

BLOCK ISLAND, RI	Station ID = ICAO_KBID
Latitude = 41.17 N	Elevation = 108 Feet
Longitude = 71.57 W	Average Pressure = 29.90 inches Hg
Period of Record = 1988 To 2017	

Design Criteria Data

	Mean Coincident (Average) Values				
Dry Bulb Temperature (T)	Design Value (°F)	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	86	74	106	10.5	WSW
0.4% Occurrence	82	72	103	10.9	WSW
1.0% Occurrence	80	71	102	11.5	SW
2.0% Occurrence	78	70	99	11.5	SW
Mean Daily Range	10	-	-	-	NW
97.5% Occurrence	21	18	8	13.3	NW
99.0% Occurrence	17	14	6	14	NW
99.6% Occurrence	12	10	5	14.8	NW
Median of Extreme Lows	8	6	4	14.3	NNW

	Design Value (°F)	Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T _{wb})					
Median of Extreme Highs	77	82	129	11.7	WSW
0.4% Occurrence	75	79	121	11.8	SW
1.0% Occurrence	74	78	118	11.7	SW
2.0% Occurrence	72	75	112	11.1	SW

	Design Value (gr/lb)	Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)					
Median of Extreme Highs	132	79	0.88	11.8	S
0.4% Occurrence	125	78	0.83	11.9	SW
1.0% Occurrence	118	75	0.78	11.5	SW
2.0% Occurrence	116	75	0.78	10.9	SW

Air Conditioning/ Humid Area Criteria	Threshold	T ≥ 93 °F	T ≥ 80 °F	Twb ≥ 73 °F	Twb ≥ 67 °F
	# of Hours	3	80	151	841

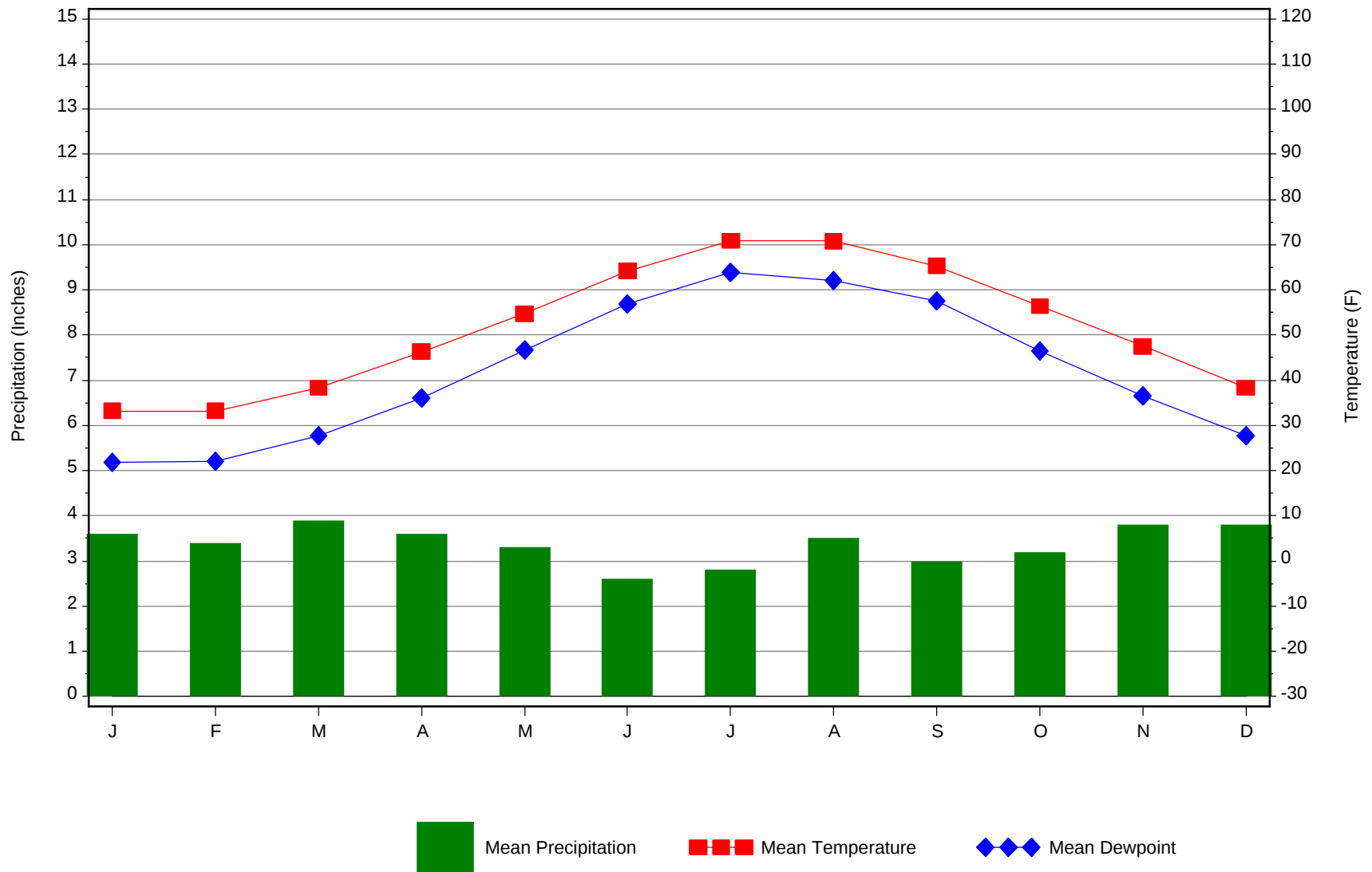
Other Site Data

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
7	2.75	115	1.6 + 0.1
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 (#)
54.3	35	30	31

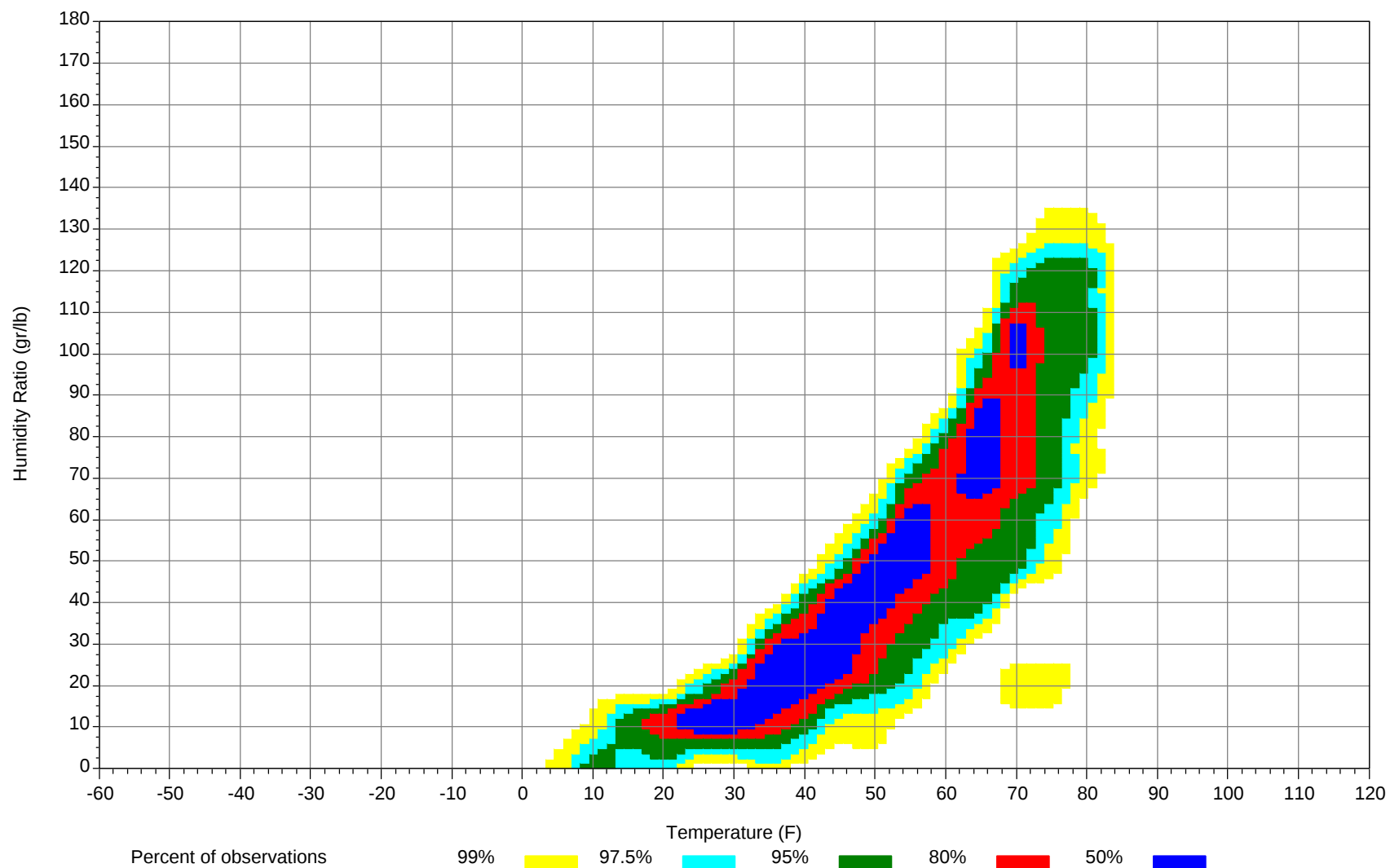
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



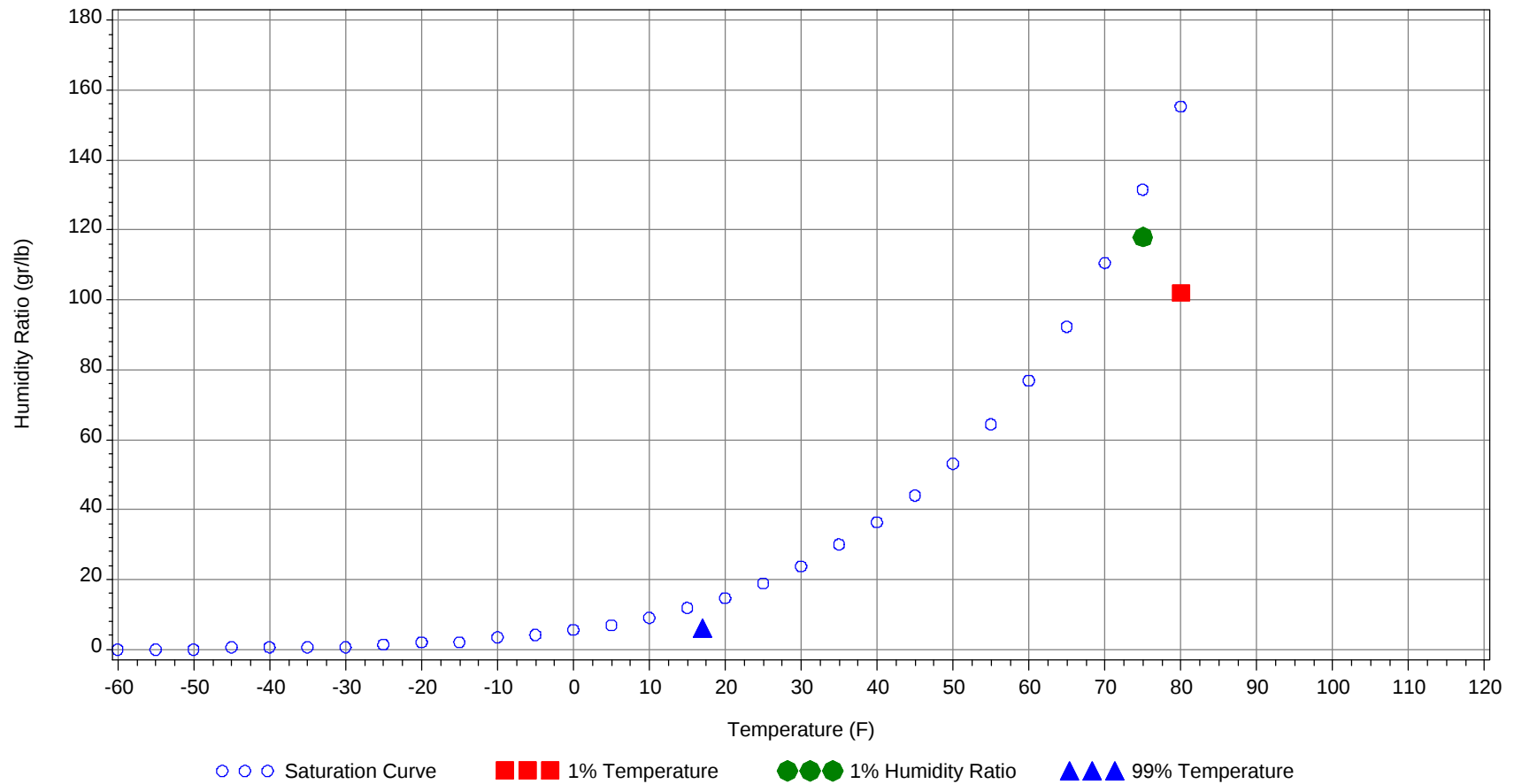
Average Annual Climate



Long Term Psychrometric Summary



Psychrometric Summary of Peak Design Values



	(° F) / (gr/lb)	MCDB (° F)	MCWB (° F)	MCDP (° F)	MCHR (gr/lb)	Enthalpy (btu/lb)
1.0% Dry Bulb	80.0		71		102.0	35.1
99.0% Dry Bulb	17.0				6.0	5.1
1.0% Humidity Ratio	118.0	75.0	72.8	71.7		36.6

Dry-Bulb Temperature Hours For An Average Year

	January					February					March				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
90/ 94															
85/ 89															
80/ 84															
75/ 79															
70/ 74															
65/ 69												0	0	0	59
60/ 64												2	0	2	52.8
55/ 59	1	2	1	4	54	0	1		1	51.9	0	5	1	6	48.8
50/ 54	6	10	7	23	49.8	2	6	2	10	48.5	6	21	7	34	46.8
45/ 49	19	30	22	71	43.4	9	25	16	50	42.9	28	56	41	125	42.5
40/ 44	27	35	29	91	38.3	20	37	27	84	38.5	40	53	51	144	38.4
35/ 39	53	55	61	169	33.2	56	53	61	170	33.6	76	61	81	218	33.7
30/ 34	48	46	50	144	28.3	50	48	53	151	28.5	54	30	44	128	28.5
25/ 29	37	32	36	105	23.2	44	32	38	114	23	26	13	15	54	23.2
20/ 24	19	15	19	53	18.7	19	13	15	47	18.7	9	3	4	16	18.4
15/ 19	20	14	13	47	14.5	17	8	10	35	14.6	7	2	3	12	14.8
10/ 14	9	6	6	21	9.6	6	2	2	10	9.7	1	0	0	1	9.4
5/ 9	7	2	3	12	5.6	2	0	0	2	6	0			0	6
0/ 4	1	0	0	1	0.7	0	0	0	0	0.3					
-5/ -1	0			0	-4	0	0		0	-3.8					
-10/ -6						0			0	-7					

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.

Dry-Bulb Temperature Hours For An Average Year

	April					May					June				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
90/ 94												0		0	75
85/ 89												1	0	1	74.3
80/ 84		0		0	66.8		0		0	68.7	0	7	0	7	70.2
75/ 79		0		0	61		4	0	4	64.7	1	23	3	27	67.5
70/ 74	0	1	0	1	59.5	1	13	2	16	61.8	15	74	27	116	64.8
65/ 69	0	2	0	2	55.8	3	19	6	28	59.1	44	60	58	162	62.5
60/ 64	1	10	2	13	52.4	20	63	30	113	56.3	97	53	92	242	59
55/ 59	5	33	9	47	49.4	55	76	67	198	52.6	61	18	47	126	54.4
50/ 54	27	71	42	140	46.8	86	55	85	226	48.9	19	3	11	33	49.9
45/ 49	84	77	95	256	42.6	74	18	53	145	44.5	2		1	3	44.6
40/ 44	61	32	55	148	38.6	9	1	5	15	39.7					
35/ 39	50	13	32	95	34.5	1	0	0	1	36.8					
30/ 34	10	1	4	15	29										
25/ 29	1	0	0	1	23.3										
20/ 24	0			0	17.7										
15/ 19															
10/ 14															
5/ 9															
0/ 4															
-5/ -1															
-10/ -6															

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.

Dry-Bulb Temperature Hours For An Average Year

	July					August					September				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
90/ 94		1		1	76.7		0		0	76.6					
85/ 89		3	0	3	74.1	0	2	0	2	73.4		0		0	75.4
80/ 84	1	36	4	41	72.1	0	29	2	31	71.9	0	2	0	2	72.5
75/ 79	13	89	30	132	70	12	96	27	135	69.5	1	28	2	31	69.7
70/ 74	97	88	116	301	67.7	101	86	120	307	66.9	31	86	43	160	66.8
65/ 69	81	24	67	172	63.9	70	27	64	161	63.1	58	61	70	189	63
60/ 64	51	7	29	87	60	58	7	32	97	59	89	51	85	225	58.2
55/ 59	6	0	2	8	54.9	7	0	2	9	53.5	44	10	30	84	52.4
50/ 54	0			0	50.3	0		0	0	44.5	14	2	7	23	47.7
45/ 49											2	0	1	3	41.9
40/ 44											0		0	0	38
35/ 39															
30/ 34															
25/ 29															
20/ 24															
15/ 19															
10/ 14															
5/ 9															
0/ 4															
-5/ -1															
-10/ -6															

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Dry-Bulb Temperature Hours For An Average Year

	October					November					December				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
90/ 94															
85/ 89															
80/ 84															
75/ 79		1		1	67										
70/ 74	1	13	1	15	65										
65/ 69	13	35	15	63	62.9		1		1	62.4					
60/ 64	48	77	61	186	57.9	8	19	9	36	58.4	1	1	1	3	59.1
55/ 59	66	61	74	201	51.9	35	46	41	122	53.5	5	10	7	22	53.9
50/ 54	56	40	54	150	46.6	41	55	46	142	47.6	20	27	18	65	49.2
45/ 49	43	16	32	91	41.6	58	60	63	181	41.6	33	48	42	123	42.6
40/ 44	15	4	9	28	37.6	37	30	36	103	36.9	36	41	41	118	37.9
35/ 39	6	1	3	10	34	39	19	31	89	32.3	56	52	56	164	32.8
30/ 34	0		0	0	30.6	13	7	9	29	27.5	44	34	42	120	28
25/ 29	0			0		7	2	3	12	23	29	22	25	76	23.1
20/ 24	0			0	21	1	0	0	1	19.6	13	9	10	32	18.8
15/ 19											8	3	5	16	14.7
10/ 14											2	1	1	4	10
5/ 9											1	0	0	1	7
0/ 4															
-5/ -1															
-10/ -6															

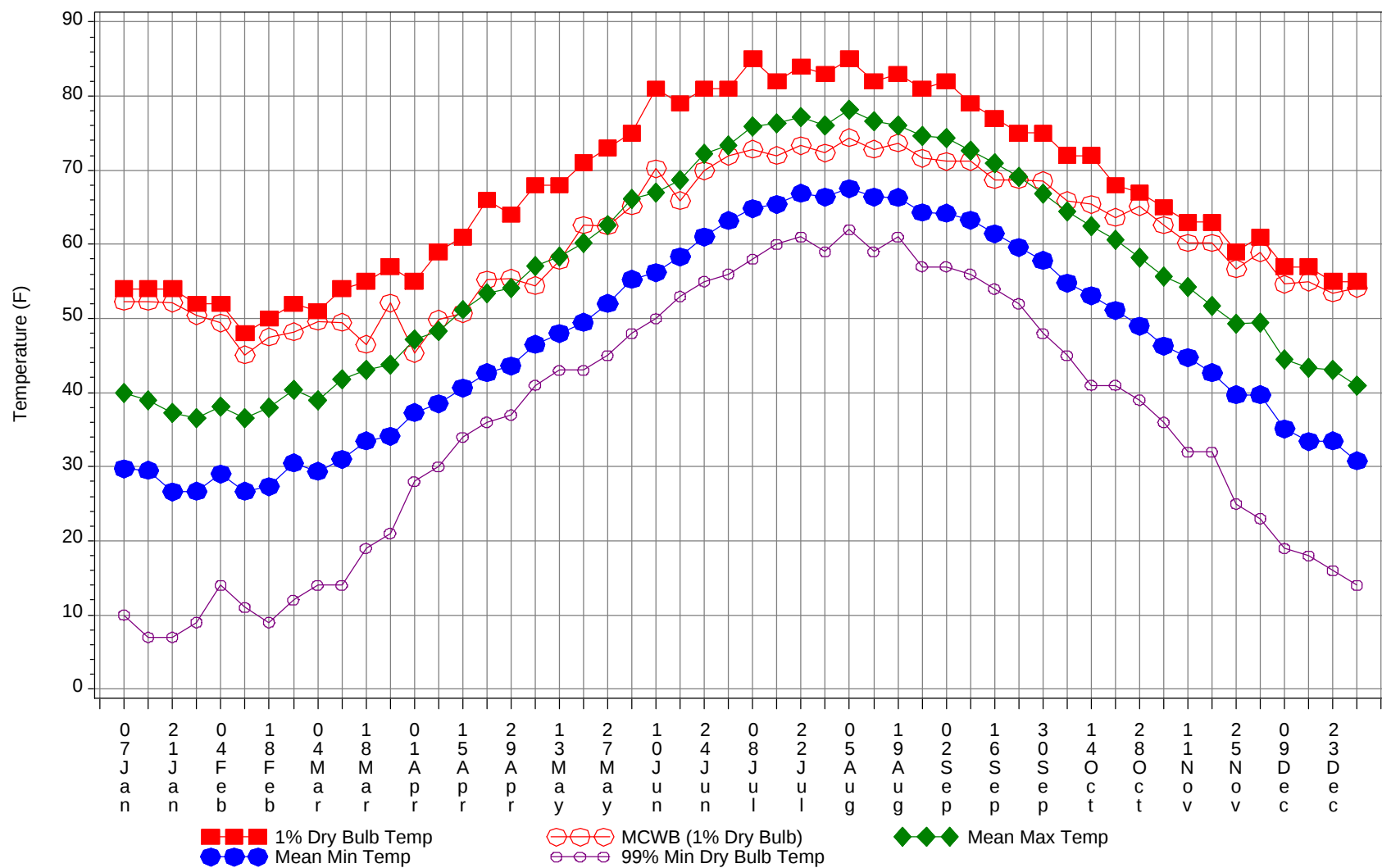
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

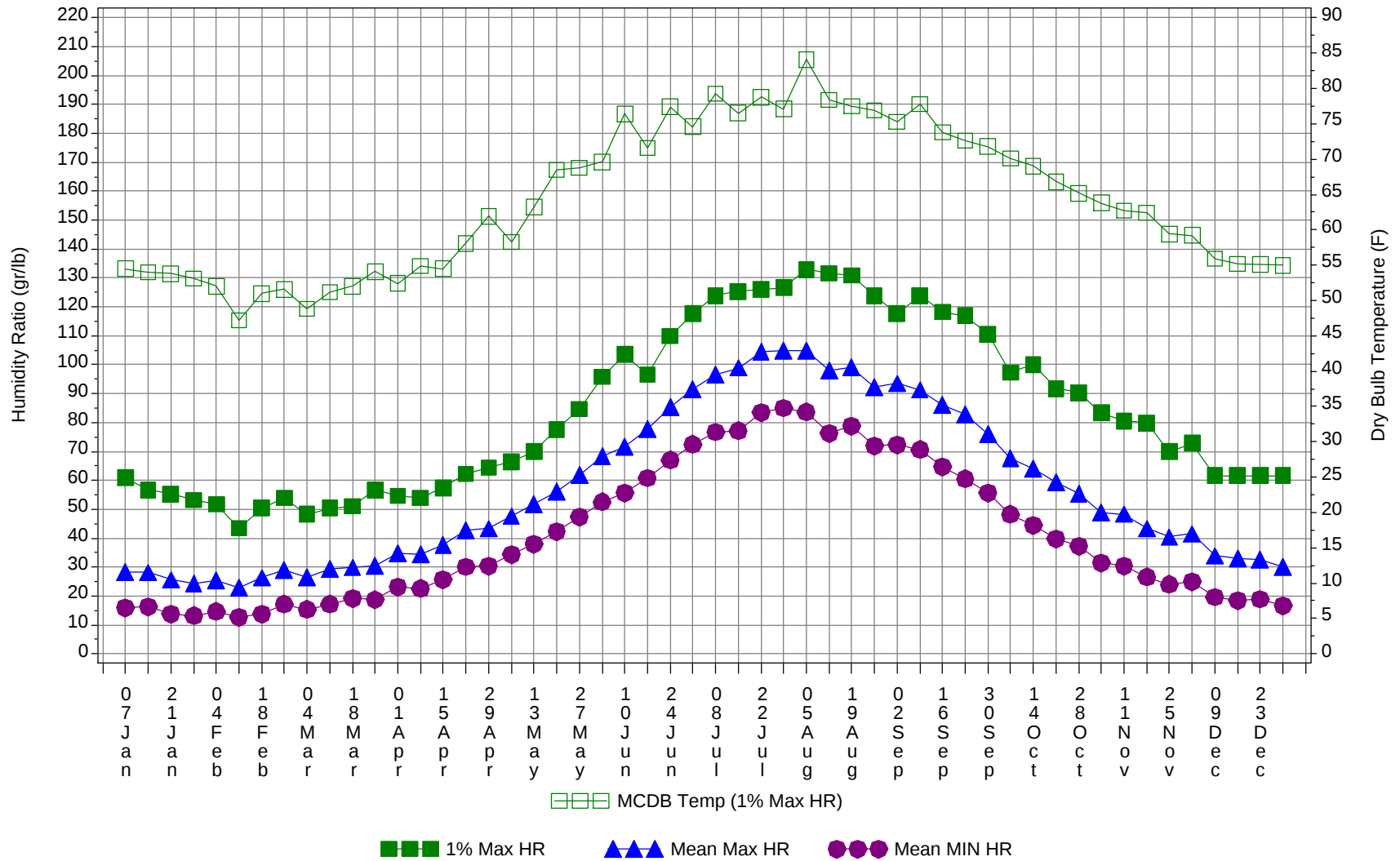
	Annual				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
90/ 94		1		1	76.5
85/ 89	0	7	0	7	73.9
80/ 84	1	77	7	85	71.9
75/ 79	27	247	65	339	69.5
70/ 74	250	365	317	932	66.8
65/ 69	272	228	285	785	62.9
60/ 64	374	288	344	1006	58.3
55/ 59	282	260	278	820	52.7
50/ 54	275	288	277	840	47.9
45/ 49	351	330	363	1044	42.7
40/ 44	244	231	251	726	38.2
35/ 39	337	252	322	911	33.4
30/ 34	220	166	200	586	28.3
25/ 29	144	100	116	360	23.1
20/ 24	63	41	48	152	18.7
15/ 19	52	26	30	108	14.6
10/ 14	18	9	10	37	9.6
5/ 9	9	2	4	15	5.8
0/ 4	2	0	0	2	0.6
-5/ -1	0	0		0	-3.9
-10/ -6	0			0	-7

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.

Annual Summary of Temperatures



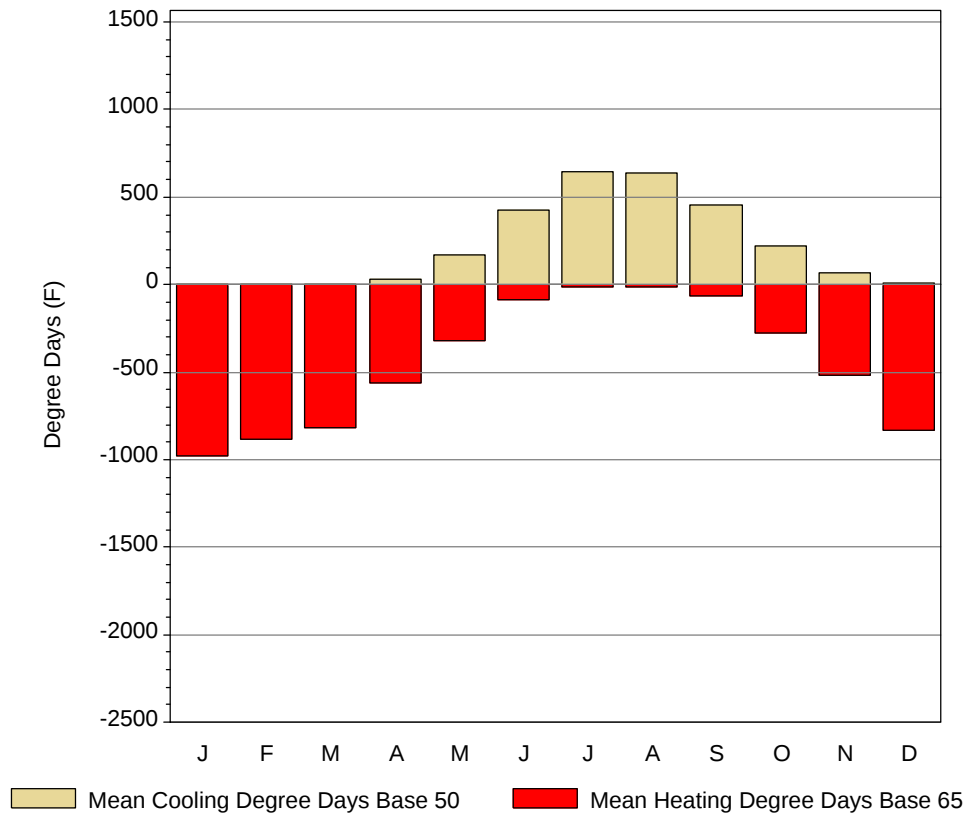
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

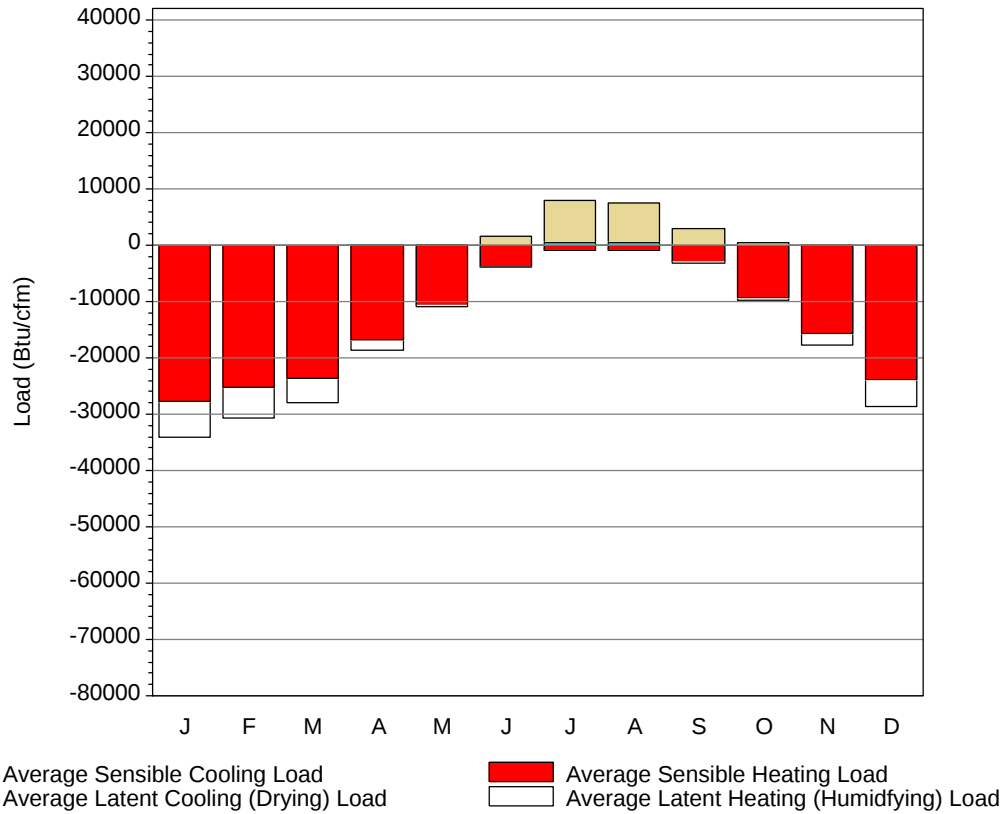
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	54	52.3	40	29.7	10	60.9	54.5	28.4	15.9
14-Jan	54	52.3	38.9	29.5	7	56.7	54	28.1	16.2
21-Jan	54	52.1	37.2	26.6	7	55.3	53.8	25.6	13.7
28-Jan	52	50.4	36.5	26.7	9	53.2	53.1	24.2	13.2
4-Feb	52	49.4	38.1	29	14	51.8	52	25.3	14.6
11-Feb	48	45.1	36.5	26.7	11	43.4	47.2	22.9	12.6
18-Feb	50	47.5	37.9	27.3	9	50.4	51	26.3	13.8
25-Feb	52	48.2	40.4	30.5	12	53.9	51.6	29.1	17.2
4-Mar	51	49.6	39	29.4	14	48.3	48.8	26.4	15.4
11-Mar	54	49.5	41.8	31	14	50.4	51.2	29.4	17.2
18-Mar	55	46.5	43.1	33.5	19	51.1	52	29.9	19.1
25-Mar	57	52.1	43.8	34.1	21	56.7	54.1	30.4	18.7
1-Apr	55	45.3	47.1	37.3	28	54.6	52.4	34.8	23.1
8-Apr	59	49.9	48.3	38.5	30	53.9	54.9	34.3	22.6
15-Apr	61	50.7	51.2	40.6	34	57.4	54.5	37.6	25.6
22-Apr	66	55.2	53.4	42.7	36	62.3	58.1	42.7	30.1
29-Apr	64	55.4	54.1	43.6	37	64.4	61.9	43.3	30.3
6-May	68	54.4	57.1	46.5	41	66.5	58.3	47.6	34.3
13-May	68	57.8	58.3	48	43	70	63.2	51.9	38
20-May	71	62.6	60.2	49.5	43	77.7	68.5	56	42.2
27-May	73	62.5	62.6	52	45	84.7	68.8	62	47.3
4-Jun	75	65.2	66.2	55.3	48	95.9	69.6	68.5	52.6
10-Jun	81	70.2	67	56.2	50	103.6	76.4	71.6	55.6
17-Jun	79	65.9	68.7	58.3	53	96.6	71.6	77.7	60.8
24-Jun	81	69.9	72.2	61	55	109.9	77.4	85.5	67
1-Jul	81	71.9	73.4	63.2	56	117.6	74.6	91.4	72.5
8-Jul	85	72.8	75.9	64.8	58	123.9	79.3	96.7	76.7
15-Jul	82	72	76.3	65.4	60	125.3	76.5	98.9	77.2
22-Jul	84	73.3	77.2	66.9	61	126	78.8	104.4	83.5
29-Jul	83	72.3	76.1	66.4	59	126.7	77.1	104.9	85
5-Aug	85	74.4	78.1	67.5	62	133	84.1	105	83.6
12-Aug	82	72.8	76.6	66.4	59	131.6	78.4	97.9	76.2
19-Aug	83	73.7	76	66.3	61	130.9	77.5	99.1	78.7
26-Aug	81	71.6	74.6	64.3	57	123.9	76.9	92.3	71.9
2-Sep	82	71.2	74.3	64.2	57	117.6	75.3	93.5	72.3
9-Sep	79	71.2	72.6	63.3	56	123.9	77.8	91.3	70.6
16-Sep	77	68.7	71	61.4	54	118.3	73.8	86.1	64.7
23-Sep	75	68.7	69.1	59.6	52	116.9	72.6	82.9	60.6
30-Sep	75	68.6	66.9	57.8	48	110.6	71.8	75.9	55.7
7-Oct	72	65.9	64.4	54.8	45	97.3	70.1	67.6	48.3
14-Oct	72	65.4	62.4	53.1	41	100.1	69	64	44.5
21-Oct	68	63.6	60.6	51.1	41	91.7	66.8	59.4	39.8
28-Oct	67	65.1	58.2	49	39	90.3	65.2	55.5	37.2
4-Nov	65	62.6	55.6	46.3	36	83.3	63.8	49	31.4
11-Nov	63	60.2	54.2	44.7	32	80.5	62.7	48.3	30.3
18-Nov	63	60.2	51.7	42.7	32	79.8	62.4	43.3	26.5
25-Nov	59	56.7	49.3	39.7	25	70	59.4	40.4	24.1
2-Dec	61	58.9	49.5	39.7	23	72.8	59.2	41.5	25
9-Dec	57	54.6	44.5	35.1	19	61.6	55.9	33.9	19.6
16-Dec	57	54.9	43.4	33.4	18	61.6	55.2	33	18.5
23-Dec	55	53.4	43.1	33.5	16	61.6	55.1	32.7	18.9
31-Dec	55	54.1	40.9	30.8	14	61.6	55	30.2	16.7

Degree Days, Heating and Cooling (Base 65 F) & Cooling (Base 50F)



Month	Mean Cooling Degree Days (°F) Base 50	Mean Cooling Degree Days (°F) Base 65	Mean Heating Degree Days (°F) Base 65
JAN	2.3	0	976.8
FEB	0.7	0	883.7
MAR	4.5	0	821
APR	31.7	0.5	559.9
MAY	171.3	7.2	320.6
JUN	425.8	60.8	85.2
JUL	643	188.4	10.4
AUG	639.7	185.6	11
SEP	456.2	70.8	65
OCT	220.7	7.5	274.4
NOV	67.5	0	514.8
DEC	11.5	0	829.6
ANN	2674.9	520.8	5352.4

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



Month	Average Sensible Cooling Load (Btu/cfm)	Average Sensible Heating Load (Btu/cfm)	Average Latent Cooling Load (Btu/cfm)	Average Latent Heating Load (Btu/cfm)
JAN	0	-27729	0	-6304
FEB	0	-25105	0	-5564
MAR	0	-23692	0	-4330
APR	1	-16838	0	-1668
MAY	6	-10619	78	-328
JUN	96	-3753	1574	-72
JUL	534	-805	7358	-17
AUG	461	-830	7040	-160
SEP	55	-3045	3002	-12
OCT	0	-9378	454	-444
NOV	0	-15676	13	-2107
DEC	0	-23913	0	-4761
ANN	1153	-161383	19519	-25767

Station Information		Shading Geometry in Dimensionless Units	
City, State, WBAN	PROVIDENCE, RI 14765	Window:	1.000
Lat, Lon, Elev	41.73N 71.43W 62ft	Overhang:	0.583
Press, Stn Type	14.7psia Secondary	Vert Gap:	0.327

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	590	850	1180	1490	1760	1900	1870	1660	1340	970	610	490	1230
	Std.Dev.	42	77	93	127	124	144	130	106	78	68	45	39	42
	Minimum	530	710	970	1230	1500	1580	1630	1440	1210	870	530	410	1160
	Maximum	710	1050	1310	1720	2010	2200	2070	1880	1500	1170	690	560	1300
	Diffuse	290	410	550	710	840	890	880	780	610	430	310	250	580
Clear Day	Global	800	1150	1640	2140	2470	2590	2500	2210	1760	1260	850	690	1680
NORTH	Global	180	250	340	430	540	610	580	480	380	280	190	160	370
	Diffuse	180	250	340	430	500	540	530	460	380	280	190	160	350
Clear Day	Global	180	240	330	430	580	680	620	480	360	260	190	160	380
EAST	Global	410	560	730	880	980	1050	1010	950	800	620	410	340	730
	Diffuse	230	310	420	520	600	630	630	570	460	340	230	200	430
Clear Day	Global	620	820	1080	1300	1420	1450	1410	1310	1120	860	630	540	1050
SOUTH	Global	1020	1120	1090	960	860	810	850	960	1080	1150	930	900	980
	Diffuse	340	420	490	540	580	590	600	580	520	440	330	300	480
Clear Day	Global	1770	1880	1790	1470	1150	1010	1050	1300	1610	1790	1730	1670	1520
WEST	Global	410	550	730	860	980	1040	1040	940	800	620	400	340	730
	Diffuse	230	320	420	520	610	640	640	580	470	350	240	200	430
Clear Day	Global	620	820	1080	1300	1420	1450	1410	1310	1120	860	630	540	1050

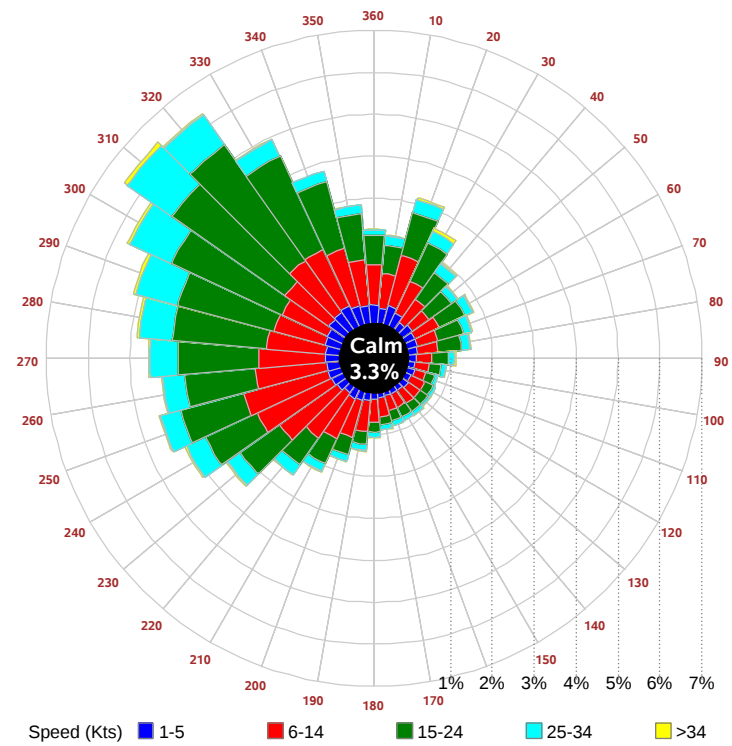
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

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	580	830	1070	1270	1380	1350	1200	950	670	400	310	870
NORTH	Unshaded	130	180	240	300	360	400	380	320	260	190	130	110	250
	Shaded	110	150	210	260	310	350	330	290	230	170	120	95	220
EAST	Unshaded	280	390	510	630	690	740	720	670	570	440	280	230	510
	Shaded	250	340	440	530	580	610	590	560	480	380	250	210	440
SOUTH	Unshaded	770	820	760	640	550	500	530	620	740	830	700	680	680
	Shaded	750	760	590	410	350	350	360	380	520	720	670	660	540
WEST	Unshaded	280	390	510	610	700	740	740	670	560	440	280	230	510
	Shaded	250	340	440	510	580	610	610	560	480	380	240	210	430

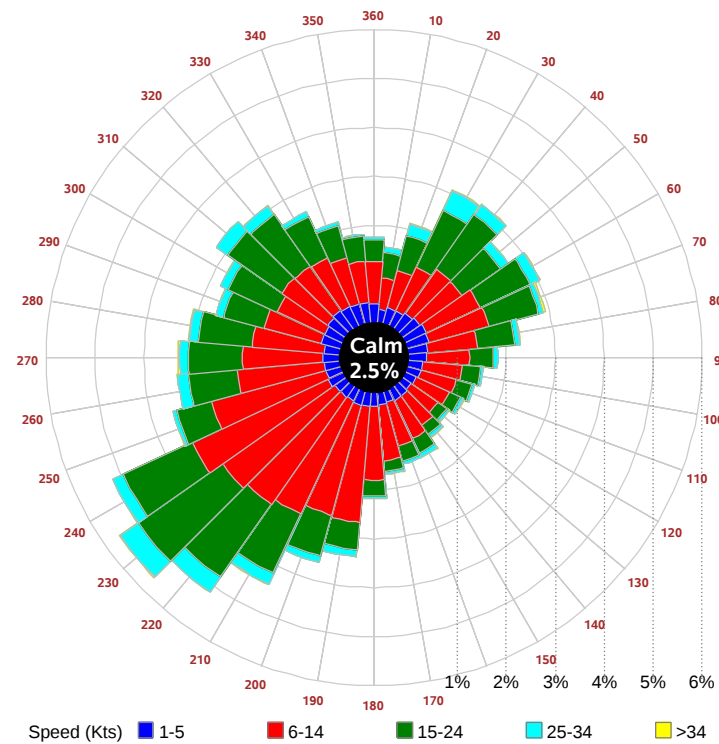
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS Percentage Uncertainty = 11												
		March					June					
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	
HORIZ.	M.Clear	42	72	77	56	19	53	86	99	90	62	
	M.Cloudy	24	43	45	34	12	32	54	69	63	41	
NORTH	M.Clear	10	14	15	12	7	15	17	17	17	15	
	M.Cloudy	10	15	16	13	5	13	18	20	19	14	
EAST	M.Clear	71	49	15	12	7	79	67	24	17	15	
	M.Cloudy	25	27	16	13	5	33	38	23	19	14	
SOUTH	M.Clear	45	77	82	60	19	13	38	51	43	19	
	M.Cloudy	18	35	38	28	8	12	26	37	32	16	
WEST	M.Clear	10	14	30	67	51	13	17	17	57	77	
	M.Cloudy	10	15	21	30	16	12	18	20	39	40	
M.Clear	(% hrs)	37	35	34	34	37	39	37	32	29	34	

		Sept					Dec					
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	
HORIZ.	M.Clear	32	67	81	70	38	15	38	40	20	0	
	M.Cloudy	19	41	54	47	24	9	22	23	12	0	
NORTH	M.Clear	9	14	16	15	11	6	10	10	7	0	
	M.Cloudy	8	15	17	16	10	4	9	9	6	0	
EAST	M.Clear	64	63	21	15	11	37	32	10	7	0	
	M.Cloudy	22	32	20	16	10	10	15	9	6	0	
SOUTH	M.Clear	26	61	76	65	32	38	78	81	48	0	
	M.Cloudy	12	31	44	37	17	10	27	28	15	0	
WEST	M.Clear	9	14	16	56	67	6	10	26	41	0	
	M.Cloudy	8	15	17	34	29	4	9	13	13	0	
M.Clear	(% hrs)	44	43	39	37	39	37	36	36	36	39	

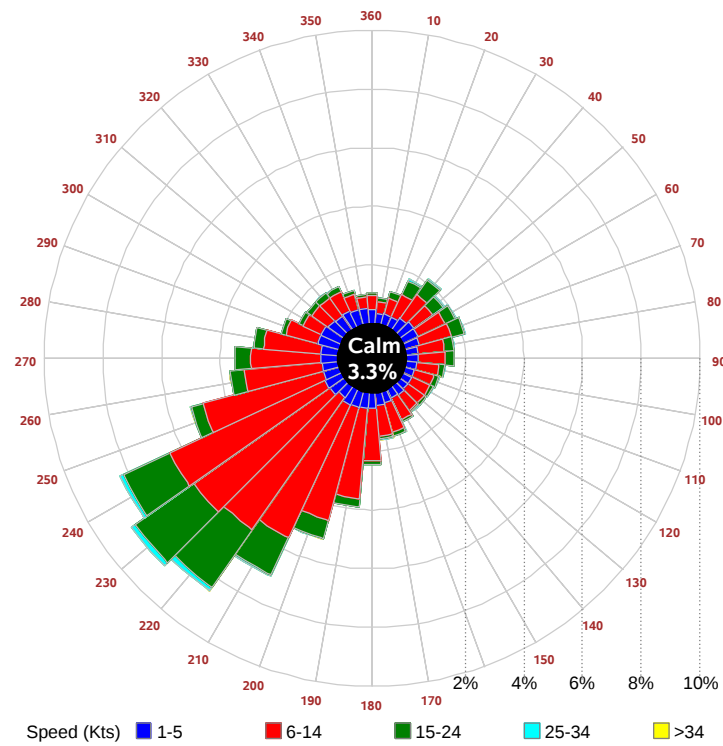
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

