

WORCESTER MA

Latitude = 42.27 N

Longitude = 71.88 W

Period of Record = 1973 to 1996

WMO No. 725095

Elevation = 1011 feet

Average Pressure = 28.88 inches Hg

Design Criteria Data

	Design Value	Mean Coincident (Average) Values			
		Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Dry Bulb Temperature (T)	(°F)				
Median of Extreme Highs	90	75	112	10.6	W
0.4% Occurrence	86	72	103	9.6	W
1.0% Occurrence	83	70	95	9.3	W
2.0% Occurrence	80	68	90	9.3	W
Mean Daily Range	16	-	-	-	-
97.5% Occurrence	10	8	5	10.8	W
99.0% Occurrence	5	4	4	12.0	W
99.6% Occurrence	1	0	3	13.0	W
Median of Extreme Lows	-5	-6	2	13.4	W
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T_{wb})	(°F)				
Median of Extreme Highs	77	85	129	8.7	WSW
0.4% Occurrence	75	83	121	9.0	W
1.0% Occurrence	73	80	113	8.9	W
2.0% Occurrence	71	77	107	8.8	W
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)	(gr/lb)				
Median of Extreme Highs	132	82	0.85	8.6	WSW
0.4% Occurrence	123	79	0.79	8.7	SW
1.0% Occurrence	115	77	0.74	8.6	W
2.0% Occurrence	109	75	0.71	7.8	SW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		4	203	89	562

Other Site Data

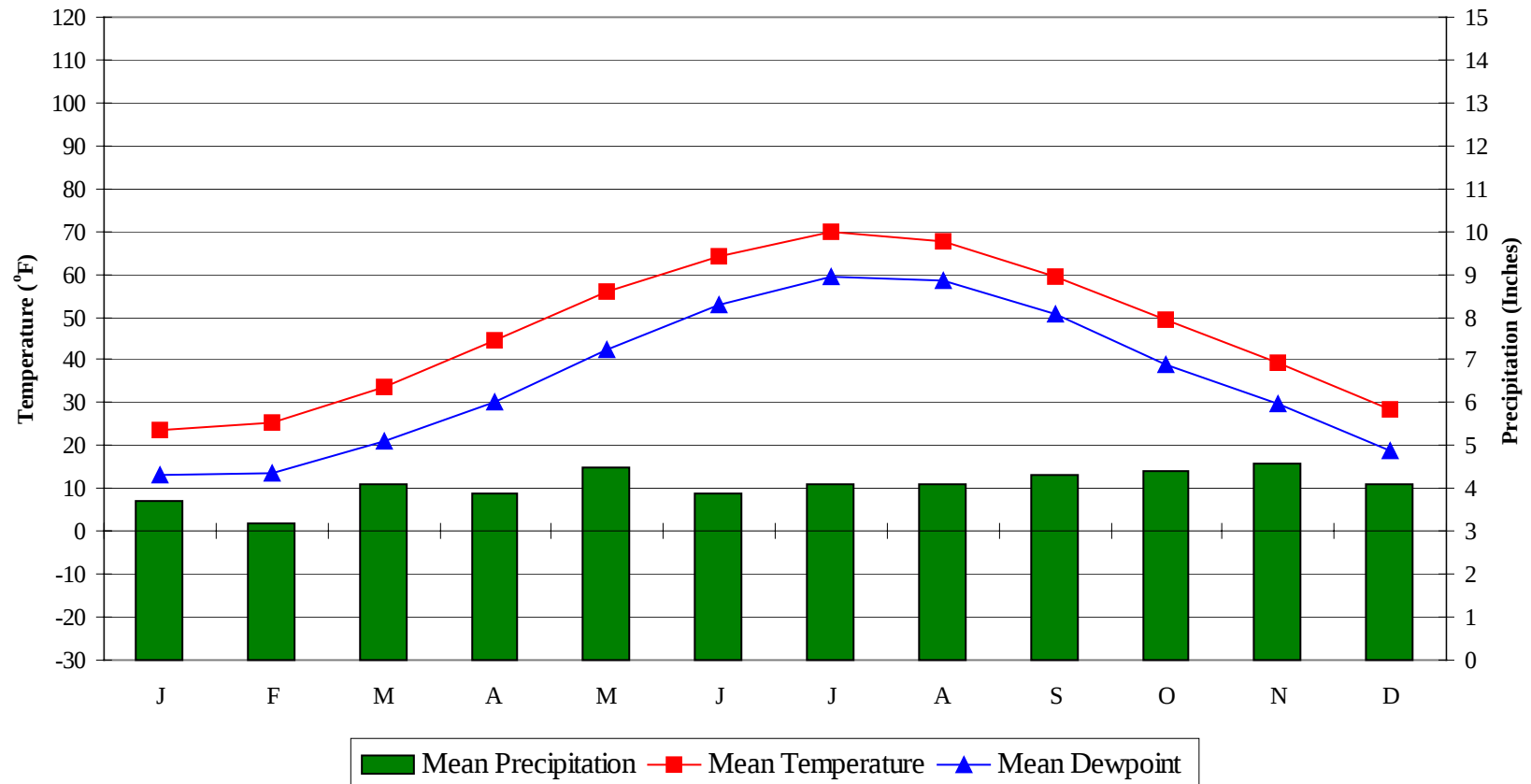
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
5	2.5	100	0.7 + 0.2
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
49.2	N/A	44	66

*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

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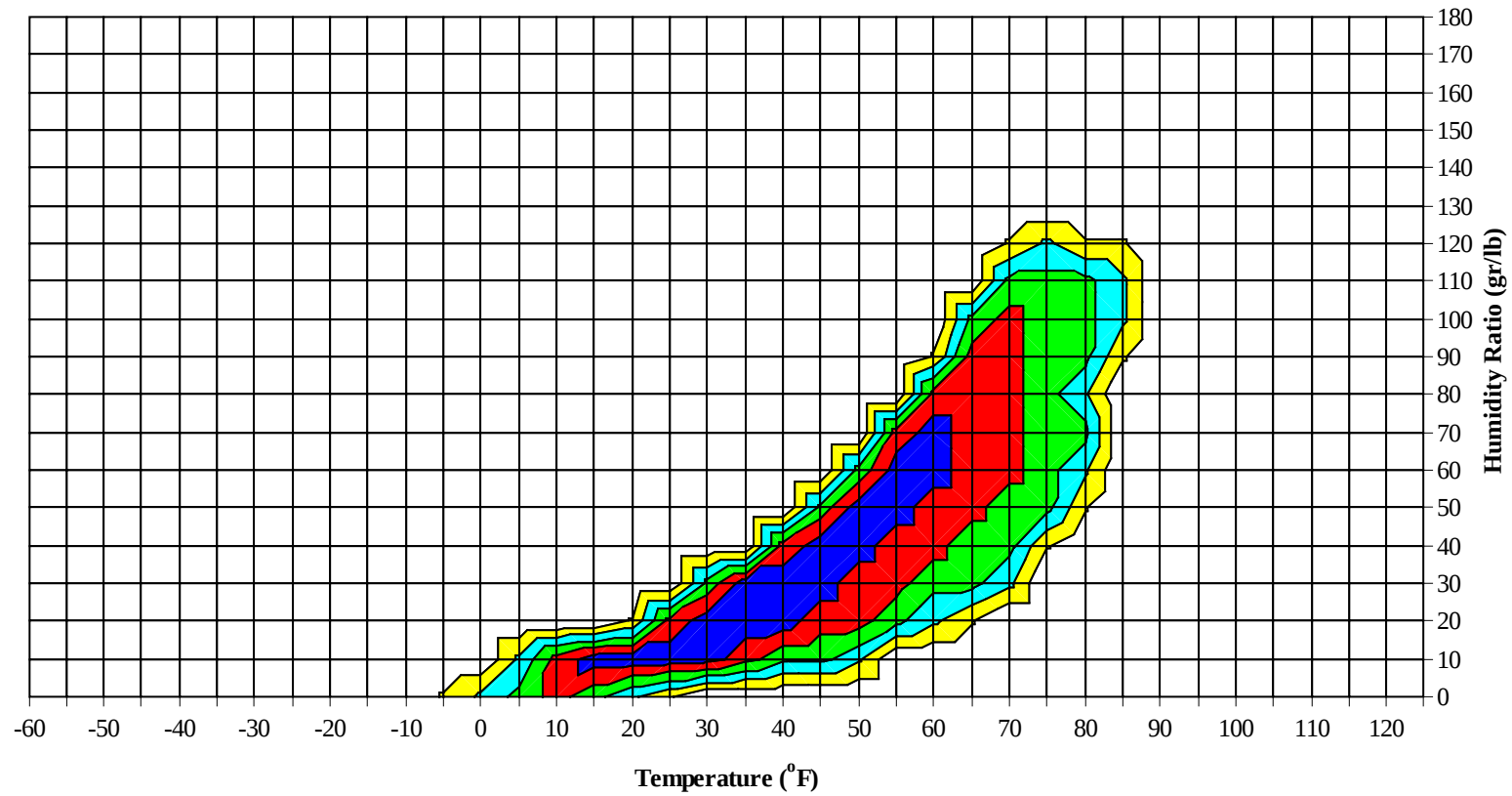
Average Annual Climate



WORCESTER MA

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Long Term Psychrometric Summary

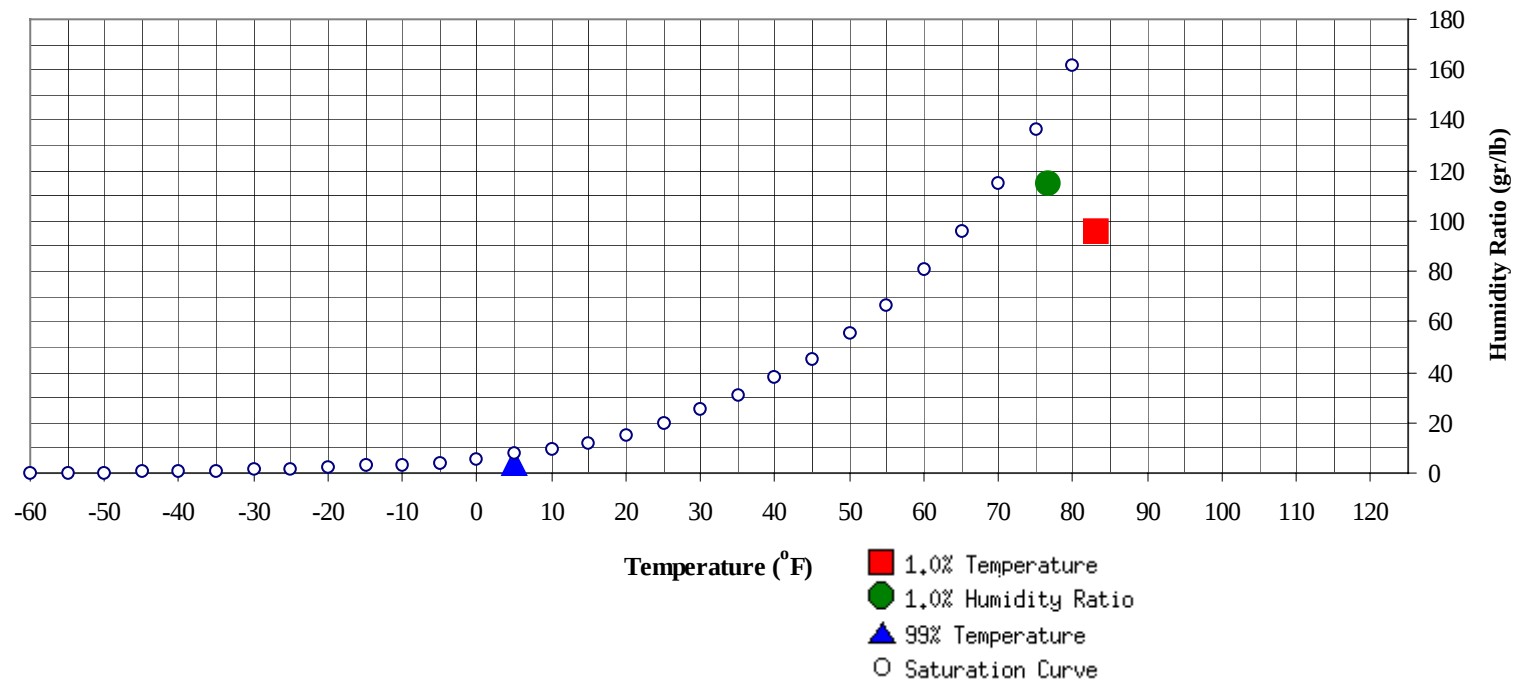


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

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Psychrometric Summary of Peak Design Values



	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
99% Dry Bulb	5	3.9	1.8		114.8	76.7	72	70	36.4

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	83	95.7	70.4	34.9

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Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	January					February					March				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
130 / 134															
125 / 129															
120 / 124															
115 / 119															
110 / 114															
105 / 109															
100 / 104															
95 / 99															
90 / 94															
85 / 89															
80 / 84															
75 / 79												0	0	0	57.8
70 / 74												1	0	1	56.0
65 / 69							0	0	0	55.3		0	2	1	3 52.9
60 / 64		0		0	51.0		1	0	1	52.3		0	5	2	7 51.2
55 / 59	1	2	1	4	52.9	0	2	1	3	50.1	1	9	4	14	48.4
50 / 54	3	5	3	11	48.7	2	6	3	11	46.9	5	16	9	30	44.7
45 / 49	3	6	6	15	42.8	4	10	7	21	41.7	12	28	18	58	40.7
40 / 44	5	14	9	28	37.9	8	16	10	34	37.2	16	42	31	89	36.5
35 / 39	15	29	22	66	33.2	16	33	25	74	32.6	39	50	51	140	32.8
30 / 34	30	45	38	114	28.7	27	40	37	104	28.5	58	46	55	159	28.6
25 / 29	35	43	40	119	24.1	29	38	39	106	23.7	43	27	38	108	23.9
20 / 24	40	40	44	124	19.3	36	35	36	107	19.2	29	14	21	64	19.2
15 / 19	39	29	34	102	14.8	34	24	29	87	14.6	22	6	13	41	14.4
10 / 14	32	21	27	80	10.1	29	12	21	62	10.1	11	2	4	17	10.0
5 / 9	24	9	14	47	5.5	24	5	10	39	5.4	7	1	1	9	5.6
0 / 4	12	4	7	23	0.8	7	3	4	14	1.1	2	1	1	4	1.3
-5 / -1	5	2	2	9	-3.7	3	0	1	4	-3.4	1		0	1	-2.8
-10 / -6	2	0	1	3	-7.3	2	0	0	2	-6.9					
-15 / -11	1		0	1	-11.2										

Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary and the ventilation and infiltration load pages in this manual.

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Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	April					May					June				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
130 / 134															
125 / 129															
120 / 124															
115 / 119															
110 / 114															
105 / 109															
100 / 104															
95 / 99															
90 / 94												0		0	71.5
85 / 89		0		0	63.0		2	0	2	67.5		8	1	9	71.8
80 / 84		2	0	2	62.5	0	8	2	10	65.3	0	19	5	24	68.3
75 / 79	0	2	1	3	59.1	1	18	6	25	62.6	3	47	16	66	65.0
70 / 74	0	6	2	8	56.4	3	28	11	42	59.2	11	59	36	106	62.3
65 / 69	1	12	4	17	53.8	9	38	23	70	56.2	36	45	52	133	60.0
60 / 64	2	19	10	31	50.8	24	46	40	109	53.5	65	32	57	155	56.9
55 / 59	8	29	19	56	48.2	38	41	47	126	50.4	61	20	42	123	53.0
50 / 54	20	42	31	93	44.6	53	34	50	137	46.7	42	9	22	73	48.7
45 / 49	26	43	39	108	40.7	61	22	41	125	43.2	17	2	7	26	44.5
40 / 44	53	45	52	150	37.1	41	8	21	70	39.2	4	0	2	6	40.0
35 / 39	63	27	49	139	33.2	14	2	6	22	34.6	0			0	35.6
30 / 34	44	10	25	79	29.1	3	1	1	5	29.4					
25 / 29	18	2	5	25	24.2	0	0		0	24.0					
20 / 24	2	1	1	4	18.6		0		0						
15 / 19	1	1	1	3	14.7										
10 / 14	1	0	0	1	9.9										
5 / 9	0	0	0	0											
0 / 4	0	0	0	0											
-5 / -1															
-10 / -6															
-15 / -11															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	July					August					September				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
130 / 134															
125 / 129															
120 / 124															
115 / 119															
110 / 114															
105 / 109															
100 / 104															
95 / 99													0	0	67.0
90 / 94		3	0	3	74.7		1	0	1	78.4	0	0	0	0	68.3
85 / 89	0	17	3	20	73.5	0	10	1	11	73.6	0	2	0	2	74.3
80 / 84	1	49	14	64	69.9	0	40	8	48	70.6	0	8	1	9	71.2
75 / 79	9	71	40	121	67.2	6	64	26	96	67.6	1	21	5	27	67.2
70 / 74	41	58	66	165	65.2	31	62	56	150	65.2	8	37	17	62	64.5
65 / 69	78	33	64	174	62.4	72	39	70	181	62.5	23	49	35	107	61.0
60 / 64	74	12	43	130	58.4	72	21	54	147	58.4	38	56	48	143	56.9
55 / 59	36	4	15	55	53.9	47	9	23	79	54.1	54	41	54	149	53.1
50 / 54	7	1	3	11	49.5	16	2	8	26	49.4	61	21	48	130	48.8
45 / 49	1		0	1	45.8	3	0	1	4	44.3	33	5	21	59	43.9
40 / 44	0			0	43.7	1	0	0	1	39.4	15	1	8	24	39.0
35 / 39						0	0	0	0	37.0	5		2	7	34.0
30 / 34						0	0	0	0		1		0	1	30.8
25 / 29						0	0	0	0						
20 / 24						0	0	0	0	17.0					
15 / 19						0	0	0	0	14.0					
10 / 14						0	0	0	0	10.0					
5 / 9						0	0	0	0	7.0					
0 / 4						0	0		0						
-5 / -1															
-10 / -6															
-15 / -11															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	October					November					December				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
130 / 134						0	0	0			0	0	0		
125 / 129						1	0	1			0	0	0		
120 / 124						0	0	0			0	0	0		
115 / 119						0	0	0			0	0	0		
110 / 114						0	0	0			0	0	0		
105 / 109						0	0	0			0	0	0		
100 / 104						0	0	0			0	0	0		
95 / 99						0	0	0			0	0	0		
90 / 94						0	0	0			0	0	0		
85 / 89						0	0	0			0	0	0		
80 / 84		0		0	69.5	0	0	0			0	0	0		
75 / 79		2	0	2	63.3	0	0	0	0	63.6	0	0	0		
70 / 74	1	9	2	12	61.7	0	1	0	1	60.0	0	0	0	0	61.0
65 / 69	2	23	7	32	58.5	0	4	2	6	59.1	0	0	0	0	59.3
60 / 64	11	38	19	68	55.1	4	9	6	19	56.6	0	1	0	1	57.0
55 / 59	26	43	35	105	51.6	9	15	12	36	51.7	3	4	2	9	51.7
50 / 54	37	50	45	132	47.2	14	25	17	55	46.9	4	7	6	17	47.2
45 / 49	49	46	53	148	42.4	21	40	30	90	42.4	8	13	10	31	43.0
40 / 44	52	25	49	126	38.2	38	49	42	129	37.8	12	22	14	48	37.8
35 / 39	42	8	29	80	33.7	44	46	48	137	33.1	25	43	33	100	33.3
30 / 34	23	2	9	34	29.2	50	31	46	127	28.6	41	53	51	144	29.0
25 / 29	4		1	5	25.5	35	13	24	72	24.4	45	43	49	137	24.3
20 / 24	0		0	0	21.1	14	4	8	25	19.7	36	28	30	94	19.6
15 / 19						6	2	4	12	15.0	29	19	24	71	14.8
10 / 14						3	1	2	6	10.2	20	12	18	49	10.3
5 / 9						1	0	0	1	7.7	16	4	10	30	5.7
0 / 4						1		0	1		6	1	3	10	1.0
-5 / -1											2	0	0	2	-3.0
-10 / -6											0	0	0	0	-7.9
-15 / -11											0	0	0	0	-11.0

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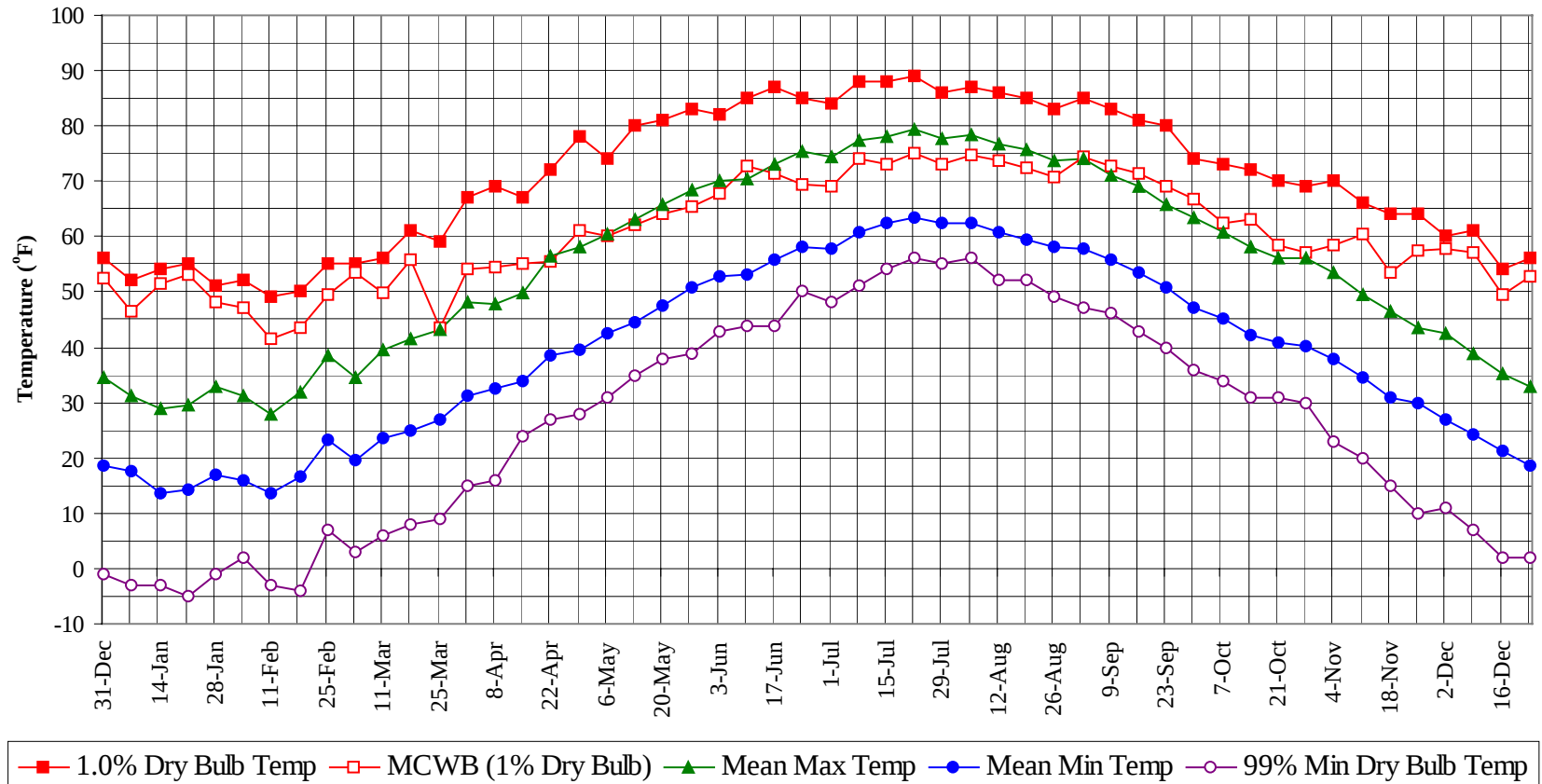
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

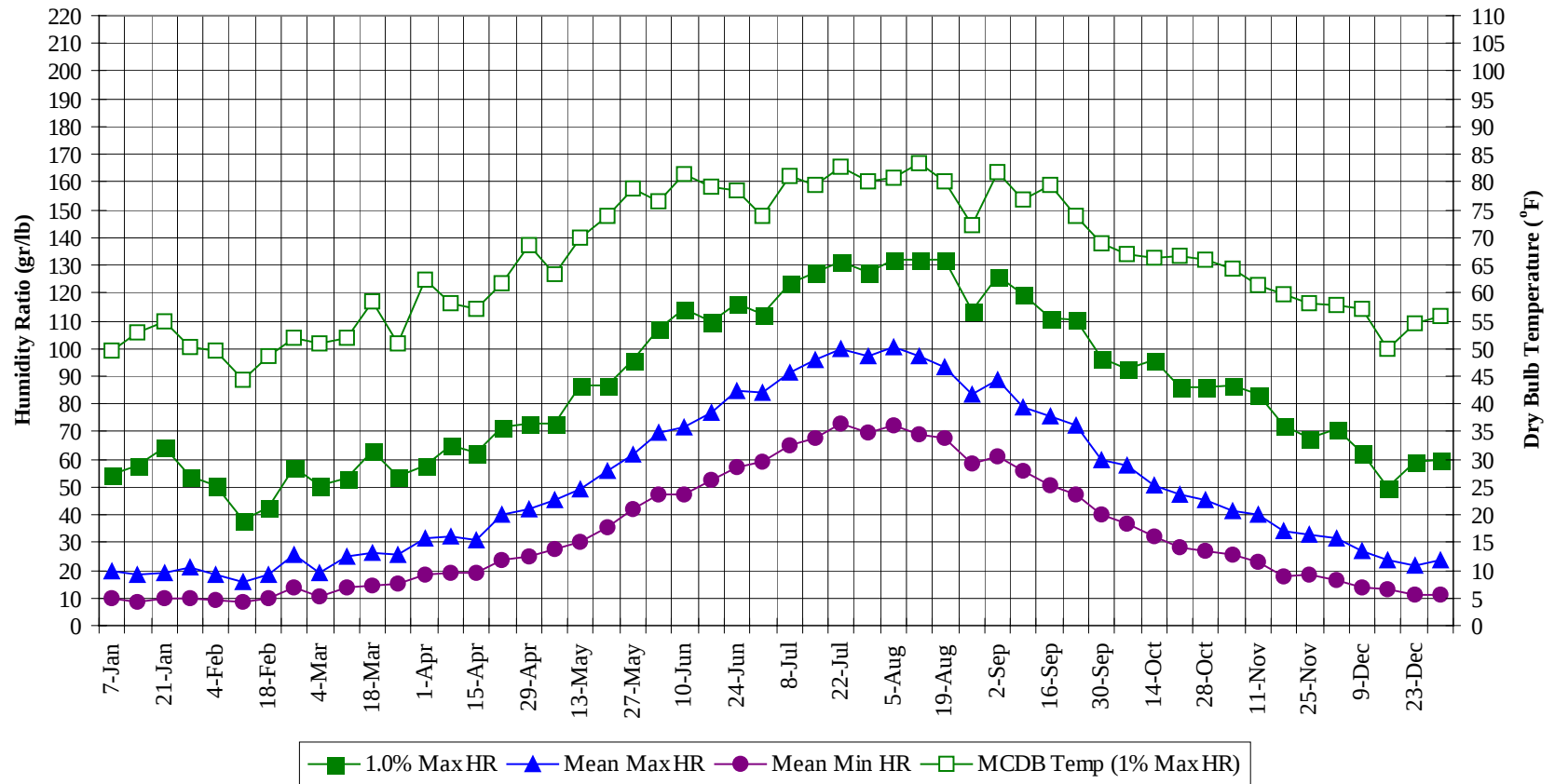
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
130 / 134		0	0	0	
125 / 129	0	1	0	1	
120 / 124	0	0	0	0	
115 / 119	0	0	0	0	
110 / 114	0	0	0	0	
105 / 109	0	0	0	0	
100 / 104	0	1	0	1	
95 / 99	0	0	0	0	67.0
90 / 94	0	4	0	4	74.6
85 / 89	0	38	6	44	72.8
80 / 84	2	124	30	156	69.5
75 / 79	18	222	91	331	66.4
70 / 74	93	259	185	536	63.8
65 / 69	214	245	251	709	60.7
60 / 64	285	241	275	800	56.5
55 / 59	283	218	256	756	52.0
50 / 54	263	215	245	723	47.2
45 / 49	239	215	235	689	42.4
40 / 44	248	219	239	706	37.7
35 / 39	267	237	267	771	33.2
30 / 34	281	229	264	773	28.8
25 / 29	214	168	199	580	24.1
20 / 24	161	123	142	426	19.3
15 / 19	134	81	107	322	14.7
10 / 14	99	48	75	222	10.1
5 / 9	74	20	37	131	5.5
0 / 4	29	9	16	54	0.9
-5 / -1	11	2	4	17	-3.5
-10 / -6	5	1	1	7	-7.3
-15 / -11	1	0	0	1	-11.2

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary



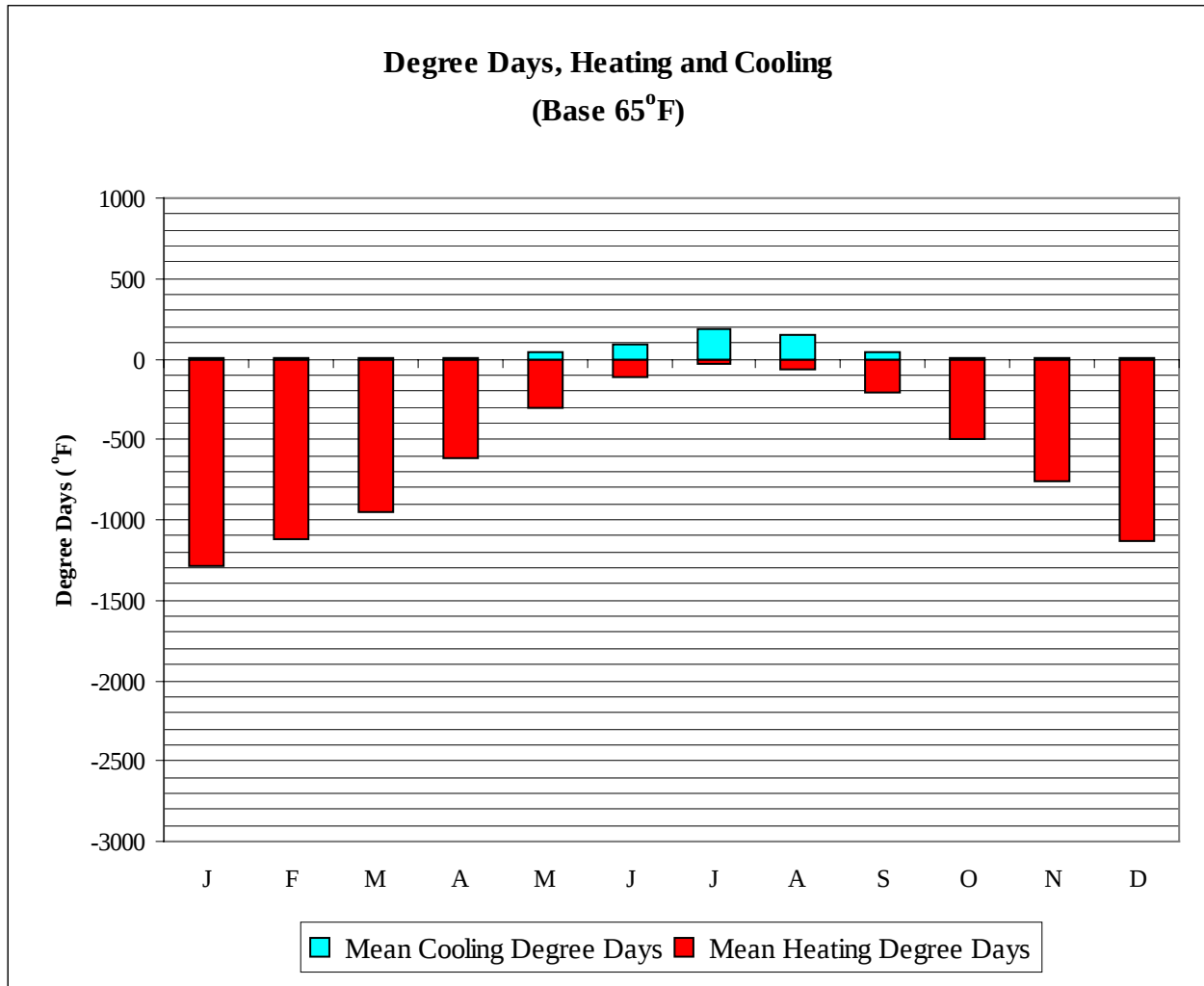
WORCESTER MA**WMO No. 725095****Long Term Dry Bulb Temperature and Humidity Summary**

Week Ending	1.0% Temp (°F)	MCWB @ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB @ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	52.0	46.5	31.2	17.6	-3.0	54.6	49.6	19.5	10.1
14-Jan	54.0	51.4	28.8	13.5	-3.0	58.1	53.0	18.5	8.7
21-Jan	55.0	53.1	29.4	14.3	-5.0	64.4	54.8	19.2	9.5
28-Jan	51.0	48.2	33.0	16.9	-1.0	53.9	50.4	21.3	10.0
4-Feb	52.0	47.2	31.1	15.8	2.0	50.4	49.4	18.7	8.9
11-Feb	49.0	41.6	28.0	13.7	-3.0	37.8	44.3	15.6	8.3
18-Feb	50.0	43.6	32.0	16.5	-4.0	42.7	48.6	18.3	9.7
25-Feb	55.0	49.5	38.6	23.2	7.0	57.4	51.8	25.3	14.0
4-Mar	55.0	53.3	34.7	19.5	3.0	50.4	50.8	19.3	10.7
11-Mar	56.0	49.8	39.4	23.5	6.0	53.2	51.8	25.1	13.6
18-Mar	61.0	55.8	41.5	24.9	8.0	63.0	58.3	26.3	14.6
25-Mar	59.0	43.6	43.2	27.0	9.0	53.9	50.8	25.3	14.8
1-Apr	67.0	54.3	48.2	31.3	15.0	58.1	62.3	31.5	18.1
8-Apr	69.0	54.6	47.8	32.7	16.0	65.1	58.0	32.0	19.1
15-Apr	67.0	55.1	49.9	33.9	24.0	62.3	57.1	31.1	18.7
22-Apr	72.0	55.4	56.5	38.5	27.0	71.4	61.9	39.9	23.9
29-Apr	78.0	61.1	58.2	39.6	28.0	72.8	68.7	41.7	24.8
6-May	74.0	60.1	60.5	42.4	31.0	72.8	63.3	45.2	27.4
13-May	80.0	62.0	63.1	44.6	35.0	86.8	69.9	49.5	30.3
20-May	81.0	64.2	65.9	47.4	38.0	86.8	74.0	55.7	35.7
27-May	83.0	65.5	68.4	50.9	39.0	95.9	78.9	62.0	41.8
3-Jun	82.0	67.9	70.0	52.8	43.0	107.1	76.5	69.7	47.0
10-Jun	85.0	72.8	70.3	53.3	44.0	114.1	81.5	71.7	47.6
17-Jun	87.0	71.3	73.2	55.8	44.0	109.9	79.1	77.1	52.4
24-Jun	85.0	69.5	75.4	58.3	50.0	116.2	78.6	84.9	57.2
1-Jul	84.0	69.0	74.4	57.9	48.0	112.0	73.8	83.8	58.8
8-Jul	88.0	74.0	77.3	60.9	51.0	123.2	81.0	91.0	64.7
15-Jul	88.0	73.2	78.1	62.3	54.0	127.4	79.3	95.9	67.5
22-Jul	89.0	75.1	79.4	63.5	56.0	131.6	82.8	99.6	72.9
29-Jul	86.0	72.9	77.6	62.5	55.0	127.4	80.0	97.0	69.8
5-Aug	87.0	74.7	78.4	62.4	56.0	132.3	80.8	100.4	72.0
12-Aug	86.0	73.7	76.8	60.7	52.0	132.3	83.4	97.2	69.1
19-Aug	85.0	72.4	75.8	59.6	52.0	132.3	80.1	93.2	67.5
26-Aug	83.0	70.7	73.8	58.0	49.0	113.4	72.4	83.3	58.5
2-Sep	85.0	74.4	74.0	57.9	47.0	126.0	81.6	88.4	60.9
9-Sep	83.0	72.8	71.2	55.7	46.0	119.7	76.9	79.1	55.7
16-Sep	81.0	71.4	69.0	53.4	43.0	111.3	79.3	75.4	50.6
23-Sep	80.0	69.0	65.8	50.8	40.0	110.6	74.0	71.9	47.5
30-Sep	74.0	66.9	63.4	47.3	36.0	96.6	68.9	60.1	40.0
7-Oct	73.0	62.6	60.9	45.2	34.0	92.4	67.1	57.7	36.9
14-Oct	72.0	63.0	58.0	42.2	31.0	95.9	66.3	50.5	32.0
21-Oct	70.0	58.6	56.3	40.7	31.0	86.1	66.8	47.5	28.5
28-Oct	69.0	57.2	56.2	40.0	30.0	86.1	66.0	45.3	26.9
4-Nov	70.0	58.6	53.5	37.8	23.0	86.8	64.3	41.2	25.6
11-Nov	66.0	60.6	49.6	34.5	20.0	83.3	61.4	40.3	22.9
18-Nov	64.0	53.5	46.5	30.7	15.0	72.1	59.7	34.0	17.7
25-Nov	64.0	57.6	43.5	29.8	10.0	67.9	58.0	32.5	18.1
2-Dec	60.0	57.7	42.7	26.8	11.0	70.7	57.7	31.3	16.1
9-Dec	61.0	57.0	39.0	24.1	7.0	62.3	57.1	27.0	13.9
16-Dec	54.0	49.3	35.2	21.3	2.0	49.7	49.8	24.0	13.2
23-Dec	56.0	52.8	33.0	18.5	2.0	59.2	54.6	21.6	11.3
31-Dec	56.0	52.6	34.6	18.7	-1.0	59.5	55.9	23.3	11.1

WORCESTER

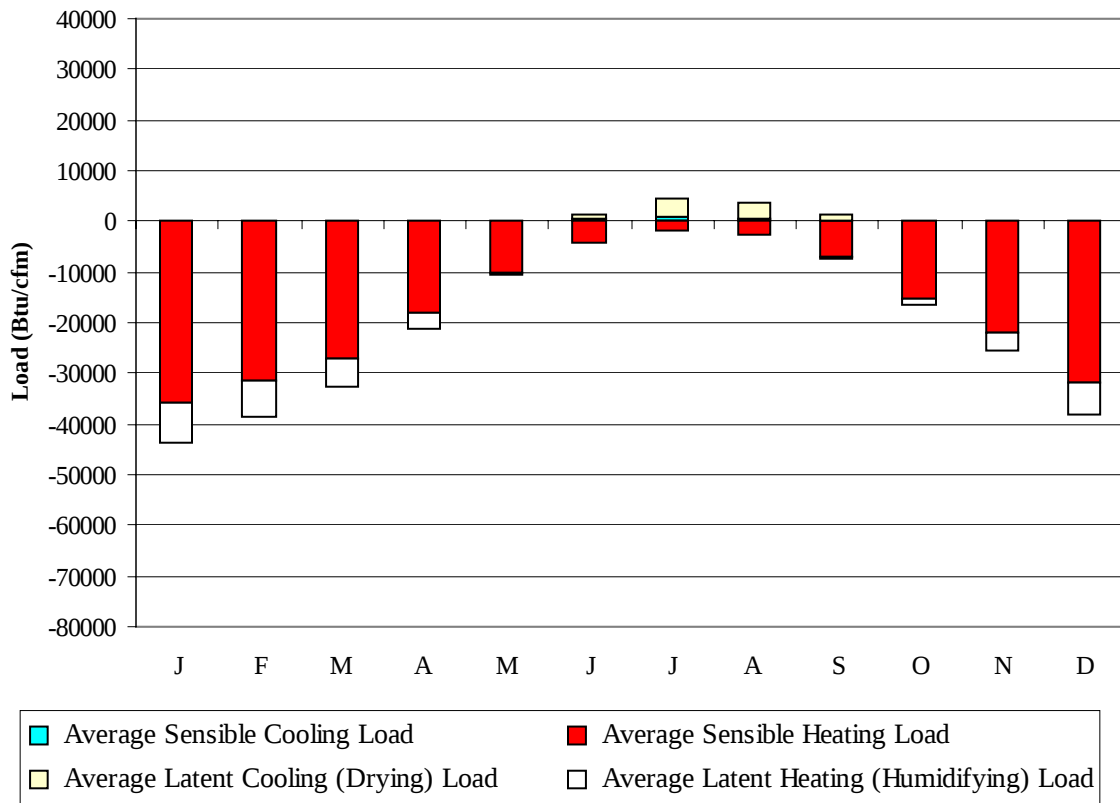
MA

WMO No. 725095



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1287
FEB	0	1123
MAR	1	950
APR	8	614
MAY	36	307
JUN	95	116
JUL	186	34
AUG	146	60
SEP	45	205
OCT	6	494
NOV	6	763
DEC	5	1132
ANN	533	7085

Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	0	-35765	0	-7856
FEB	0	-31274	0	-7143
MAR	1	-26983	0	-5612
APR	31	-18128	1	-3078
MAY	138	-9939	131	-779
JUN	368	-4378	1069	-29
JUL	923	-1682	3579	-4
AUG	627	-2595	3136	-16
SEP	134	-7121	989	-151
OCT	4	-15114	76	-1506
NOV	96	-22008	15	-3488
DEC	85	-31713	0	-6494
ANN	2407	-206700	8996	-36156

Average Annual Solar Radiation – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

City: WORCHESTER
 State: MA
 WBAN No: 94746
 Lat(N): 42.27
 Long(W): 71.87
 Elev(ft): 988

Stn Type: Secondary
 SHADING GEOMETRY IN DIMENSIONLESS UNITS
 Window: 1
 Overhang: 0.599
 Vert Gap: 0.328

AVERAGE INCIDENT SOLAR RADIATION (Btu/sq.ft./day), Percentage Uncertainty = 11		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ	Global	600	870	1200	1480	1730	1890	1880	1660	1330	950	590	480	1220
	Std Dev	48	79	94	115	127	143	104	97	88	60	45	34	34
	Minimum	520	700	950	1260	1450	1600	1670	1460	1170	860	480	410	1170
	Maximum	690	1060	1370	1710	2030	2170	2080	1870	1500	1120	660	560	1280
	Diffuse	320	450	600	730	860	910	890	780	610	440	320	270	600
Clear Day	Global	790	1150	1650	2150	2490	2610	2520	2210	1760	1240	830	680	1680
NORTH	Global	190	270	360	440	540	620	590	480	380	280	190	160	370
	Diffuse	190	270	360	430	510	540	530	470	370	280	190	160	360
Clear Day	Global	180	250	330	430	580	680	620	480	360	260	180	160	380
EAST	Global	410	570	740	880	990	1060	1040	960	810	610	390	340	730
	Diffuse	240	340	440	530	610	640	640	570	460	340	230	200	440
Clear Day	Global	610	830	1100	1310	1430	1470	1430	1320	1120	860	620	530	1050
SOUTH	Global	1010	1130	1100	970	860	820	860	970	1080	1120	890	860	970
	Diffuse	370	450	520	550	590	600	600	580	530	440	340	310	490
Clear Day	Global	1770	1900	1830	1490	1180	1030	1080	1320	1630	1790	1720	1660	1530
WEST	Global	410	570	740	860	960	1040	1040	950	800	610	390	330	730
	Diffuse	240	340	450	530	610	650	650	580	470	340	240	200	440
Clear Day	Global	610	830	1100	1310	1430	1470	1430	1320	1120	860	620	530	1050

Average Annual Solar Heat and Illumination – Nearest Available Site

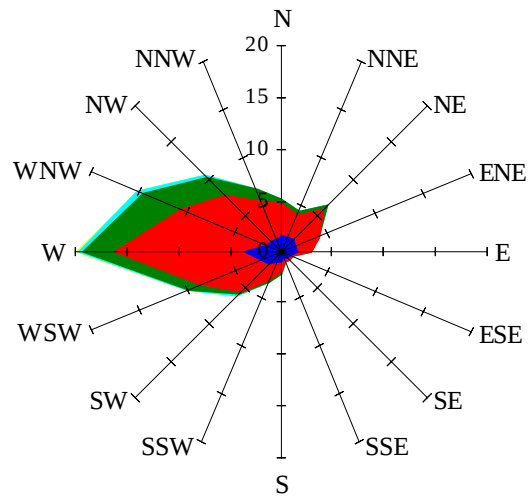
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 11		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ	Unshaded	380	590	840	1060	1250	1360	1360	1200	940	650	390	300	860
NORTH	Unshaded	130	190	250	300	360	410	390	330	260	190	130	110	250
	Shaded	110	160	210	260	310	350	340	290	230	170	110	96	220
EAST	Unshaded	280	400	520	630	700	750	740	680	570	430	270	230	520
	Shaded	250	340	440	530	580	620	610	570	480	370	240	200	440
SOUTH	Unshaded	760	830	770	640	550	510	540	630	740	810	670	650	670
	Shaded	730	760	600	410	350	360	360	380	520	700	640	630	540
WEST	Unshaded	280	400	520	610	680	740	740	670	570	430	270	230	510
	Shaded	250	340	450	510	560	610	610	560	480	370	230	200	430

AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 11											
		March					June				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	42	71	77	57	19	52	85	99	90	62
	M.Cloudy	25	45	48	37	13	33	55	68	64	42
NORTH	M.Clear	10	14	15	13	7	15	16	17	17	15
	M.Cloudy	10	16	17	14	6	13	18	19	19	14
EAST	M.Clear	71	50	15	13	7	77	67	25	17	15
	M.Cloudy	27	28	17	14	6	36	39	23	19	14
SOUTH	M.Clear	44	77	83	61	19	13	38	51	44	20
	M.Cloudy	20	38	41	30	9	12	27	37	33	17
WEST	M.Clear	10	14	29	67	51	13	16	17	56	77
	M.Cloudy	10	16	22	33	18	12	18	19	40	42
M.Clear	(% hrs)	35	32	30	31	35	37	34	28	25	28
		Sept					Dec				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	31	66	80	70	39	14	37	39	20	0
	M.Cloudy	19	40	54	47	24	9	23	23	13	0
NORTH	M.Clear	9	14	16	15	11	5	9	10	7	0
	M.Cloudy	8	14	17	16	10	4	9	9	6	0
EAST	M.Clear	64	63	21	15	11	35	31	10	7	0
	M.Cloudy	23	32	20	16	10	11	16	9	6	0
SOUTH	M.Clear	25	61	76	65	33	35	76	81	47	0
	M.Cloudy	12	31	45	38	17	11	29	29	15	0
WEST	M.Clear	9	14	16	56	68	5	9	25	40	0
	M.Cloudy	8	14	17	34	28	4	9	13	14	0
M.Clear	(% hrs)	43	43	36	35	40	34	32	31	33	36

Wind Summary - December, January, and February

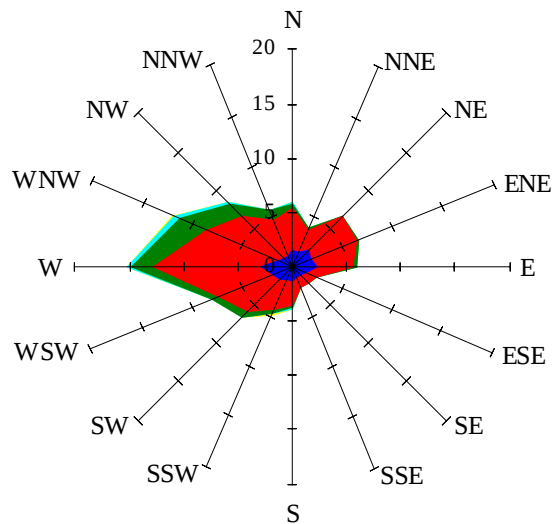
Labels of Percent Frequency on North Axis



Percent Calm = 0.79

Wind Summary - March, April, and May

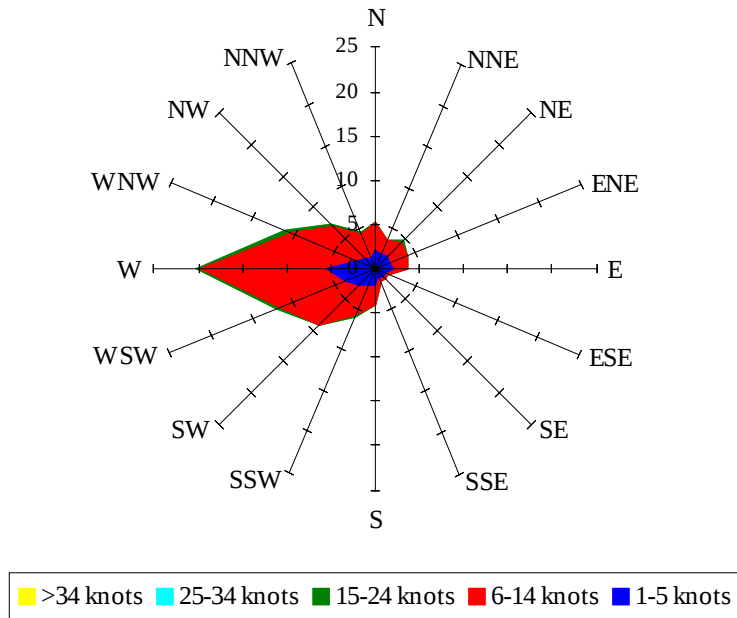
Labels of Percent Frequency on North Axis



Percent Calm = 0.86

Wind Summary - June, July, and August

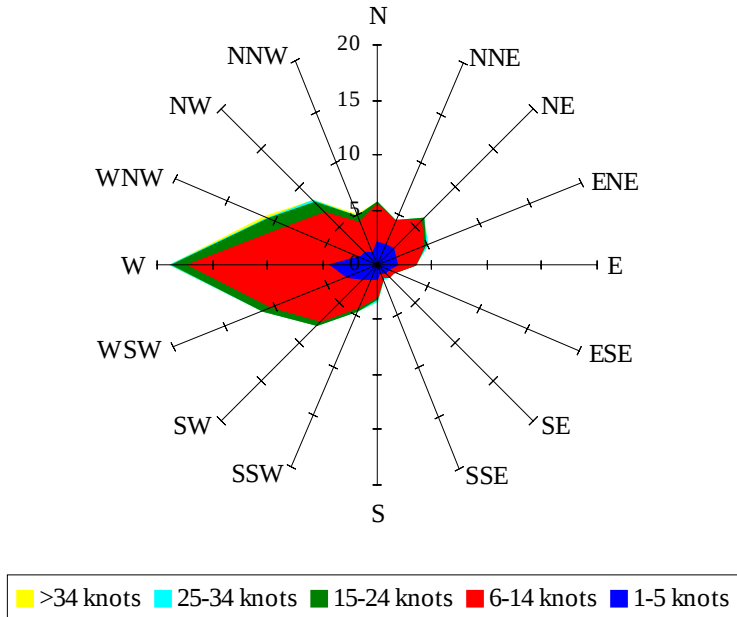
Labels of Percent Frequency on North Axis



Percent Calm = 1.02

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 1.54