

ANSBACH AHP, GM

Latitude = 49.31 N

Longitude = 10.64 E

Period of Record = 1988 To 2017

Station ID = ICAO_ETEB

Elevation = 1532 Feet

Average Pressure = 28.39 inches Hg

Design Criteria Data

Dry Bulb Temperature (T)	Mean Coincident (Average) Values				
	Design Value (°F)	Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Median of Extreme Highs	90	69	80	6.6	VRB
0.4% Occurrence	86	67	75	6.4	VRB
1.0% Occurrence	82	65	73	6.9	VRB
2.0% Occurrence	79	64	72	7	VRB
Mean Daily Range	12	-	-	-	S
97.5% Occurrence	21	20	14	6.2	S
99.0% Occurrence	18	18	13	6.1	E
99.6% Occurrence	14	14	10	5.6	ENE
Median of Extreme Lows	10	9	8	5.7	NE

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	71	83	97	6.5	VRB
0.4% Occurrence	69	81	90	6.5	VRB
1.0% Occurrence	67	77	86	6.7	VRB
2.0% Occurrence	66	76	83	6.7	VRB

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	109	77	0.69	5.9	S
0.4% Occurrence	97	73	0.61	6.2	W
1.0% Occurrence	91	70	0.58	6.5	W
2.0% Occurrence	89	70	0.57	6.1	W

Air Conditioning/ Humid Area Criteria	Threshold	$T \geq 93^{\circ}\text{F}$	$T \geq 80^{\circ}\text{F}$	$T_{wb} \geq 73^{\circ}\text{F}$	$T_{wb} \geq 67^{\circ}\text{F}$
	# of Hours	10	102	10	91

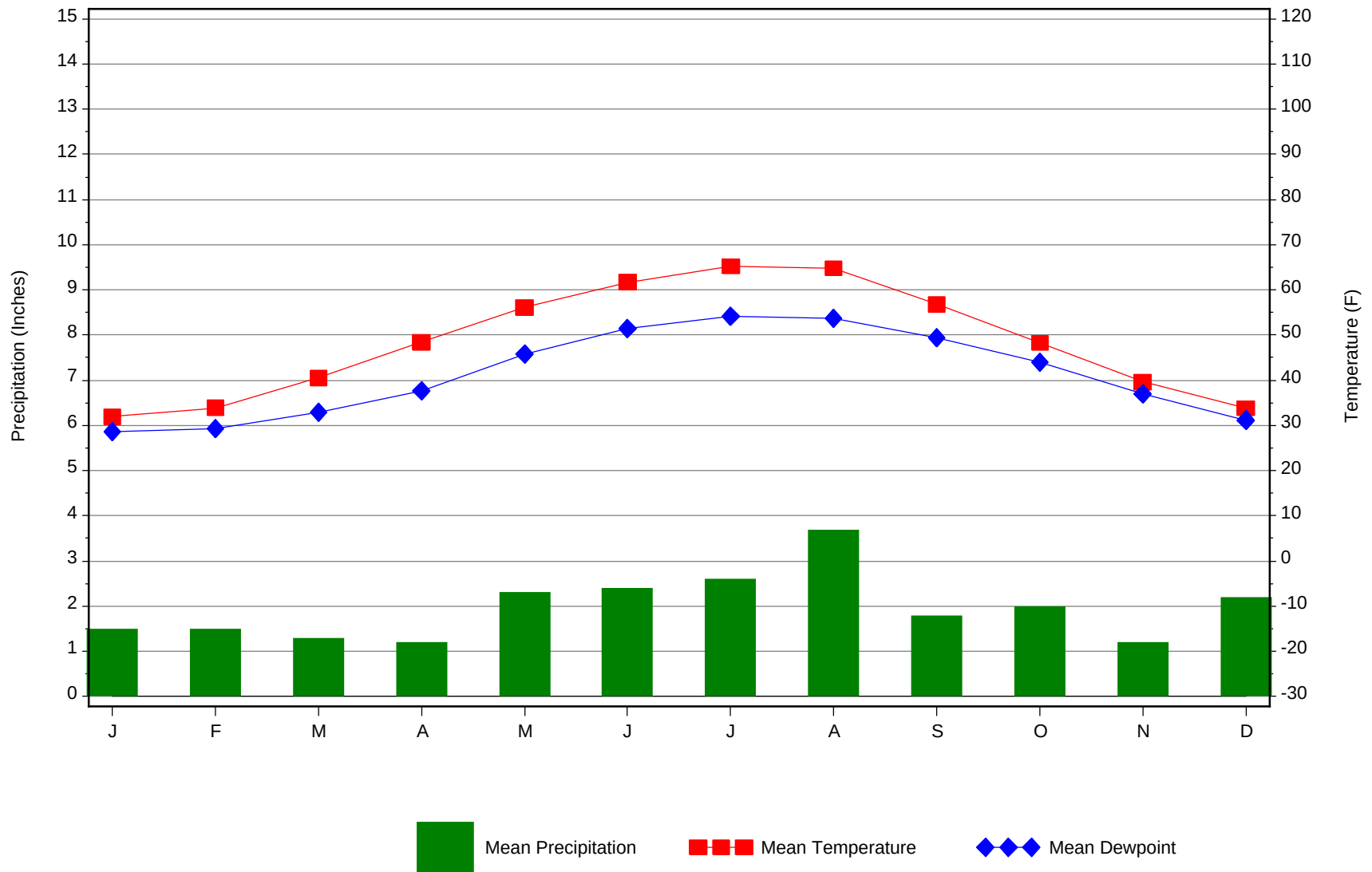
Other Site Data

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
6	N/A	N/A	0.1 + 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 (#)
51.1	N/A	N/A	29

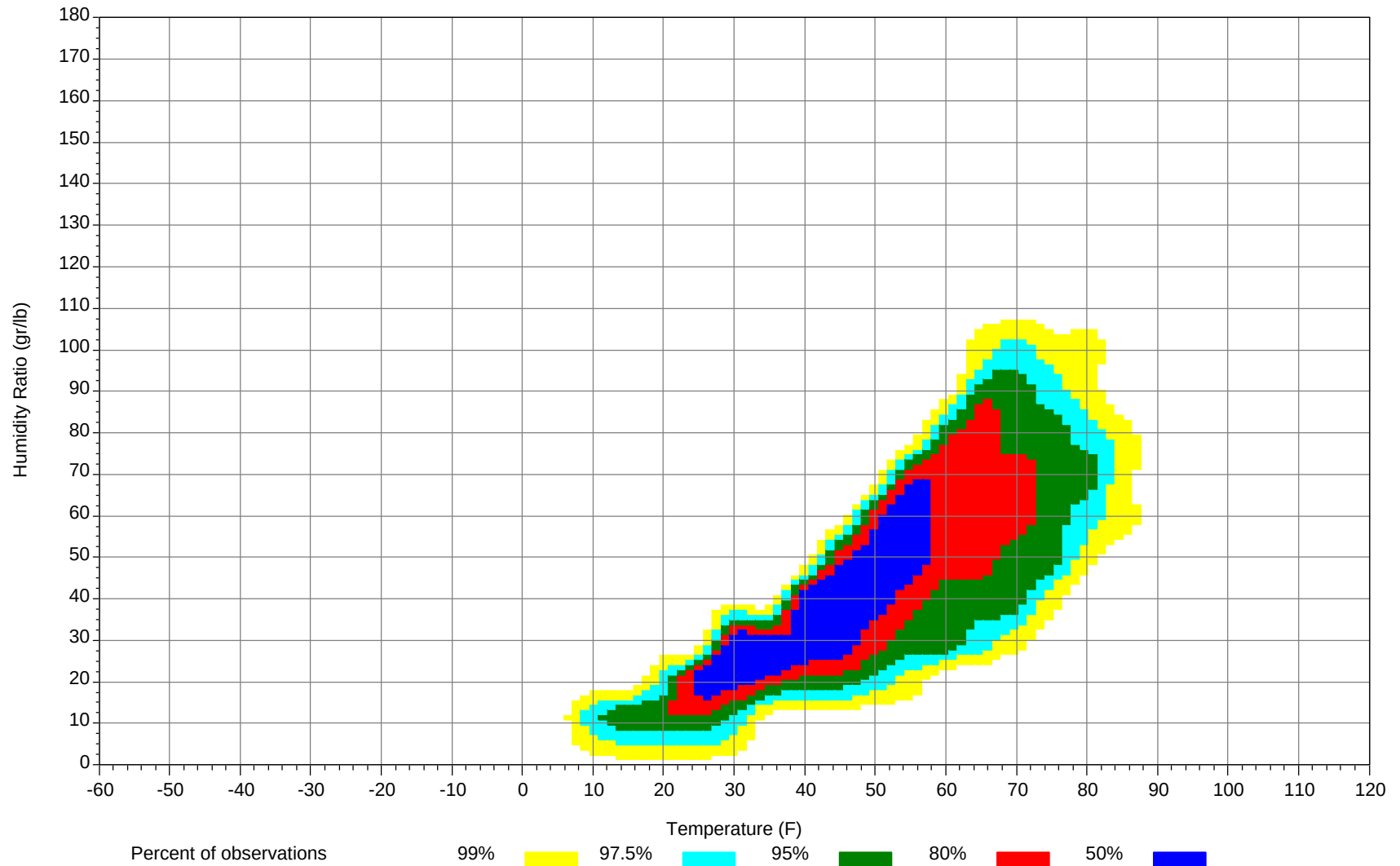
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



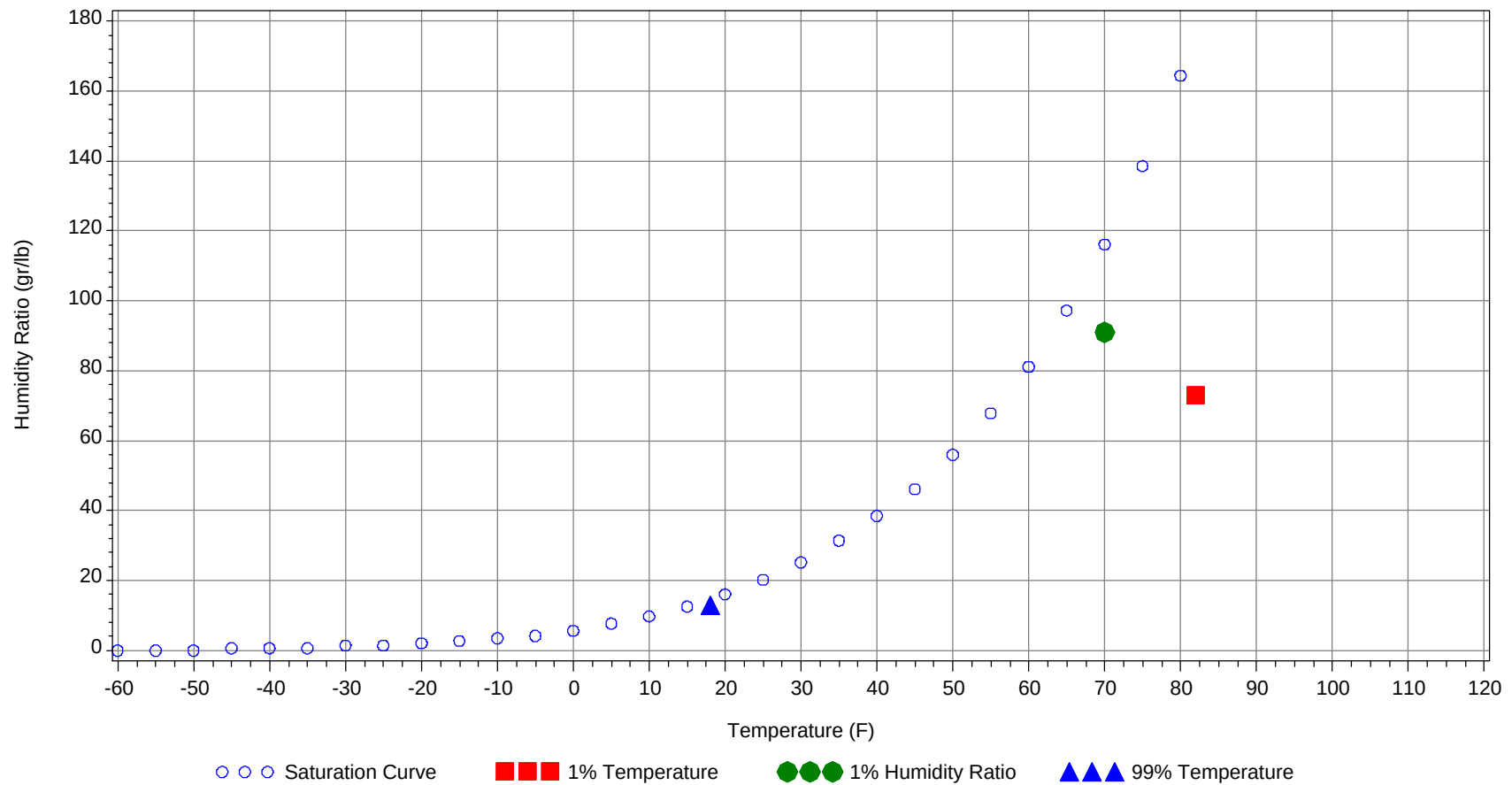
Average Annual Climate



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	82.0		65		73.0	31.2
99.0% Dry Bulb	18.0				13.0	6.2
1.0% Humidity Ratio	91.0	70.0	65.1	62.8		30.9

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)
95/ 99															
90/ 94															
85/ 89															
80/ 84															
75/ 79															
70/ 74												1	0	1	55.1
65/ 69												2	1	3	52.9
60/ 64		0	0	0	52.4		0	0	0	48.4		9	4	13	50.3
55/ 59		0	0	0	49.7		2	1	3	48.1	0	18	12	30	47.7
50/ 54	2	7	4	13	47.6	1	10	5	16	45.2	5	32	26	63	45.6
45/ 49	11	19	17	47	43.7	9	29	19	57	42.6	29	54	48	131	42.5
40/ 44	20	26	25	71	40.2	21	31	29	81	39.4	47	45	49	141	39.2
35/ 39	45	54	49	148	35.9	50	51	57	158	35.5	67	44	51	162	35.1
30/ 34	62	62	66	190	31.1	69	55	55	179	31	58	30	38	126	30.8
25/ 29	48	42	43	133	26	37	27	34	98	25.8	29	10	14	53	25.5
20/ 24	25	21	26	72	21.4	16	9	13	38	21.2	7	2	3	12	21.1
15/ 19	23	12	15	50	17.2	14	6	7	27	17.1	4	1	1	6	17.1
10/ 14	8	3	4	15	11.9	4	3	3	10	11.2	1	0	0	1	12.3
5/ 9	4	1	0	5	7.6	2	1	1	4	6.1	0	0	0	0	6.1
0/ 4	0			0	3	2	0	0	2	1.8	0			0	2.4

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)
95/ 99															
90/ 94												1	0	1	72.6
85/ 89							0	0	0	62.3		4	2	6	67.7
80/ 84		0	0	0	60		3	1	4	63.8	0	12	7	19	65.5
75/ 79		1	0	1	58		12	5	17	61.5	1	26	18	45	63.4
70/ 74		8	4	12	55.4	0	28	15	43	58.1	5	42	31	78	61
65/ 69	0	14	8	22	53.8	3	33	22	58	56.5	14	39	34	87	58.9
60/ 64	1	30	21	52	51.6	13	55	43	111	54.2	46	51	55	152	56.7
55/ 59	8	41	35	84	49.2	45	53	60	158	51.8	70	44	52	166	53.6
50/ 54	33	53	47	133	46.4	78	39	54	171	48.8	68	18	32	118	50
45/ 49	62	48	55	165	43	70	20	31	121	44.7	31	2	7	40	45.7
40/ 44	53	25	35	113	39.1	27	4	13	44	40.9	5	0	1	6	41.6
35/ 39	52	16	25	93	35.4	10	0	2	12	36.8	0			0	38.6
30/ 34	26	3	8	37	30.7	1		0	1	32.7					
25/ 29	5	0	0	5	26.5	0			0	28					
20/ 24	0			0	21										
15/ 19															
10/ 14															
5/ 9															
0/ 4															

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)
95/ 99		0		0	71.3		0	0	0	68.2					
90/ 94		3	1	4	69.9		3	2	5	67.7		0		0	67
85/ 89		8	4	12	67.8	0	6	3	9	67.4		0	0	0	66.1
80/ 84	0	22	13	35	66.1	0	20	10	30	65.8		3	1	4	63
75/ 79	2	41	26	69	64.1	2	43	24	69	63.7		11	4	15	62.5
70/ 74	11	53	44	108	62	8	52	40	100	61.7	0	26	12	38	60.4
65/ 69	29	41	45	115	60.2	24	42	45	111	59.9	2	30	20	52	58.7
60/ 64	73	49	56	178	57.9	70	54	62	186	57.9	18	58	44	120	56.4
55/ 59	75	26	42	143	54.3	82	23	44	149	54.5	56	62	67	185	53.5
50/ 54	49	6	16	71	50.7	48	5	14	67	50.3	80	39	58	177	49.9
45/ 49	9	0	1	10	46.3	12	0	3	15	45.9	62	10	29	101	45.7
40/ 44	0			0	42.3	1		0	1	41.5	18	1	3	22	41.5
35/ 39											4	0	0	4	37.7
30/ 34											0			0	34
25/ 29															
20/ 24															
15/ 19															
10/ 14															
5/ 9															
0/ 4															

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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)
95/ 99															
90/ 94															
85/ 89															
80/ 84															
75/ 79		1	0	1	63.2										
70/ 74		5	1	6	60.8										
65/ 69	0	9	2	11	59.4										
60/ 64	2	28	13	43	56.6		2	0	2	56.5					
55/ 59	17	48	37	102	53.8	2	8	4	14	53		0		0	50
50/ 54	52	62	63	177	49.9	9	27	17	53	49.2	2	6	2	10	47.5
45/ 49	65	53	61	179	45	31	51	41	123	44.8	13	21	17	51	44.1
40/ 44	48	25	38	111	40.9	55	50	55	160	40.9	26	33	31	90	40.7
35/ 39	39	15	26	80	36.4	67	54	63	184	36.5	62	65	65	192	36.1
30/ 34	21	3	7	31	31.4	47	35	42	124	31.7	65	65	67	197	31.4
25/ 29	4	0	1	5	26.5	21	11	16	48	26.8	43	39	42	124	26.3
20/ 24	1			1	22.6	7	2	2	11	21.6	19	12	14	45	21.7
15/ 19						1	0	0	1	17.9	12	4	8	24	17.5
10/ 14						0			0	12	4	1	1	6	12.4
5/ 9											1	0	0	1	6.5
0/ 4											0	0	0	0	1.5

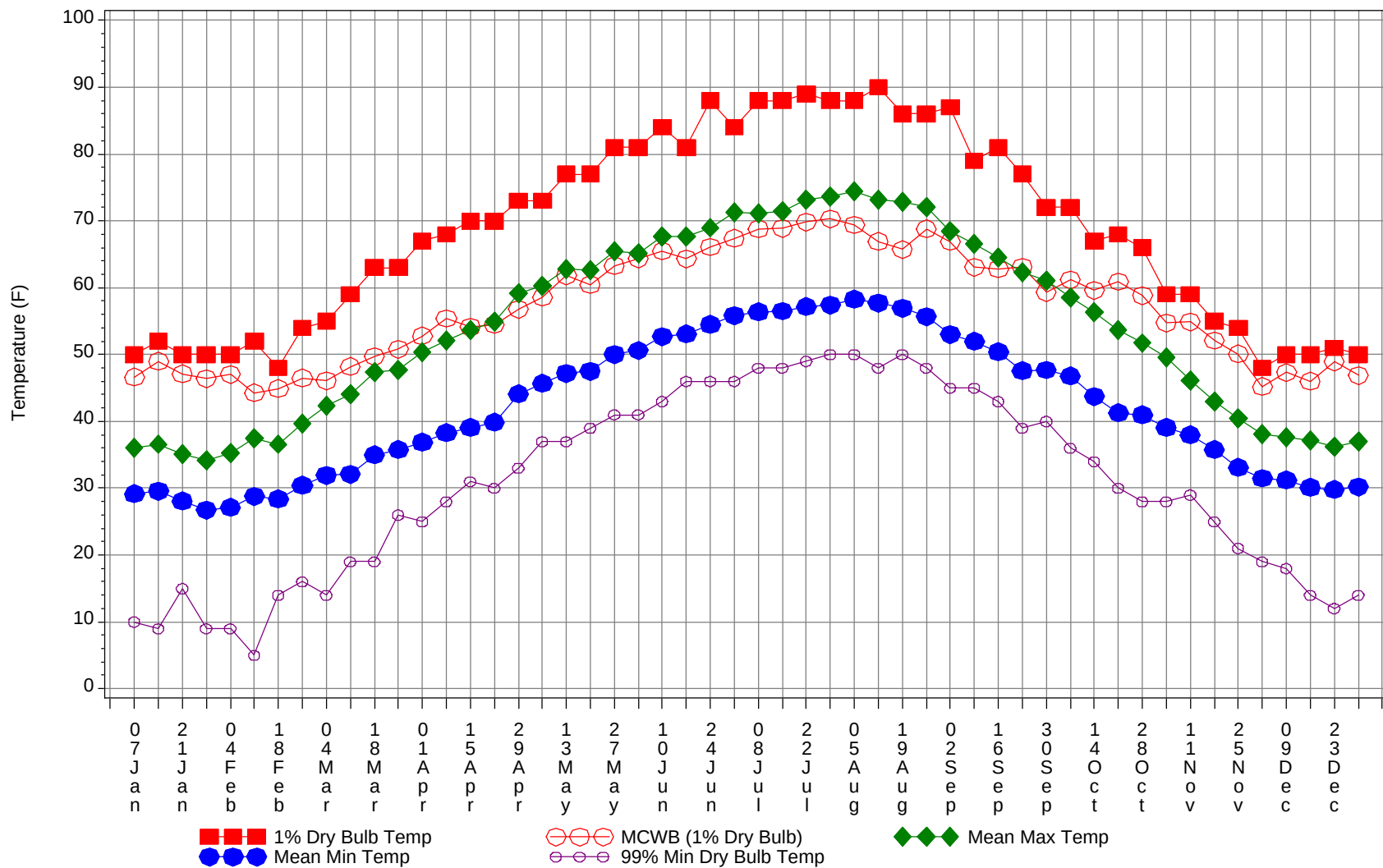
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Dry-Bulb Temperature Hours For An Average Year

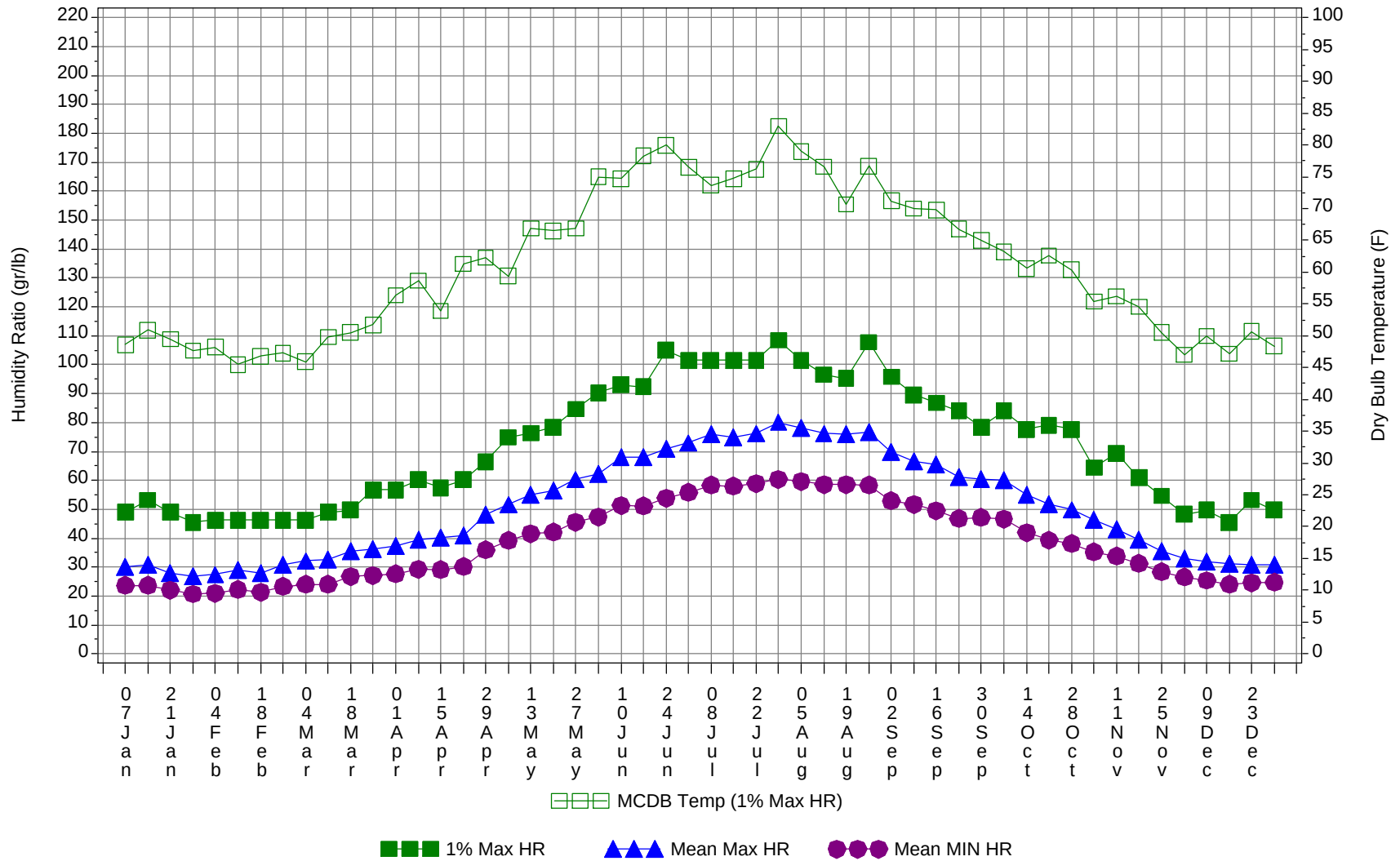
	Annual				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
95/ 99		1	0	1	68.8
90/ 94		8	4	12	69.1
85/ 89	0	18	10	28	67.6
80/ 84	0	61	32	93	65.6
75/ 79	5	135	79	219	63.5
70/ 74	26	216	148	390	60.9
65/ 69	75	212	179	466	58.9
60/ 64	228	338	300	866	56.4
55/ 59	362	329	355	1046	53
50/ 54	434	306	341	1081	49
45/ 49	405	307	330	1042	44.2
40/ 44	320	240	280	840	40.2
35/ 39	393	297	337	1027	35.9
30/ 34	342	249	278	869	31.2
25/ 29	181	127	149	457	26.1
20/ 24	72	44	58	174	21.4
15/ 19	51	23	30	104	17.3
10/ 14	16	7	7	30	11.8
5/ 9	8	2	2	12	6.8
0/ 4	2	0	0	2	1.8

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



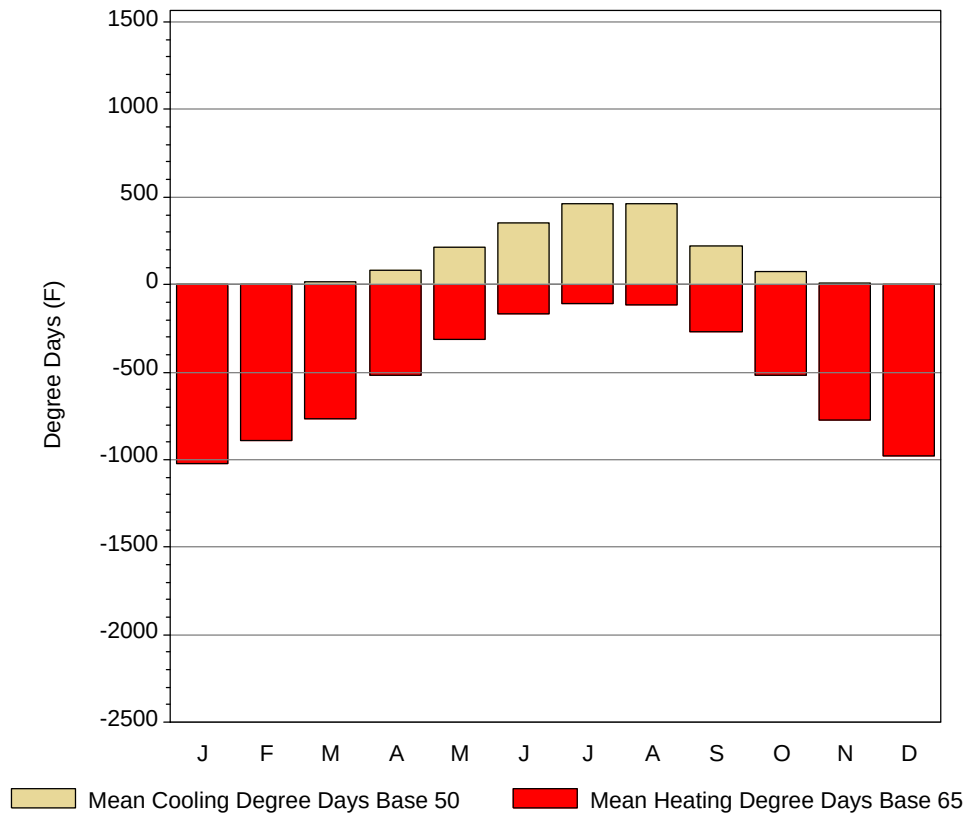
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

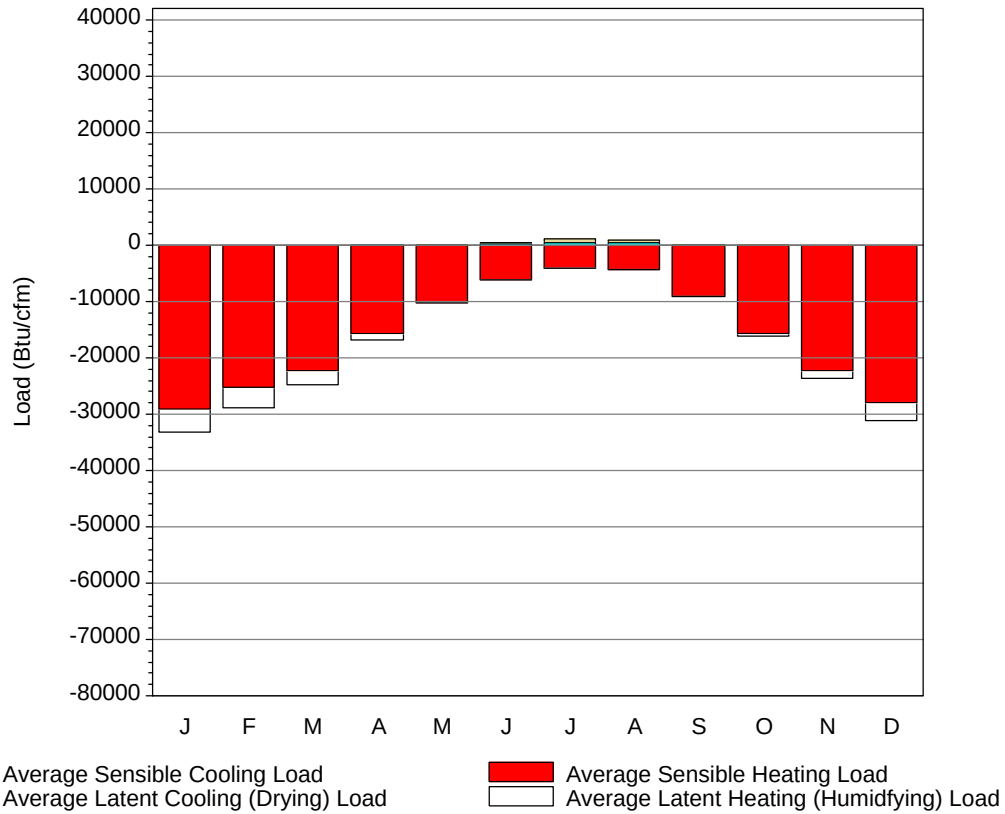
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	50	46.6	36.1	29.2	10	49	48.6	30.2	23.7
14-Jan	52	49	36.6	29.6	9	53.2	50.9	30.8	23.6
21-Jan	50	47.1	35.1	28.1	15	49	49.5	27.9	22
28-Jan	50	46.4	34.2	26.7	9	45.5	47.7	26.8	20.7
4-Feb	50	47	35.3	27.1	9	46.2	48.2	27.4	21
11-Feb	52	44.3	37.4	28.8	5	46.2	45.5	29.1	22.3
18-Feb	48	44.9	36.6	28.4	14	46.2	46.8	27.9	21.3
25-Feb	54	46.5	39.6	30.4	16	46.2	47.3	30.8	23.3
4-Mar	55	46.1	42.3	31.9	14	46.2	45.9	32.1	24
11-Mar	59	48.2	44.1	32.1	19	49	49.8	32.5	24
18-Mar	63	49.7	47.4	35	19	49.7	50.5	35.4	26.7
25-Mar	63	50.8	47.7	35.8	26	56.7	51.7	36.3	27.1
1-Apr	67	52.8	50.3	36.9	25	56.7	56.4	37.3	27.7
8-Apr	68	55.4	52.1	38.3	28	60.2	58.7	39.5	29.3
15-Apr	70	54.1	53.7	39.1	31	57.4	53.9	40.3	29.1
22-Apr	70	54.5	54.9	39.9	30	60.2	61.3	40.9	30.2
29-Apr	73	56.8	59.2	44.1	33	66.5	62.3	48.2	35.9
6-May	73	58.6	60.3	45.7	37	74.9	59.4	51.6	39.2
13-May	77	61.8	62.8	47.2	37	76.3	66.9	55.1	41.6
20-May	77	60.5	62.7	47.5	39	78.4	66.5	56.6	42.1
27-May	81	63.3	65.5	50	41	84.7	66.9	60.3	45.5
4-Jun	81	64.3	65.2	50.6	41	90.3	75	62.3	47.3
10-Jun	84	65.5	67.7	52.7	43	93.1	74.7	68	51.3
17-Jun	81	64.3	67.7	53.1	46	92.4	78.3	68.1	51.1
24-Jun	88	66.1	69	54.5	46	105	80	70.8	53.8
1-Jul	84	67.4	71.3	55.8	46	101.5	76.5	72.9	55.8
8-Jul	88	68.8	71.1	56.4	48	101.5	73.7	76.1	58.3
15-Jul	88	68.9	71.5	56.5	48	101.5	74.7	74.9	58
22-Jul	89	69.8	73.1	57.2	49	101.5	76.2	76.2	58.9
29-Jul	88	70.3	73.7	57.4	50	108.5	83	80.1	60.4
5-Aug	88	69.4	74.4	58.3	50	101.5	79	78.2	59.7
12-Aug	90	66.9	73.1	57.7	48	96.6	76.6	76.2	58.5
19-Aug	86	65.7	72.8	56.9	50	95.2	70.7	75.9	58.5
26-Aug	86	68.8	72	55.7	48	107.8	76.7	76.6	58.3
2-Sep	87	66.9	68.5	53	45	95.9	71.2	69.7	53
9-Sep	79	63.1	66.6	52	45	89.6	70	66.6	51.6
16-Sep	81	62.8	64.5	50.4	43	86.8	69.8	65.5	49.5
23-Sep	77	63.1	62.3	47.6	39	84	66.8	61.1	46.8
30-Sep	72	59.3	61.1	47.7	40	78.4	65	60.4	47.2
7-Oct	72	61.2	58.6	46.8	36	84	63.2	60.1	46.6
14-Oct	67	59.6	56.3	43.7	34	77.7	60.6	54.9	41.9
21-Oct	68	60.9	53.6	41.3	30	79.1	62.6	51.9	39.3
28-Oct	66	58.8	51.7	41	28	77.7	60.4	49.8	38.2
4-Nov	59	54.7	49.5	39.1	28	64.4	55.4	46.3	35.2
11-Nov	59	54.9	46.1	38	29	69.3	56.2	43.1	33.8
18-Nov	55	52.1	43	35.8	25	60.9	54.6	39.6	31.3
25-Nov	54	50.1	40.5	33.1	21	54.6	50.5	35.6	28.3
2-Dec	48	45.2	38.1	31.5	19	48.3	47	32.9	26.6
9-Dec	50	47.3	37.6	31.2	18	49.7	50	32	25.4
16-Dec	50	46	37.2	30.1	14	45.5	47.2	31.2	24.1
23-Dec	51	48.9	36.2	29.8	12	53.2	50.7	30.9	24.6
31-Dec	50	46.9	37	30.2	14	49.7	48.4	30.9	24.7

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	0.6	0	1025.7
FEB	1.4	0	891.8
MAR	19.8	0.3	764.4
APR	82	4.7	519.3
MAY	216.3	24.8	312.7
JUN	354.3	67.9	170
JUL	465.4	104.6	105.1
AUG	460.2	106.4	113.1
SEP	223.1	22.5	270.4
OCT	74.5	2	516.3
NOV	6.3	0	772.7
DEC	0.4	0	981.5
ANN	1904.3	333.2	6443

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	-28988	0	-4108
FEB	0	-25313	0	-3639
MAR	0	-22218	0	-2483
APR	2	-15719	0	-1175
MAY	53	-10213	21	-103
JUN	295	-6086	237	-6
JUL	512	-4170	569	-1
AUG	561	-4403	416	-3
SEP	50	-9064	48	-11
OCT	0	-15759	10	-381
NOV	0	-22361	0	-1320
DEC	0	-27852	0	-3264
ANN	1473	-192146	1301	-16494

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													

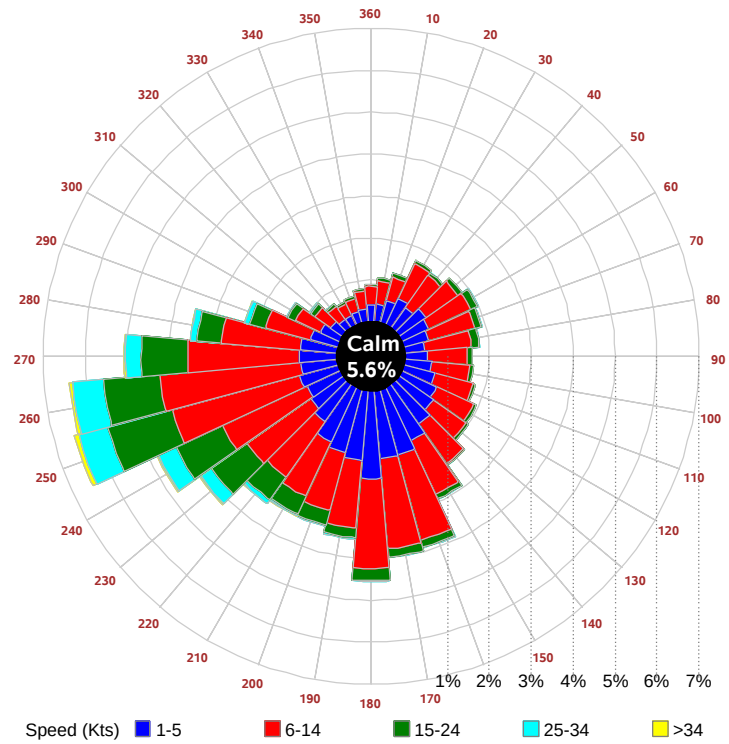
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

AVERAGE TRANSMITTED SOLAR RADIATION (Btu/sq.ft./day) FOR DOUBLE GLAZING, Percentage Uncertainty = 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													

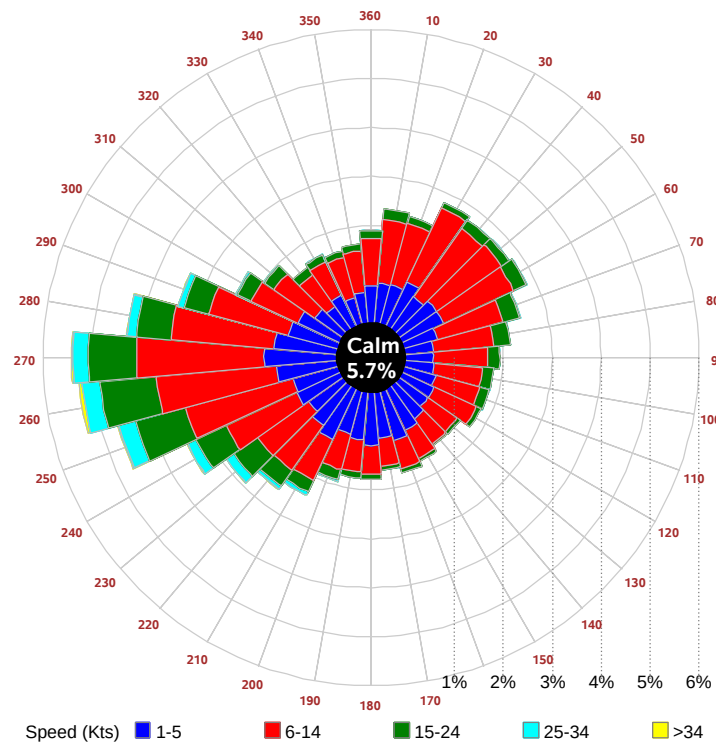
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9												
		March						June				
		9am	11am	1pm	3pm	5pm		9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear											
	M.Cloudy											
NORTH	M.Clear											
	M.Cloudy											
EAST	M.Clear			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

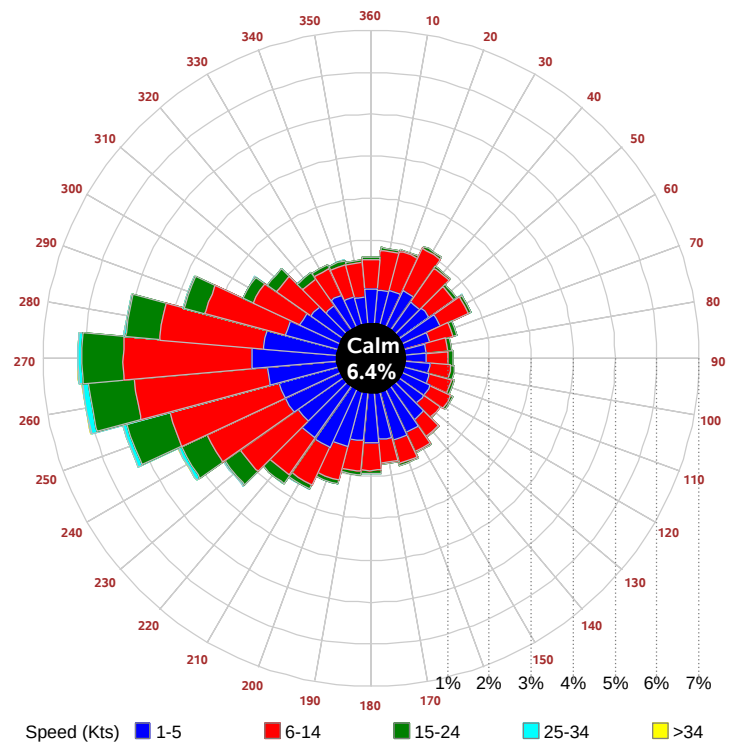
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

