CASALE, IT	
Latitude = 40.66 N	Station ID = ICAO_LIBR
Longitude = 17.95 E	Elevation = 47 Feet
Period of Record = 1988 To 2017	Average Pressure = 29.94 inches Hg

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	97	74	87	12	S
0.4% Occurrence	91	75	109	10.1	S
1.0% Occurrence	88	76	119	9.4	E
2.0% Occurrence	86	76	121	9.4	NNW
Mean Daily Range	12	-	-	-	W
97.5% Occurrence	43	40	32	8.1	W
99.0% Occurrence	39	37	28	7.5	W
99.6% Occurrence	37	35	26	7.4	WSW
Median of Extreme Lows	32	30	22	7.8	W

Wet Bulb Temperature (T_{wb})	**Design Value (°F)**	**Dry Bulb Temperature (°F)**	**Humidity Ratio (gr/lb)**	**Wind Speed (mph)**	**Prevailing Direction (NSEW)**
Median of Extreme Highs	83	87	161	8.6	NW
0.4% Occurrence	81	86	151	9.4	NW
1.0% Occurrence	79	84	140	9.2	NW
2.0% Occurrence	78	83	135	9.1	NW

Humidity Ratio (HR)	**Design Value (gr/lb)**	**Dry Bulb Temperature (°F)**	**Vapor Pressure (in. Hg)**	**Wind Speed (mph)**	**Prevailing Direction (NSEW)**
Median of Extreme Highs	167	86	1.11	6.7	N
0.4% Occurrence	152	85	1.01	7.5	NW
1.0% Occurrence	143	84	0.95	8.9	S
2.0% Occurrence	140	83	0.93	9.4	NW

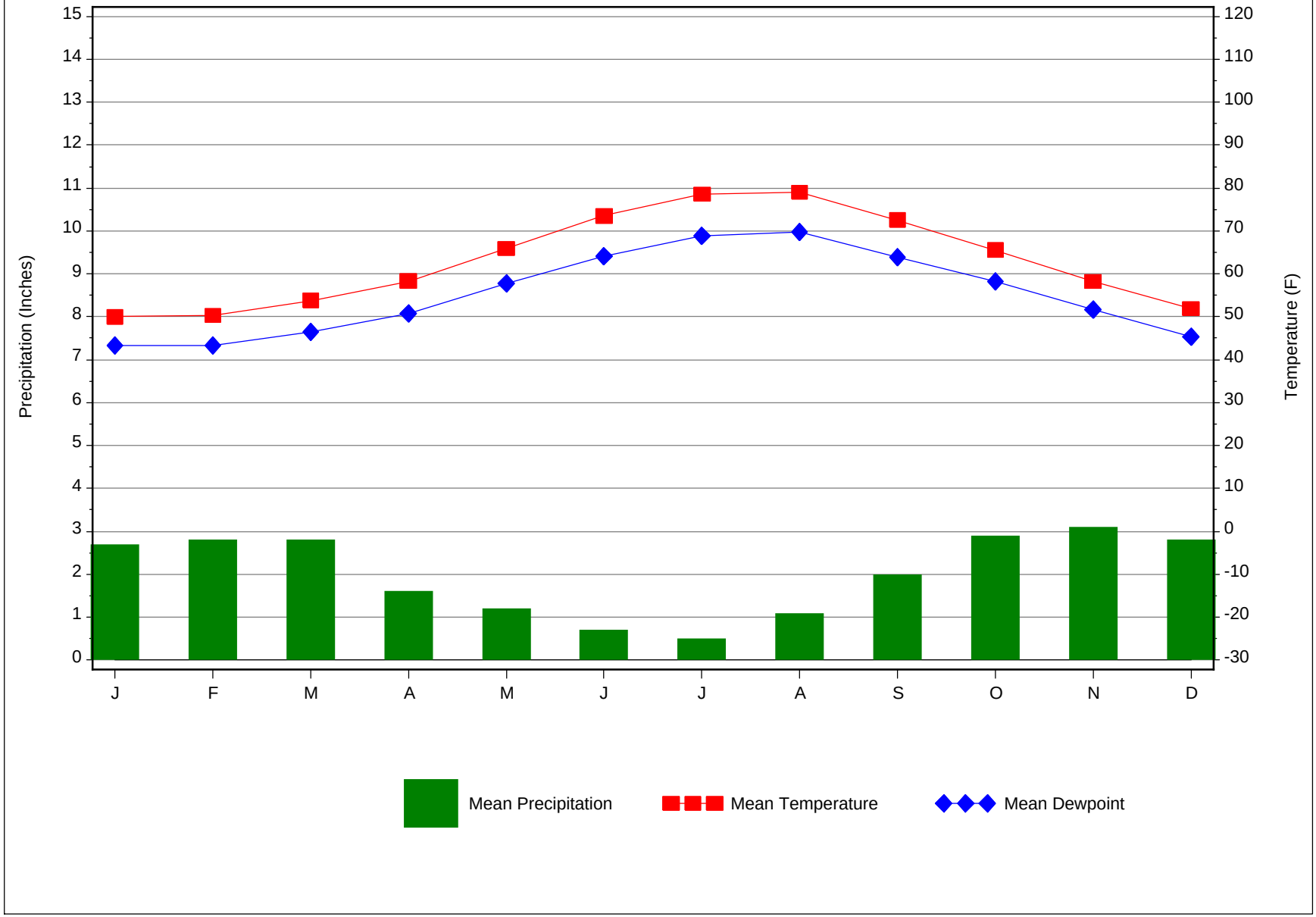
Air Conditioning/ Humid Area Criteria	**Threshold**	**T ≥ 93°F**	**T ≥ 80°F**	**Twb ≥ 73°F**	**Twb ≥ 67°F**
	# of Hours	24	841	995	2362

Other Site Data

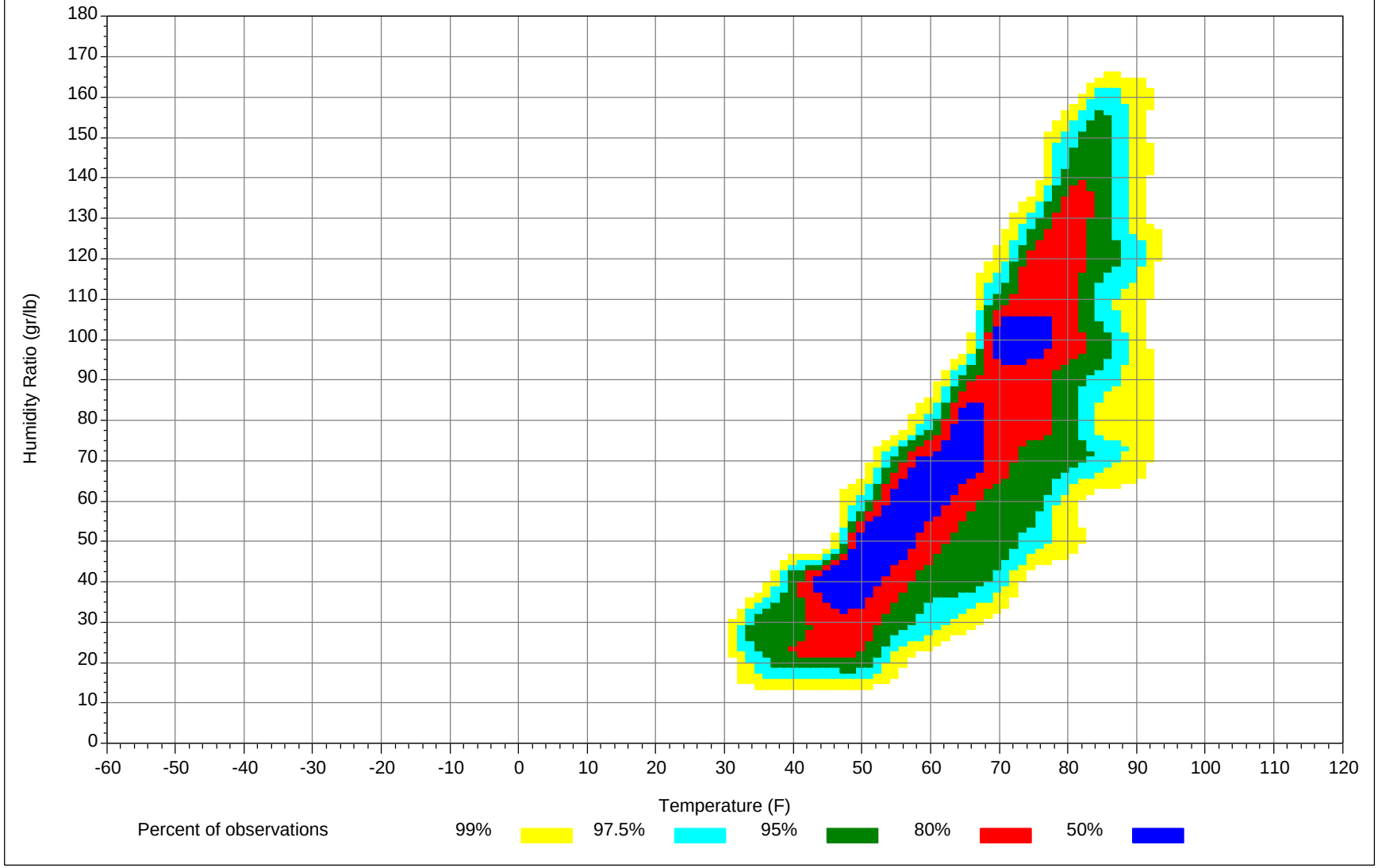
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
8	N/A	N/A	4.4 + 0.8
Ground Water Temperature (°F) 50 Foot Depth*	Frost Depth 50 Year Recurrence (in)	Ground Snow Load 50 Year Recurrence (lb/ft^2)	Average Annual Freeze-Thaw Cycles (#)
65.7	N/A	N/A	0

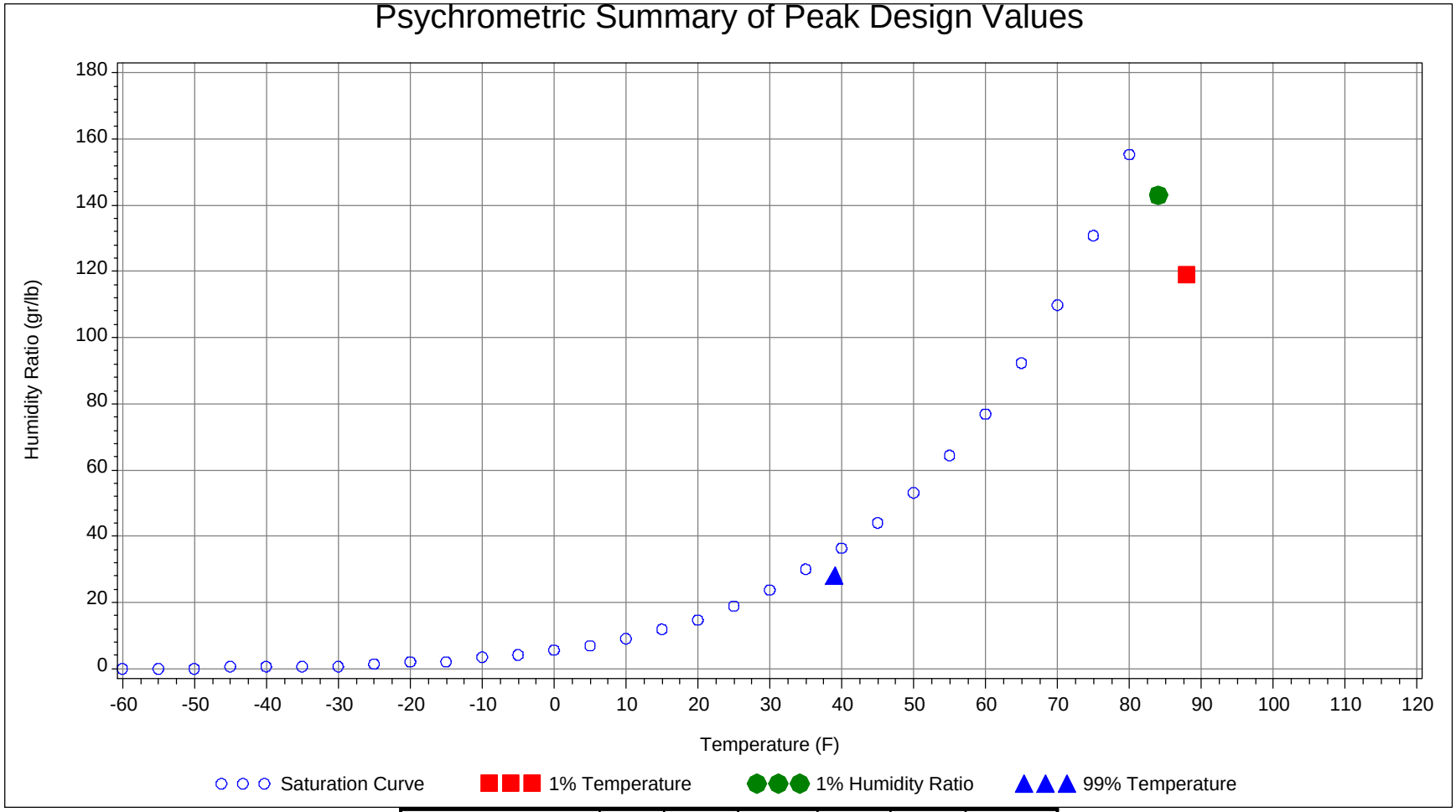
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.

Average Annual Climate



Long Term Psychrometric Summary





	(°F) / (gr/lb)	MCDB (°F)	MCWB (°F)	MCDP (°F)	MCHR (gr/lb)	Enthalpy (btu/lb)
1.0% Dry Bulb	88.0		76		119.0	39.8
99.0% Dry Bulb	39.0				28.0	13.6
1.0% Humidity Ratio	143.0	84.0	79	77.4		42.5

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**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
110/114															
105/109															
100/104															
95/ 99															
90/ 94															
85/ 89															
80/ 84															
75/ 79							0		0	73		0	0	0	59.7
70/ 74		0		0	64.4	0	1	0	1	64.4		4	1	5	58.5
65/ 69	0	1	0	1	59.9	0	3	1	4	59.9		12	3	15	58.6
60/ 64	2	16	4	22	56.9	2	22	7	31	56.8	3	61	23	87	56.7
55/ 59	17	68	37	122	53.1	20	70	44	134	52.9	47	97	92	236	53.4
50/ 54	79	102	110	291	48.7	65	73	88	226	48.6	104	54	91	249	48.7
45/ 49	90	45	73	208	43.7	75	40	60	175	43.5	65	17	32	114	43.7
40/ 44	39	11	18	68	39.2	38	12	20	70	39.3	21	3	6	30	39.2
35/ 39	17	3	5	25	35.6	22	3	5	30	35.8	7	0	1	8	36.3
30/ 34	3	1	1	5	30.8	3	0	0	3	30.9	0		0	0	31.9
25/ 29	0			0	28	0			0	27					

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
110/114															
105/109												0	0	0	69.3
100/104												0	0	0	70
95/ 99							0		0	64		1	0	1	72.5
90/ 94							0	0	0	68.9		5	2	7	71.2
85/ 89							1	1	2	68.1	0	14	6	20	72.1
80/ 84		0		0	61	0	9	4	13	67.1	4	55	27	86	72.1
75/ 79		3	1	4	61.5	1	38	17	56	66.2	29	97	70	196	70
70/ 74	0	16	5	21	60.5	12	84	49	145	64.8	90	57	89	236	67
65/ 69	0	39	15	54	59.2	41	65	68	174	62.7	70	8	32	110	63.8
60/ 64	20	103	71	194	57.7	107	43	81	231	59.4	39	3	11	53	59.9
55/ 59	102	64	104	270	54	70	6	27	103	55	7	0	1	8	55.2
50/ 54	87	14	39	140	49.3	17	1	2	20	50.4	1		0	1	50.7
45/ 49	26	2	6	34	44.5	1			1	45.6					
40/ 44	3	0	0	3	40.1										
35/ 39	1	0	0	1	35.9										
30/ 34															
25/ 29															

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
110/114		0		0	70										
105/109		0	0	0	71.9		0	0	0	67					
100/104		1	0	1	72.9		0	0	0	70.1					
95/ 99		3	2	5	72.9		2	1	3	74.1		1	0	1	76
90/ 94	0	15	7	22	74.5	0	18	6	24	76.5	0	3	1	4	75.2
85/ 89	1	40	15	56	76.2	1	48	17	66	77.6	0	10	3	13	75.2
80/ 84	19	121	72	212	74.5	22	130	80	232	75.3	1	47	15	63	73.3
75/ 79	109	62	114	285	71.6	119	44	116	279	71.8	24	98	65	187	70.1
70/ 74	94	6	35	135	67.8	87	5	24	116	67.6	85	63	98	246	66.6
65/ 69	21	0	2	23	63.9	16	1	3	20	63.7	72	15	42	129	63
60/ 64	3	0	0	3	60	3	0	0	3	59.7	47	3	14	64	59.6
55/ 59	0			0	55.7	0			0	55	9	0	1	10	55.2
50/ 54											1		0	1	49.8
45/ 49															
40/ 44															
35/ 39															
30/ 34															
25/ 29															

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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

	October					November					December				
Temperature Range (°F)	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
110/114															
105/109															
100/104															
95/ 99															
90/ 94															
85/ 89		0	0	0	71.8										
80/ 84		5	1	6	70		0		0	66					
75/ 79	1	33	9	43	69.4		2	0	2	67.2					
70/ 74	20	85	45	150	66.3	2	17	4	23	65.2		0		0	61.4
65/ 69	50	65	72	187	63	9	36	16	61	62.7	0	5	1	6	61.1
60/ 64	102	47	88	237	58.8	46	93	69	208	58.9	8	32	13	53	58.3
55/ 59	56	11	28	95	53.9	83	61	91	235	54	41	92	63	196	53.5
50/ 54	16	1	5	22	50	63	25	45	133	48.8	86	79	99	264	48.6
45/ 49	3	0	0	3	45.7	30	6	13	49	43.9	71	31	56	158	43.7
40/ 44						6	0	2	8	40.5	29	7	12	48	39.5
35/ 39						1	0	0	1	37.2	11	2	4	17	36
30/ 34						0			0	32	2	1	0	3	31.6
25/ 29													0	0	27

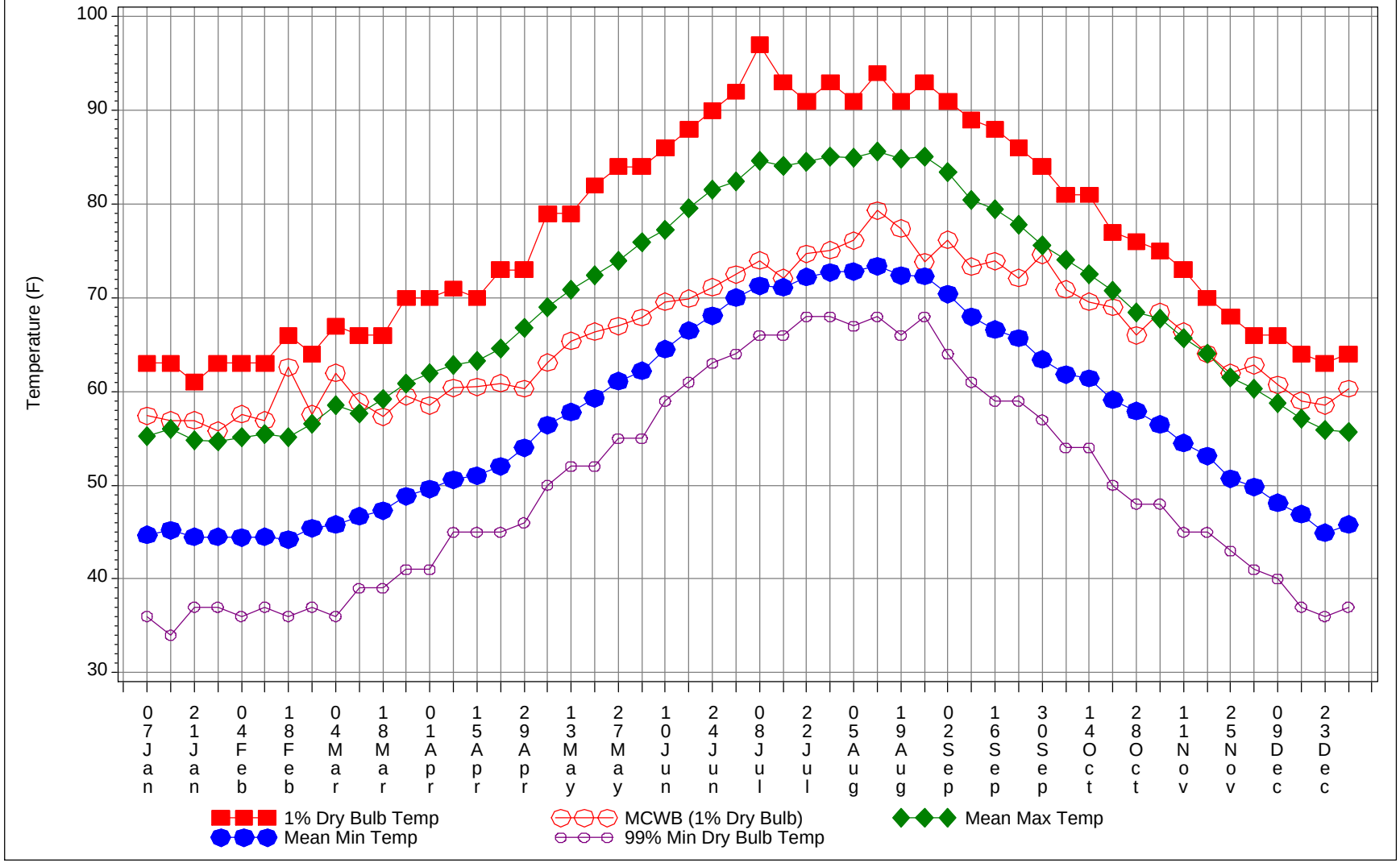
Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

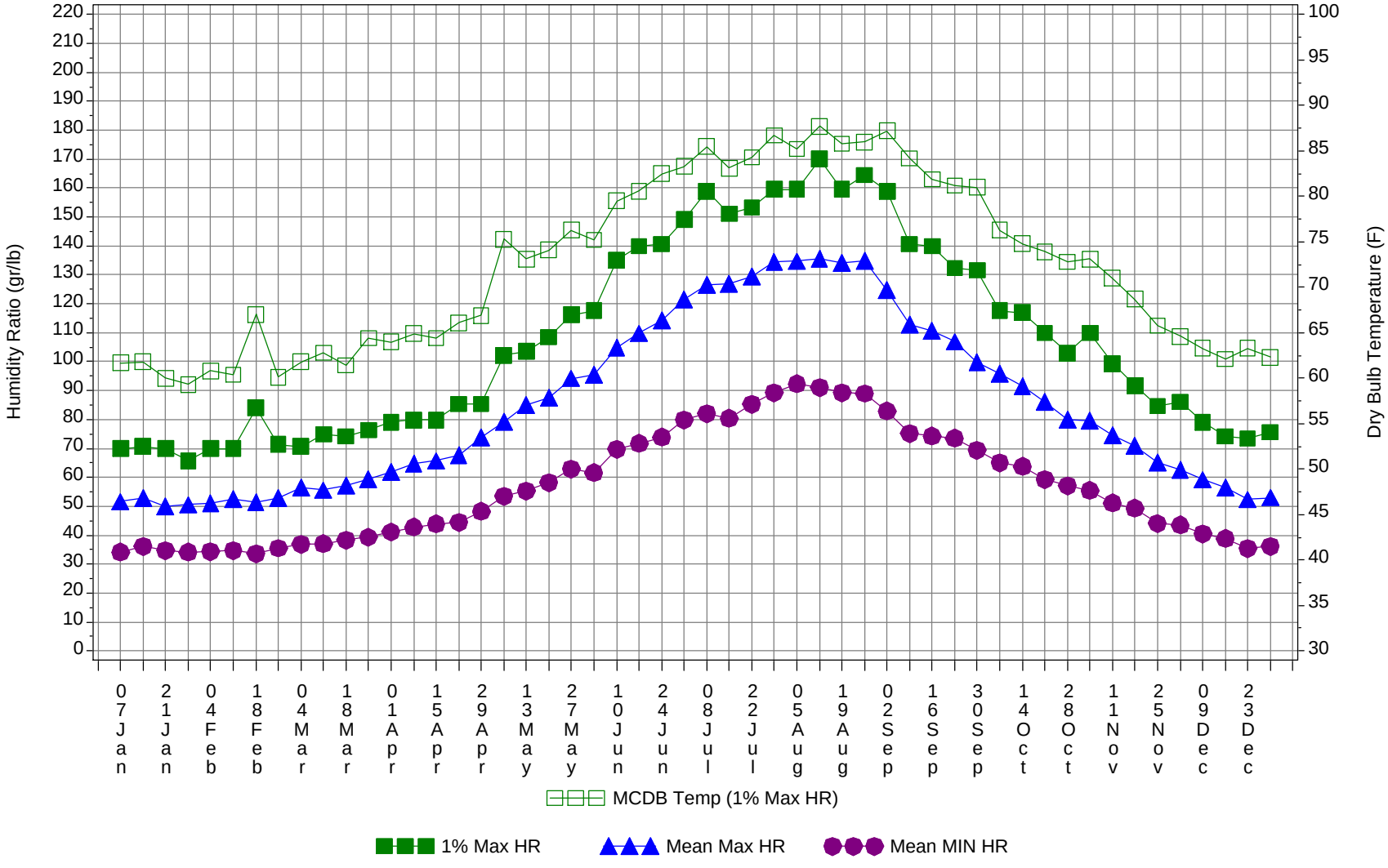
	Annual				
Temperature Range (°F)	**01 To 08 LST**	**09 To 16 LST**	**17 to 00 LST**	**Total Obs**	**MCWB (°F)**
110/114		0		0	70
105/109		0	0	0	69.9
100/104		1	0	1	71.7
95/ 99		7	3	10	73.4
90/ 94	0	42	17	59	74.9
85/ 89	2	114	42	158	76
80/ 84	47	366	199	612	74.2
75/ 79	283	376	391	1050	70.7
70/ 74	390	337	352	1079	66.5
65/ 69	279	250	255	784	62.7
60/ 64	381	425	381	1187	58.6
55/ 59	453	469	487	1409	53.7
50/ 54	518	349	478	1345	48.8
45/ 49	362	140	240	742	43.7
40/ 44	137	33	58	228	39.3
35/ 39	60	9	15	84	35.8
30/ 34	8	2	1	11	31.1
25/ 29	0		0	0	27.3

Caution: This summary reflects the typical distribtion of temperature in a typical year. It does not reflect the typical mositure 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



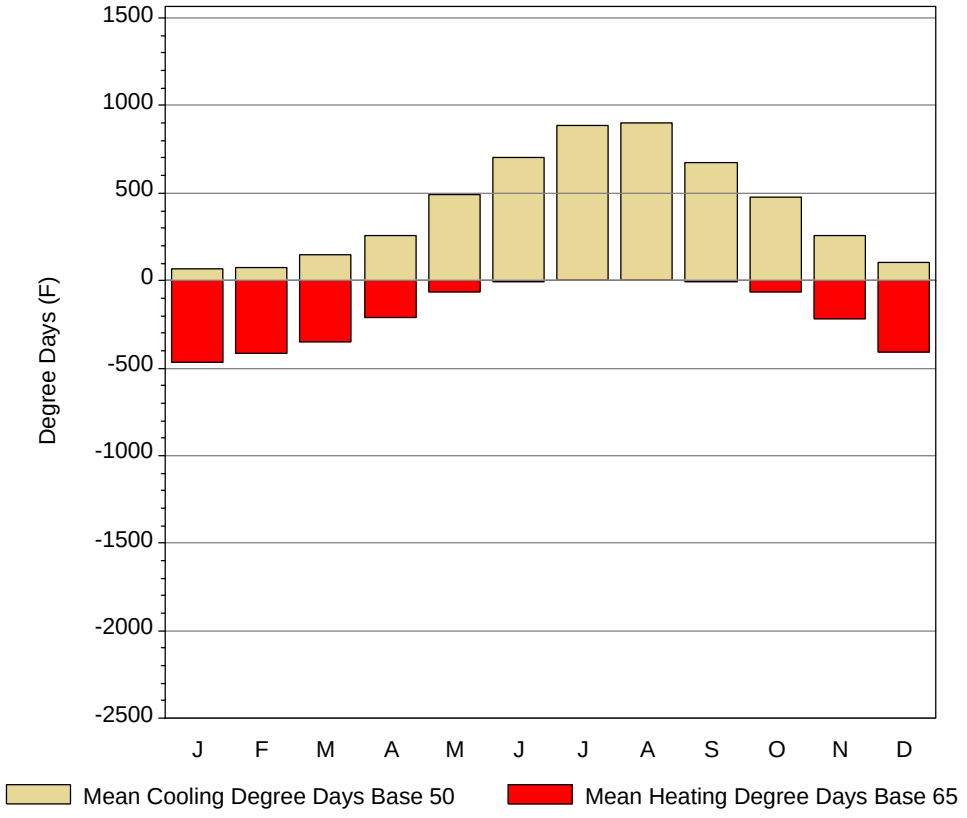
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

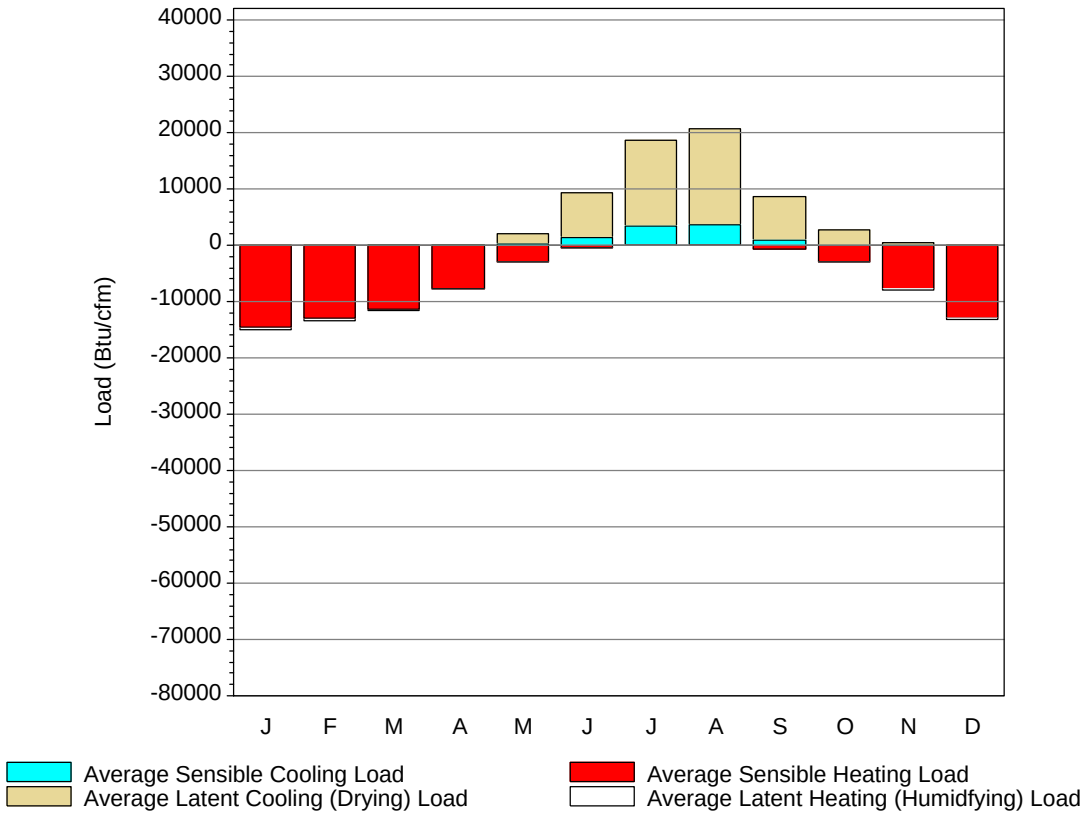
Week Ending	1.0% Temp (°F)	MCWB@ 1% Temp (°F)	Mean Max Temp (°F)	Mean Min Temp (°F)	99% Temp (°F)	1.0% HR (gr/lb)	MCDB@ 1% HR (°F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	63	57.4	55.2	44.7	36	70	61.7	51.6	34.2
14-Jan	63	56.9	56	45.2	34	70.7	61.8	52.9	36.2
21-Jan	61	56.9	54.8	44.5	37	70	60	50.1	34.7
28-Jan	63	55.8	54.7	44.5	37	65.8	59.3	50.5	34.2
4-Feb	63	57.6	55.1	44.4	36	70	60.8	51	34.3
11-Feb	63	56.9	55.5	44.5	37	70	60.4	52.4	34.7
18-Feb	66	62.6	55.1	44.2	36	84	67	51.4	33.6
25-Feb	64	57.6	56.6	45.4	37	71.4	60.1	52.8	35.5
4-Mar	67	62	58.5	45.8	36	70.7	61.8	56.5	36.8
11-Mar	66	58.9	57.7	46.7	39	74.9	62.8	55.6	37
18-Mar	66	57.3	59.2	47.3	39	74.2	61.4	57.3	38.3
25-Mar	70	59.5	60.8	48.8	41	76.3	64.4	59.3	39.3
1-Apr	70	58.5	62	49.6	41	79.1	64	61.8	41.1
8-Apr	71	60.4	62.8	50.6	45	79.8	64.9	64.7	42.9
15-Apr	70	60.5	63.3	51	45	79.8	64.4	65.7	43.9
22-Apr	73	60.9	64.6	52	45	85.4	66.1	67.6	44.5
29-Apr	73	60.3	66.8	54	46	85.4	66.9	73.7	48.2
6-May	79	63.1	69	56.4	50	102.2	75.3	79.2	53.5
13-May	79	65.4	70.9	57.8	52	103.6	73.1	85	55.3
20-May	82	66.4	72.4	59.3	52	108.5	74.1	87.5	58.1
27-May	84	67	74	61.1	55	116.2	76.3	94.2	62.9
4-Jun	84	67.9	75.9	62.2	55	117.6	75.2	95.4	61.6
10-Jun	86	69.6	77.3	64.5	59	135.1	79.5	104.8	69.8
17-Jun	88	69.9	79.6	66.5	61	140	80.6	109.8	71.8
24-Jun	90	71.1	81.5	68.1	63	140.7	82.5	114.4	73.9
1-Jul	92	72.5	82.4	70	64	149.1	83.3	121.4	79.8
8-Jul	97	74	84.6	71.3	66	158.9	85.5	126.7	82
15-Jul	93	72.1	84.1	71.1	66	151.2	83.1	126.8	80.4
22-Jul	91	74.7	84.5	72.2	68	153.3	84.3	129.6	85.2
29-Jul	93	75.1	85.1	72.7	68	159.6	86.7	134.5	89.3
5-Aug	91	76.1	85	72.8	67	159.6	85.2	134.7	92.4
12-Aug	94	79.3	85.6	73.4	68	170.1	87.7	135.6	91
19-Aug	91	77.4	84.8	72.4	66	159.6	85.8	134.1	89.2
26-Aug	93	73.8	85.1	72.3	68	164.5	86	134.8	89
2-Sep	91	76.2	83.4	70.4	64	158.9	87.2	124.8	82.9
9-Sep	89	73.3	80.4	68	61	140.7	84.2	112.7	75.1
16-Sep	88	73.9	79.5	66.6	59	140	81.9	110.6	74.3
23-Sep	86	72.1	77.8	65.7	59	132.3	81.2	106.9	73.5
30-Sep	84	74.6	75.6	63.4	57	131.6	81	99.9	69.4
7-Oct	81	70.9	74.1	61.8	54	117.6	76.3	95.8	65.1
14-Oct	81	69.6	72.5	61.4	54	116.9	74.8	91.5	63.8
21-Oct	77	69	70.8	59.1	50	109.9	73.9	86.2	59.3
28-Oct	76	66	68.4	57.9	48	102.9	72.8	79.9	57.1
4-Nov	75	68.5	67.8	56.5	48	109.9	73.1	79.7	55.4
11-Nov	73	66.4	65.7	54.5	45	99.4	71	74.4	51.1
18-Nov	70	64	64	53.1	45	91.7	68.7	70.8	49.4
25-Nov	68	62	61.5	50.7	43	84.7	65.8	65	44
2-Dec	66	62.8	60.3	49.8	41	86.1	64.6	62.7	43.6
9-Dec	66	60.7	58.8	48.1	40	79.1	63.3	59.2	40.4
16-Dec	64	59	57.1	46.9	37	74.2	62.1	56.5	38.9
23-Dec	63	58.5	55.9	44.9	36	73.5	63.3	52.3	35.4
31-Dec	64	60.3	55.7	45.8	37	75.6	62.3	53	36.1

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	67.4	0.2	465.3
FEB	73.6	0.6	416
MAR	147.5	2.5	348.8
APR	254.7	11.2	212.1
MAY	492.8	91	63.2
JUN	705	261.9	6.9
JUL	885.3	420.5	0.2
AUG	898.1	433.3	0.2
SEP	674.7	233.2	8.4
OCT	480.4	79.7	64.7
NOV	255.4	11.4	215.5
DEC	107.1	0.5	406.5
ANN	5042	1546	2207.8

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	-14466	2	-432
FEB	0	-12971	29	-417
MAR	1	-11406	10	-256
APR	4	-7641	73	-64
MAY	214	-2971	1922	-10
JUN	1431	-467	7880	-1
JUL	3501	-30	15218	-1
AUG	3743	-29	17073	0
SEP	1038	-572	7590	0
OCT	110	-3035	2667	-5
NOV	3	-7715	465	-109
DEC	0	-12936	19	-298
ANN	10045	-74239	52948	-1593

Station Information		Shading Geometry in Dimensionless Units	
City, State, WBAN	N/A	N/A	N/A
Lat, Lon, Elev	N/A	N/A	N/A
Press Stn Type	N/A	N/A	N/A

AVERAGE INCIDENT SOLAR RADIATION
(Btu/sq.ft./day), Percentage Uncertainty = 9

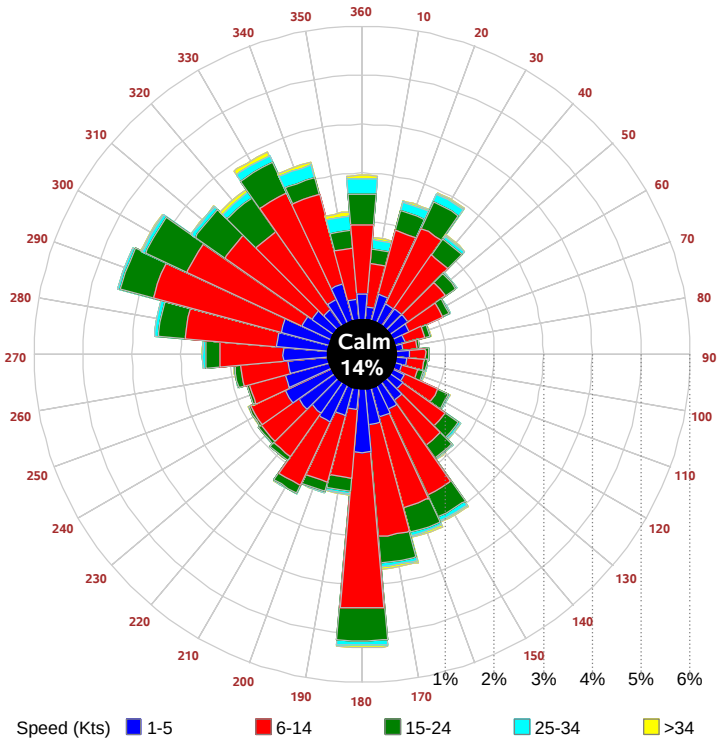
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ.	Global													
	Std.Dev.													
	Minimum													
	Maximum													
	Diffuse													
Clear Day	Global													
NORTH	Global													
	Diffuse													
Clear Day	Global													
EAST	Global													
	Diffuse													
Clear Day	Global													
SOUTH	Global													
	Diffuse													
Clear Day	Global													
WEST	Global													
	Diffuse													
Clear Day	Global													

AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 9														
		Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Year
HORIZ.	Unshaded													
NORTH	Unshaded													
	Shaded													
EAST	Unshaded													
	Shaded													
SOUTH	Unshaded													
	Shaded													
WEST	Unshaded													
	Shaded													

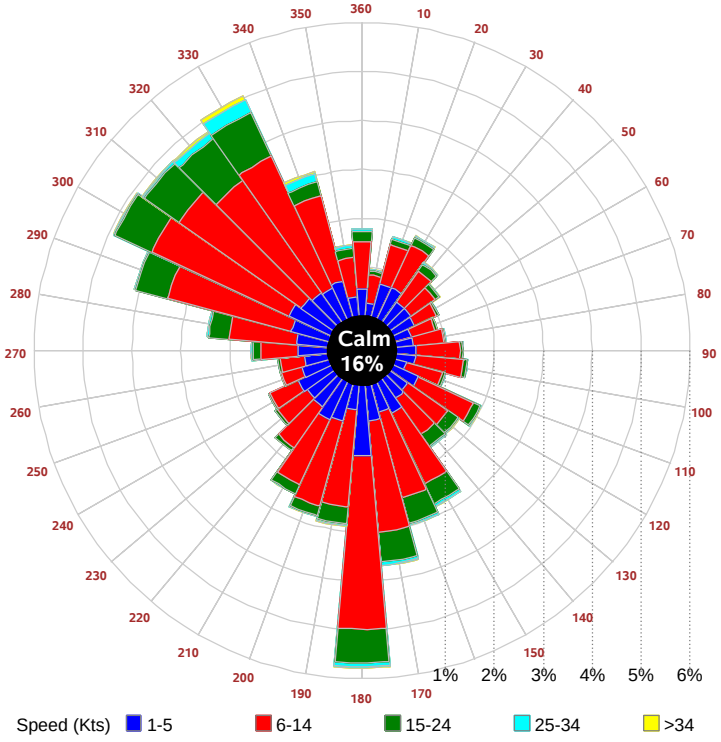
AVERAGE INCIDENT ILLUMINENCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9											
				March					June		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear										
	M.Cloudy										
NORTH	M.Clear										
	M.Cloudy										
EAST	M.Clear										
	M.Cloudy										
SOUTH	M.Clear										
	M.Cloudy										
WEST	M.Clear										
	M.Cloudy										
M.Clear	(% hrs)										

				Sept					Dec		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear										
	M.Cloudy										
NORTH	M.Clear										
	M.Cloudy										
EAST	M.Clear										
	M.Cloudy										
SOUTH	M.Clear										
	M.Cloudy										
WEST	M.Clear										
	M.Cloudy										
M.Clear	(% hrs)										

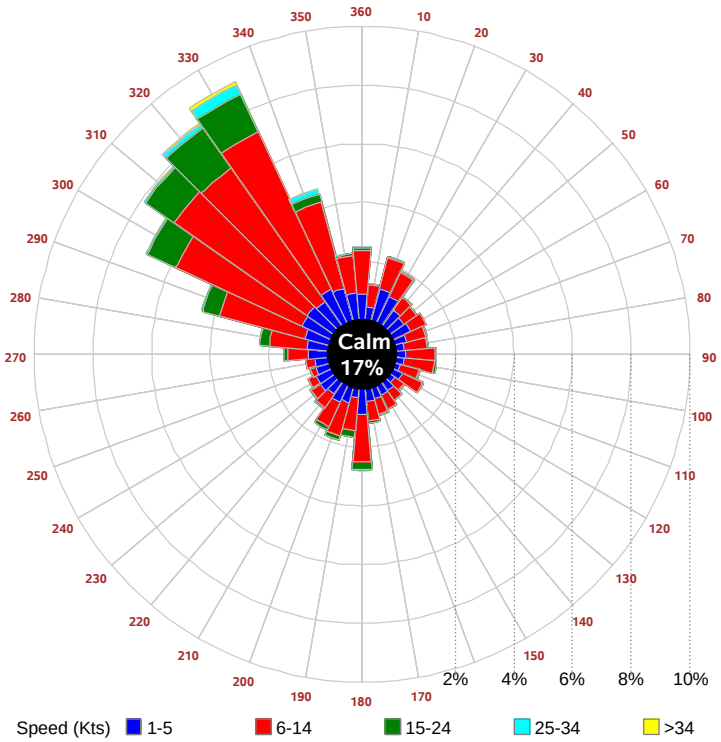
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November