	12.94	12.02	12.59	12.25	11.09	10.29	11.89	11.49	12.33	10.91	11.89
1400	12.21	12.67	12.64	12.41	12.59	12.13	11.32	10.71	12.01	10.68	12.21	10.79	11.87
1500	12.13	12.41	12.33	12.36	12.33	11.49	10.91	10.71	11.61	11.06	11.21	10.83	11.61
1600	11.78	12.21	12.02	12.02	11.75	11.44	11.26	10.56	10.62	10.17	10.83	10.52	11.26
1700	11.29	11.21	11.17	11.02	10.83	10.60	10.10	9.64	9.52	9.30	10.33	9.68	10.39
1800	10.68	10.56	10.29	10.71	9.94	9.60	9.56	8.72	7.28	7.72	10.29	9.60	9.58
1900	10.91	9.79	8.90	9.94	9.68	8.72	7.87	7.64	7.46	6.76	9.60	10.02	8.94
2000	10.91	9.48	8.61	9.37	8.87	7.06	6.26	6.19	7.32	6.49	9.99	10.14	8.39
2100	11.40	9.68	8.90	9.56	7.80	5.73	5.68	5.56	7.25	6.80	9.94	10.25	8.21
2200	11.06	9.56	8.67	7.57	7.60	5.85	5.33	5.45	7.33	7.64	10.10	10.45	8.05
2300	10.98	9.87	8.90	9.56	7.14	6.22	5.50	5.45	7.52	8.29	9.99	10.17	8.30
2400	10.94	9.91	8.87	8.87	7.26	6.45	5.88	5.61	7.41	8.49	9.79	9.56	8.25
Monthly Avg.	11.29	10.89	10.09	10.07	9.73	8.52	7.87	7.40	8.79	8.71	10.17	10.19	9.48
On-peak Avg.	11.51	11.23	10.68	10.60	10.59	9.51	8.92	8.42	9.50	9.07	10.62	10.41	10.09
Off-peak Avg.	10.86	10.20	8.90	9.02	8.02	6.52	5.79	5.37	7.36	8.00	9.26	9.75	8.25

Hourly Capacity Factors

<u>Time</u>	<u>January</u>	<u>February</u>	<u>March</u>	<u>April</u>	<u>May</u>	<u>June</u>	<u>July</u>	<u>August</u>	<u>September</u>	<u>October</u>	<u>November</u>	<u>December</u>	<u>Average</u>
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100	28.70	28.41	19.67	19.67	13.86	6.53	4.23	3.81	9.26	14.46	19.15	24.76	14.24
200	31.37	26.27	20.66	18.00	12.71	5.61	6.53	4.41	11.08	13.51	19.67	23.39	14.53
300	28.41	29.08	20.66	17.72	12.32	5.94	5.20	3.96	11.26	14.64	19.89	24.50	14.43
400	37.55	25.64	17.51	20.97	15.52	7.66	4.22	3.81	9.05	13.28	20.20	20.97	14.45
500	36.41	29.38	16.63	18.43	15.52	8.32	4.33	4.50	10.00	11.63	18.21	23.06	14.54
600	36.41	28.79	16.36	18.93	14.71	8.62	4.99	3.33	10.62	11.11	21.76	26.27	14.82
700	36.41	33.14	17.72	20.43	18.93	11.31	8.19	3.71	11.92	10.81	19.67	29.38	16.62
800	36.41	33.45	22.00	27.47	27.47	16.83	12.16	8.49	16.16	11.47	21.20	27.84	20.53
900	37.55	36.07	32.40	29.38	35.30	22.24	21.44	12.94	23.36	20.20	25.38	31.37	26.59
1000	39.06	43.98	40.25	29.77	36.41	28.41	23.39	20.97	33.27	26.54	37.55	29.38	31.92
1100	50.26	51.24	43.59	32.40	48.87	31.07	26.91	23.90	38.53	33.88	37.20	35.63	37.12
1200	46.18	52.67	44.88	39.54	53.10	39.54	28.12	27.47	41.85	39.06	42.71	32.82	40.13
1300	48.33	53.10	56.50	45.27	52.09	47.92	35.63	28.41	43.88	39.54	48.87	33.88	43.91
1400	47.52	53.10	52.67	49.84	52.09	46.58	37.89	32.09	45.21	31.78	47.52	32.82	43.59
1500	46.58	49.84	48.87	49.29	48.87	39.54	33.88	32.09	40.87	35.30	36.75	33.14	40.88
1600	42.71	47.52	45.27	45.27	42.34	39.06	37.20	30.76	31.24	27.47	33.14	30.36	37.30
1700	37.55	36.75	36.41	34.97	33.14	31.07	26.91	23.39	22.50	20.97	28.79	23.65	29.28
1800	31.78	30.76	28.41	32.09	25.64	23.06	22.81	17.31	10.06	12.00	28.41	23.06	22.93
1900	33.88	24.50	18.43	25.64	23.65	17.31	12.71	11.63	10.85	8.07	23.06	26.27	18.65
2000	33.88	22.24	16.63	21.44	18.21	9.19	6.39	6.18	10.23	7.12	26.00	27.19	15.40
2100	38.71	23.65	18.43	22.81	12.38	4.90	4.78	4.50	9.95	8.19	25.64	28.12	14.46
2200	35.30	22.81	17.03	11.31	11.47	5.21	3.96	4.22	10.28	11.63	26.91	29.77	13.62
2300	34.53	25.11	18.43	22.81	9.51	6.28	4.33	4.22	11.08	14.89	26.00	27.47	14.92
2400	34.20	25.38	18.21	18.21	9.98	7.01	5.29	4.61	10.62	15.97	24.50	22.81	14.67
Monthly Avg.	37.90	34.70	28.65	27.98	26.84	19.55	15.90	13.36	20.13	18.90	28.26	27.83	25.00
On-peak Avg.	40.13	38.43	33.72	32.31	33.75	25.83	21.40	18.00	25.01	21.50	31.80	29.67	29.29
Off-peak Avg.	33.45	27.26	18.52	19.34	13.02	7.00	4.89	4.08	10.37	13.69	21.17	24.15	16.41