

ST JOHNS INTL, CA	Station ID = ICAO_CYYT
Latitude = 47.62 N	Elevation = 461 Feet
Longitude = 52.75 W	Average Pressure = 29.40 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	82	70	91	15.3	WSW
0.4% Occurrence	77	67	84	15.4	W
1.0% Occurrence	73	64	79	15	WSW
2.0% Occurrence	72	64	79	15	WSW
Mean Daily Range	13	-	-	-	W
97.5% Occurrence	12	11	7	14.6	W
99.0% Occurrence	9	8	6	15.3	WNW
99.6% Occurrence	5	4	5	14.8	WNW
Median of Extreme Lows	3	2	5	17.1	WNW

	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	72	77	109	15.9	WSW
0.4% Occurrence	69	73	100	15.5	WSW
1.0% Occurrence	67	71	92	15	WSW
2.0% Occurrence	66	70	90	14.7	WSW

	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	111	74	0.73	16	WSW
0.4% Occurrence	104	72	0.69	15.2	WSW
1.0% Occurrence	97	71	0.65	15.2	WSW
2.0% Occurrence	91	69	0.61	14.1	WSW

Air Conditioning/ Humid Area Criteria	Threshold	T ≥ 93 °F	T ≥ 80 °F	Twb ≥ 73 °F	Twb ≥ 67 °F
	# of Hours	0	11	8	129

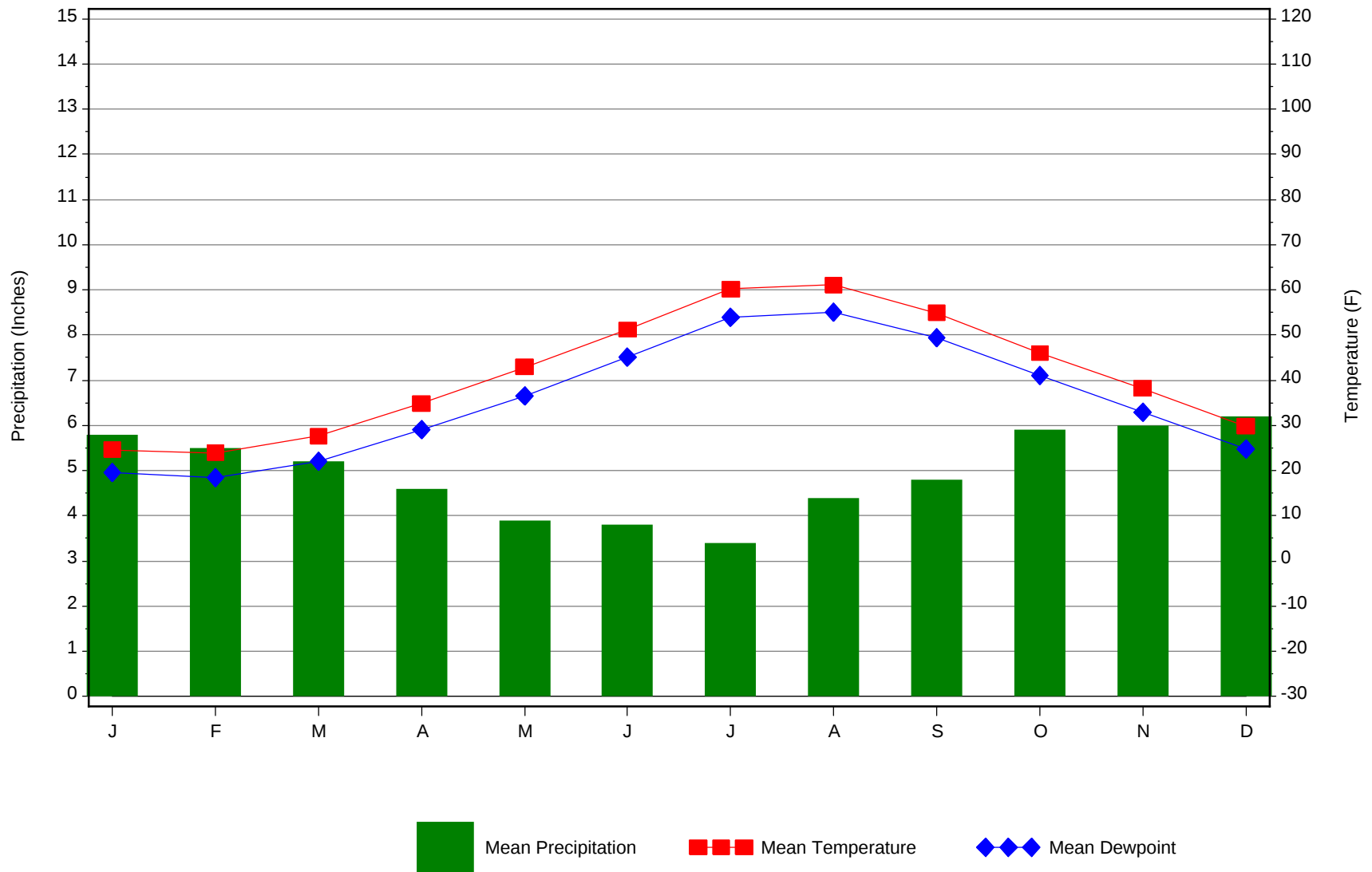
Other Site Data

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	N/A	105	0.2 + 0.0
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 (#)
43.9	36	72	59

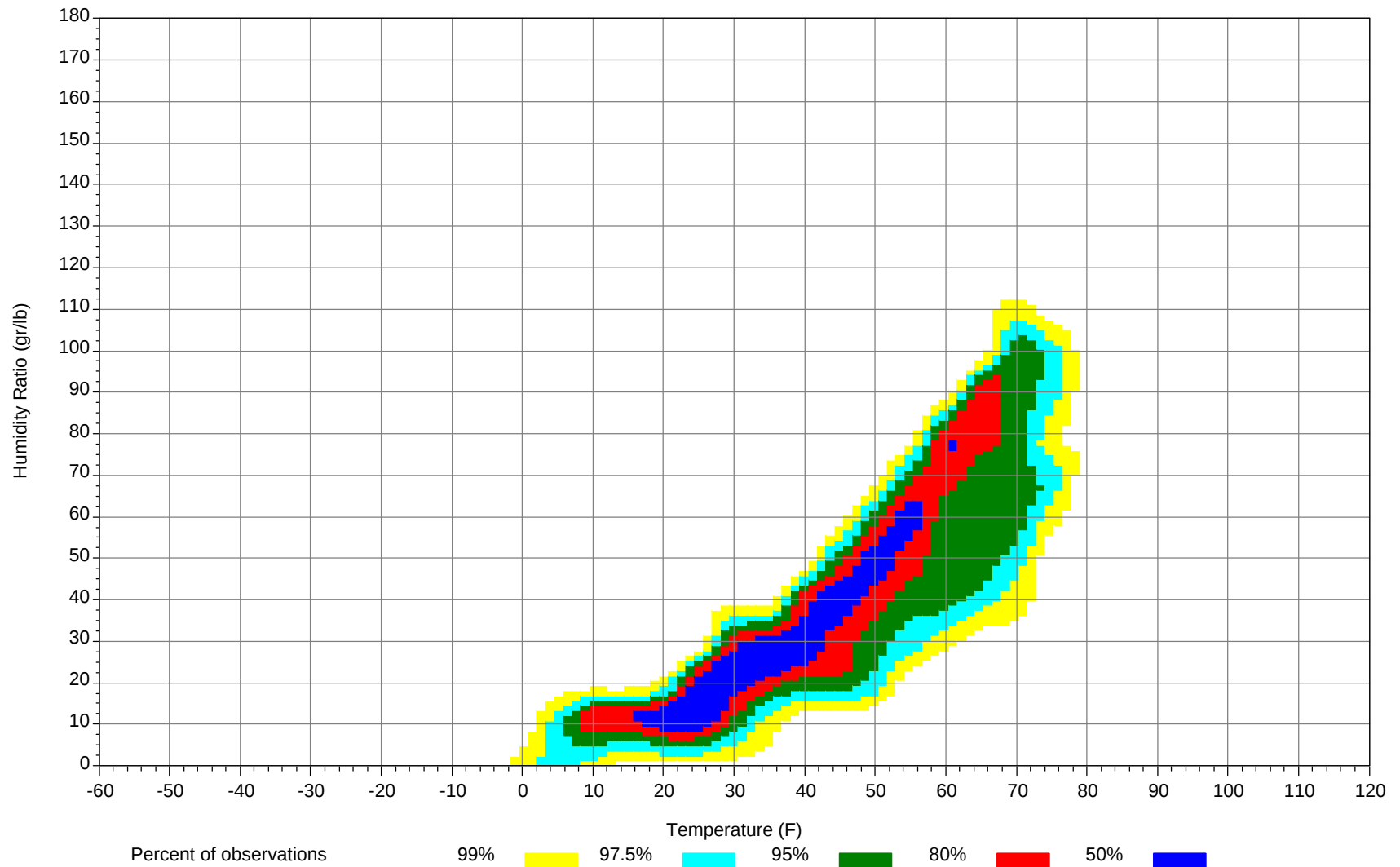
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



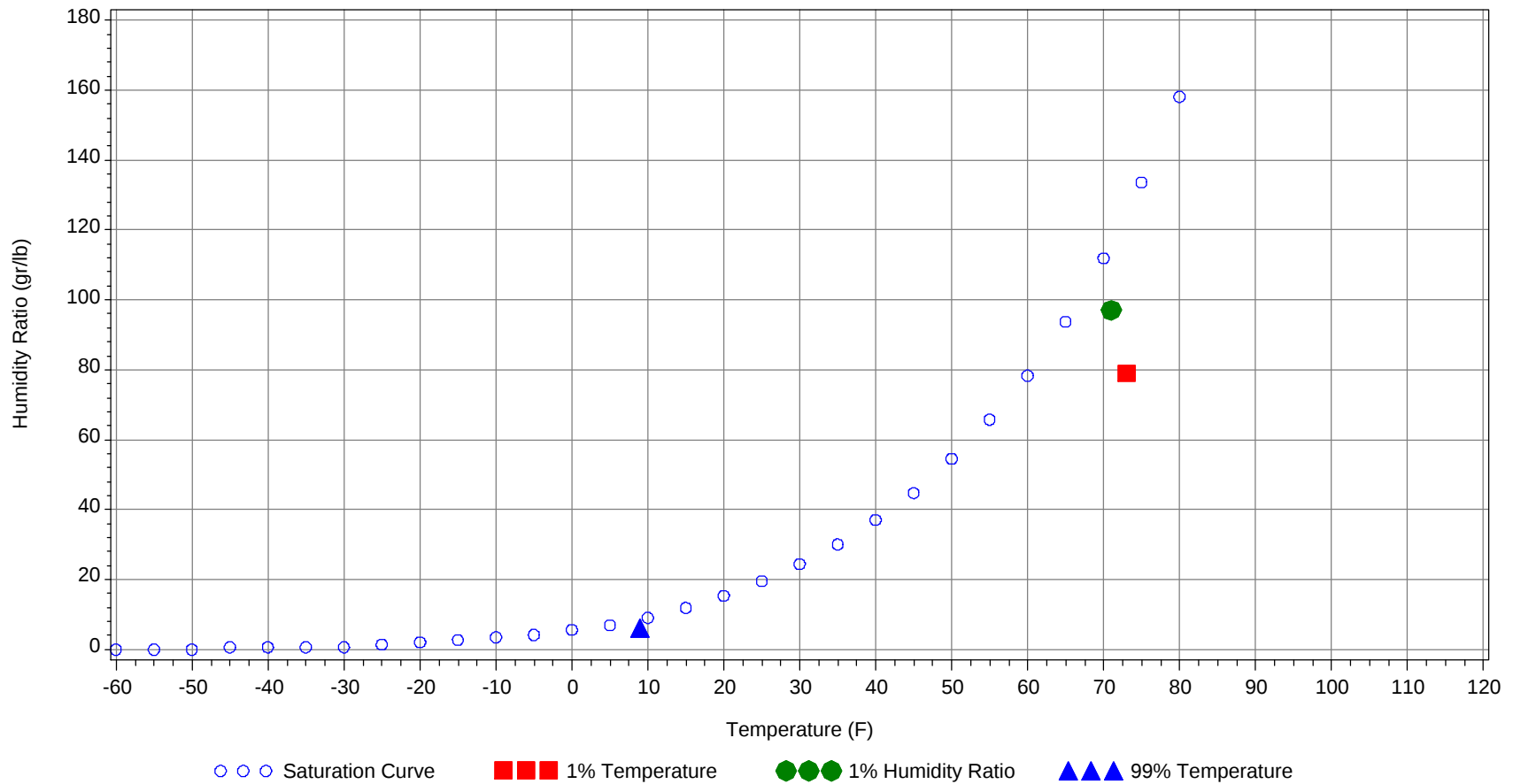
Average Annual Climate



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	73.0		64		79.0	29.9
99.0% Dry Bulb	9.0				6.0	3.1
1.0% Humidity Ratio	97.0	71.0	67.9	66.2		32.3

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)
85/ 89															
80/ 84															
75/ 79															
70/ 74															
65/ 69															
60/ 64			0	0	59		0		0	55.5		0		0	49
55/ 59	0	1	0	1	54.8	0	0	0	0	53.4		1	0	1	46.7
50/ 54	2	2	1	5	50.7	1	1	1	3	49.9	1	3	1	5	47.6
45/ 49	3	4	4	11	45.5	2	4	4	10	45	3	7	4	14	44.2
40/ 44	5	4	4	13	41.1	5	6	5	16	41	6	12	7	25	39.8
35/ 39	15	19	16	50	36	12	18	12	42	36	18	34	21	73	35
30/ 34	42	54	45	141	30.6	37	47	40	124	30.5	59	81	69	209	30.3
25/ 29	58	68	62	188	25.3	48	55	53	156	25.3	66	60	70	196	25.3
20/ 24	40	35	40	115	20.7	32	34	33	99	20.6	36	24	31	91	20.4
15/ 19	37	35	39	111	16.2	34	33	36	103	16	31	18	30	79	16.1
10/ 14	28	17	24	69	10.9	31	18	26	75	11	19	6	11	36	11
5/ 9	14	7	10	31	6.1	13	6	10	29	6.1	7	2	4	13	6.1
0/ 4	4	2	3	9	1.2	6	2	3	11	0.9	2	0	1	3	1.2
-5/ -1	0		0	0	-2.8	2	1	1	4	-3.6	0			0	-2
-10/ -6			0	0	-7	1	0	0	1	-7.6					
-15/-11						0			0	-11.5					

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)
85/ 89															
80/ 84												0		0	65
75/ 79							0		0	59.7		6	0	6	65.1
70/ 74	0			0	52		5	0	5	59.6	1	21	4	26	62.4
65/ 69	0	0		0	54.2	0	8	1	9	57.4	3	25	9	37	59.7
60/ 64	0	2	0	2	55	3	18	7	28	55	15	38	23	76	57
55/ 59	1	7	1	9	51.1	9	27	14	50	51.2	31	36	36	103	52.9
50/ 54	4	16	5	25	47.2	19	36	23	78	47.1	45	44	44	133	48.7
45/ 49	10	27	12	49	42.6	31	45	37	113	42.9	60	44	54	158	44.5
40/ 44	15	35	17	67	38.8	40	41	38	119	39.6	48	21	43	112	40.8
35/ 39	43	65	51	159	34.8	83	52	78	213	36	32	6	24	62	37.1
30/ 34	96	68	99	263	30.6	55	14	46	115	31.6	5	0	3	8	32.6
25/ 29	56	18	44	118	25.8	7	1	5	13	26.3	0			0	28
20/ 24	11	2	7	20	20.8	1		0	1	21.8					
15/ 19	4	1	2	7	16.4										
10/ 14	1		0	1	10.5										
5/ 9	0			0	6.7										
0/ 4															
-5/ -1															
-10/ -6															
-15/-11															

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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)
85/ 89		0		0	69.5		0		0	68.3					
80/ 84		5	0	5	69.6		4	0	4	69.6		1		1	68
75/ 79	0	30	4	34	66.4	0	22	2	24	66.8		4	0	4	67.5
70/ 74	6	55	19	80	64	6	61	15	82	64.3	2	18	3	23	65
65/ 69	20	45	31	96	61.8	25	46	35	106	62.5	8	28	10	46	62.4
60/ 64	55	45	61	161	58.8	68	54	72	194	59.3	25	59	33	117	58.5
55/ 59	75	34	60	169	54.6	83	39	69	191	55	55	56	56	167	54
50/ 54	54	24	42	120	50.4	47	20	39	106	50.6	71	51	68	190	49.7
45/ 49	30	9	25	64	45.9	16	1	13	30	46	51	21	51	123	44.8
40/ 44	6	1	4	11	42	2	0	1	3	41.2	21	2	15	38	40.6
35/ 39	1		1	2	38.1	0		0	0	37.3	6	0	4	10	36.5
30/ 34											0		0	0	32.7
25/ 29															
20/ 24															
15/ 19															
10/ 14															
5/ 9															
0/ 4															
-5/ -1															
-10/ -6															
-15/-11															

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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)
85/ 89															
80/ 84															
75/ 79															
70/ 74	0	2	0	2	65.8										
65/ 69	1	4	1	6	62.9		0		0	63.3					
60/ 64	8	16	8	32	59.3	1	3	1	5	59.4	0	0	0	0	58.9
55/ 59	16	34	15	65	54.1	8	11	8	27	55.2	0	1	1	2	55
50/ 54	33	50	38	121	49.2	14	17	15	46	50.4	3	5	3	11	50.5
45/ 49	64	79	67	210	44.3	21	34	25	80	44.7	7	9	9	25	45.7
40/ 44	58	40	59	157	40	32	40	31	103	40.1	10	13	12	35	40.9
35/ 39	52	20	48	120	35.7	62	71	63	196	35.3	35	39	33	107	35.9
30/ 34	16	4	12	32	30.5	67	50	69	186	30.2	71	80	76	227	30.7
25/ 29	1		1	2	25.6	25	11	21	57	25.1	55	53	53	161	25.2
20/ 24			0	0	21.3	6	2	5	13	20.3	27	22	27	76	20.3
15/ 19						3	1	3	7	16.4	23	19	22	64	16
10/ 14						0	0		0	11.4	13	5	10	28	11
5/ 9						0			0	7.5	3	0	2	5	6.5
0/ 4											0		0	0	2.1
-5/ -1															
-10/ -6															
-15/-11															

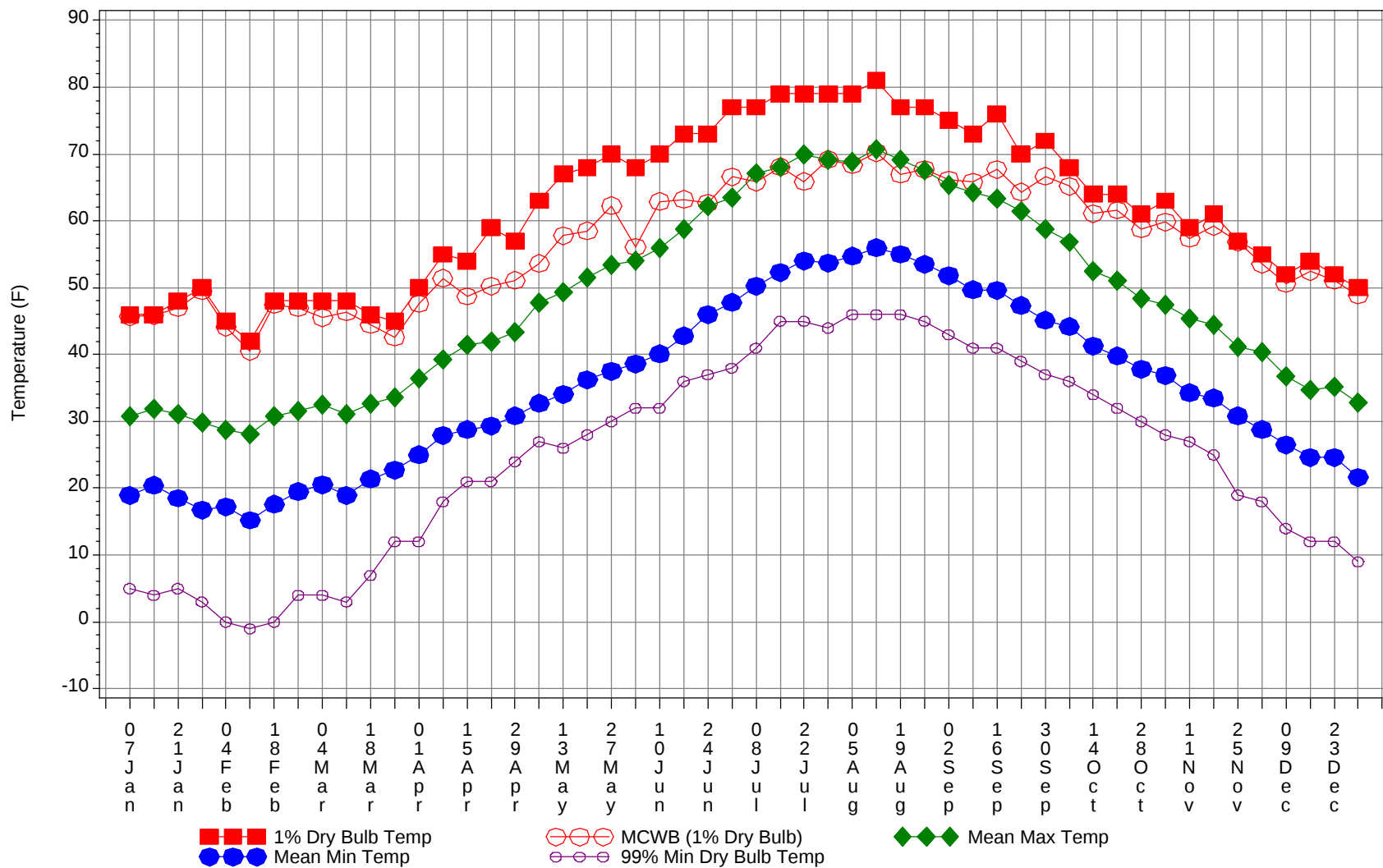
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

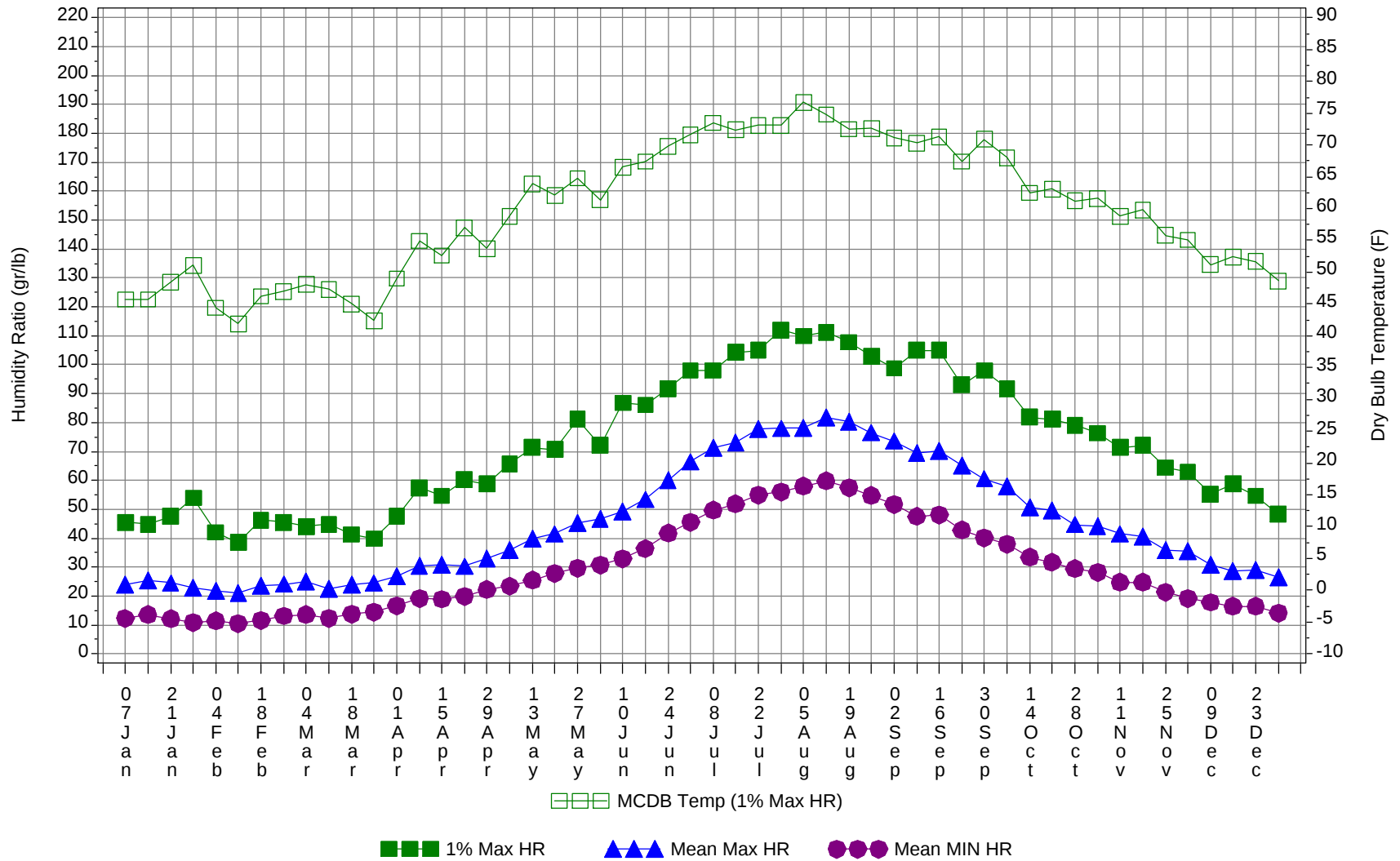
	Annual				
Temperature Range (° F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (° F)
85/ 89		0		0	69
80/ 84		9	0	9	69.4
75/ 79	1	62	6	69	66.5
70/ 74	14	163	41	218	63.9
65/ 69	57	156	86	299	61.8
60/ 64	176	235	204	615	58.5
55/ 59	279	245	260	784	54.1
50/ 54	293	269	281	843	49.4
45/ 49	299	284	305	888	44.4
40/ 44	248	214	237	699	40.1
35/ 39	360	326	352	1038	35.6
30/ 34	448	397	459	1304	30.6
25/ 29	316	266	310	892	25.3
20/ 24	153	119	143	415	20.5
15/ 19	131	108	131	370	16.1
10/ 14	91	46	72	209	11
5/ 9	39	16	25	80	6.2
0/ 4	12	4	7	23	1.1
-5/ -1	2	1	1	4	-3.5
-10/ -6	1	0	0	1	-7.6
-15/-11	0			0	-11.5

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



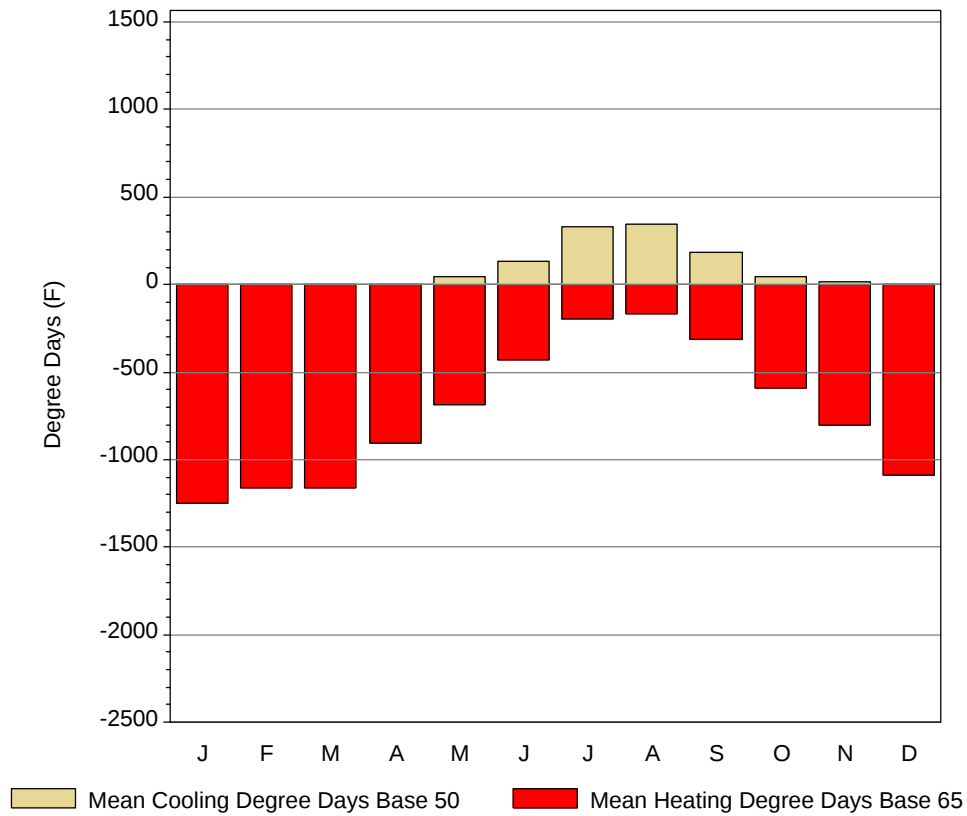
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

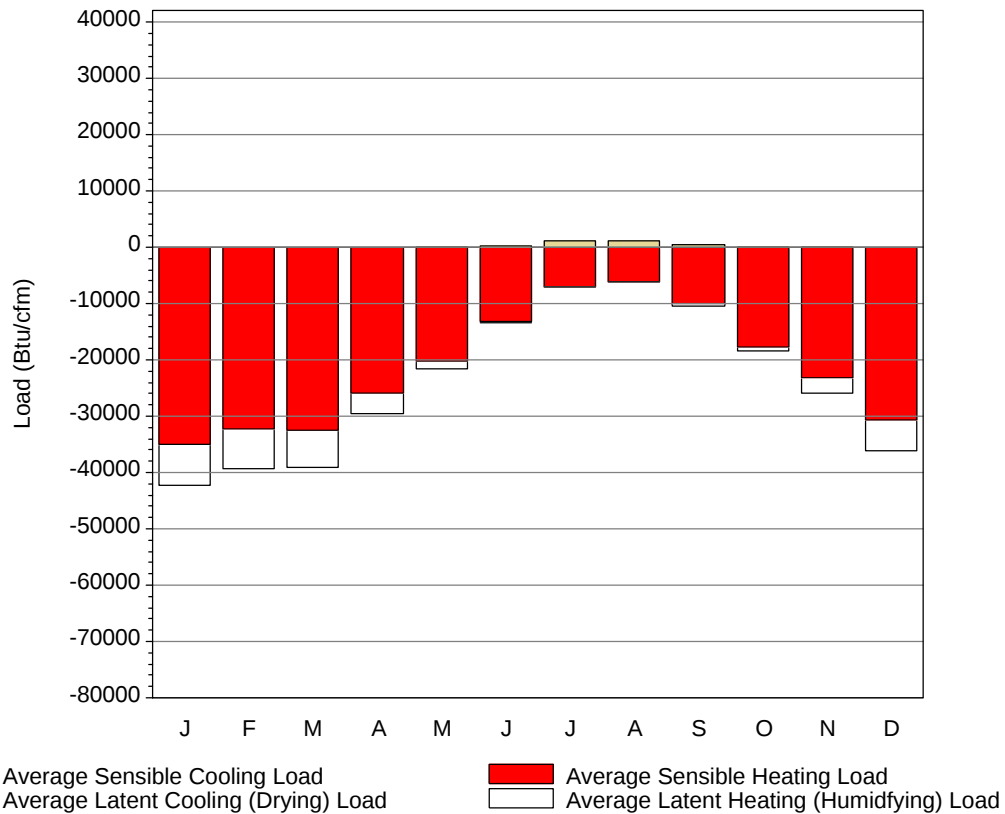
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	46	45.7	30.8	18.9	5	45.5	45.7	24	12.2
14-Jan	46	45.8	31.9	20.4	4	44.8	45.7	25.4	13.5
21-Jan	48	47	31.1	18.5	5	47.6	48.4	24.5	12.1
28-Jan	50	49.5	29.9	16.7	3	53.9	51.1	23	10.9
4-Feb	45	44.1	28.8	17.2	0	42	44.4	21.8	11.4
11-Feb	42	40.5	28.1	15.2	-1	38.5	41.9	21	10.5
18-Feb	48	47.5	30.7	17.6	0	46.2	46.2	23.7	11.5
25-Feb	48	47	31.5	19.5	4	45.5	47	24.1	13.1
4-Mar	48	45.5	32.5	20.5	4	44.1	48.1	25	13.6
11-Mar	48	46.4	31.1	18.9	3	44.8	47.3	22.6	12.3
18-Mar	46	44.5	32.6	21.4	7	41.3	45	24	13.8
25-Mar	45	42.6	33.6	22.7	12	39.9	42.4	24.5	14.5
1-Apr	50	47.6	36.5	25	12	47.6	49	26.8	16.6
8-Apr	55	51.4	39.3	27.9	18	57.4	54.9	30.5	19.2
15-Apr	54	48.7	41.4	28.8	21	54.6	52.6	30.9	18.9
22-Apr	59	50.2	41.9	29.3	21	60.2	57	30.3	19.8
29-Apr	57	51.1	43.3	30.8	24	58.8	53.7	33	22.2
6-May	63	53.6	47.7	32.7	27	65.8	58.8	36	23.4
13-May	67	57.8	49.3	34	26	71.4	63.9	39.9	25.5
20-May	68	58.5	51.5	36.2	28	70.7	62.1	41.5	27.8
27-May	70	62.3	53.4	37.5	30	81.2	64.8	45.2	29.7
4-Jun	68	56.1	54	38.6	32	72.1	61.4	46.6	30.7
10-Jun	70	62.9	56	40.1	32	86.8	66.5	49.3	32.9
17-Jun	73	63.2	58.7	42.8	36	86.1	67.4	53.4	36.4
24-Jun	73	62.7	62.2	46	37	91.7	69.8	60	41.8
1-Jul	77	66.6	63.5	47.8	38	98	71.6	66.4	45.6
8-Jul	77	65.8	67.1	50.2	41	98	73.5	71.3	49.7
15-Jul	79	68.1	68.1	52.3	45	104.3	72.4	73.2	51.8
22-Jul	79	65.9	69.9	54	45	105	73.1	77.8	54.9
29-Jul	79	69.2	69.1	53.7	44	112	73.1	78	56
5-Aug	79	68.4	68.9	54.7	46	109.9	76.7	78.1	58
12-Aug	81	70.2	70.7	56	46	111.3	74.8	81.7	59.8
19-Aug	77	67	69.2	55	46	107.8	72.5	80.3	57.4
26-Aug	77	67.7	67.6	53.5	45	102.9	72.6	76.5	54.8
2-Sep	75	66.1	65.3	51.8	43	98.7	71.1	73.6	51.7
9-Sep	73	65.8	64.3	49.7	41	105	70.3	69.6	47.6
16-Sep	76	67.7	63.4	49.6	41	105	71.3	70.1	48
23-Sep	70	64.3	61.5	47.3	39	93.1	67.4	65	42.9
30-Sep	72	66.7	58.8	45.1	37	98	70.9	60.6	40.1
7-Oct	68	65.2	56.8	44.2	36	91.7	68	58	38
14-Oct	64	61.1	52.5	41.3	34	81.9	62.5	50.6	33.4
21-Oct	64	61.6	51	39.8	32	81.2	63.1	49.5	31.7
28-Oct	61	58.8	48.4	37.8	30	79.1	61.2	44.7	29.4
4-Nov	63	59.8	47.4	36.9	28	76.3	61.6	44.1	28.2
11-Nov	59	57.4	45.4	34.3	27	71.4	58.8	41.5	24.8
18-Nov	61	59.2	44.5	33.5	25	72.1	59.8	40.5	24.7
25-Nov	57	56.8	41.2	30.8	19	64.4	55.8	35.8	21.4
2-Dec	55	53.5	40.3	28.8	18	63	55.1	35.4	19.2
9-Dec	52	50.6	36.7	26.5	14	55.3	51.2	30.7	17.8
16-Dec	54	52.4	34.7	24.6	12	58.8	52.4	28.6	16.5
23-Dec	52	51.1	35.1	24.6	12	54.6	51.7	28.9	16.4
31-Dec	50	48.9	32.8	21.6	9	48.3	48.6	26.4	14.1

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	0.5	0	1252.5
FEB	0.2	0	1160.6
MAR	0.4	0	1160.3
APR	5.1	0	904.7
MAY	45.8	2.1	688.2
JUN	133.4	12.4	427.1
JUL	328.5	49.7	198.9
AUG	347.3	44.5	167.1
SEP	181.1	11.6	314.8
OCT	47	0.8	589.3
NOV	13.3	0	804.9
DEC	1.9	0	1090.9
ANN	1104.5	121.1	8759.3

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	-34875	0	-7401
FEB	0	-32280	0	-6984
MAR	0	-32485	0	-6508
APR	0	-25782	0	-3743
MAY	0	-20212	9	-1433
JUN	8	-13229	193	-191
JUL	89	-6975	1078	-2
AUG	61	-6166	1174	-1
SEP	10	-10315	452	-48
OCT	0	-17671	60	-695
NOV	0	-23196	3	-2699
DEC	0	-30687	0	-5428
ANN	168	-253873	2969	-35133

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													

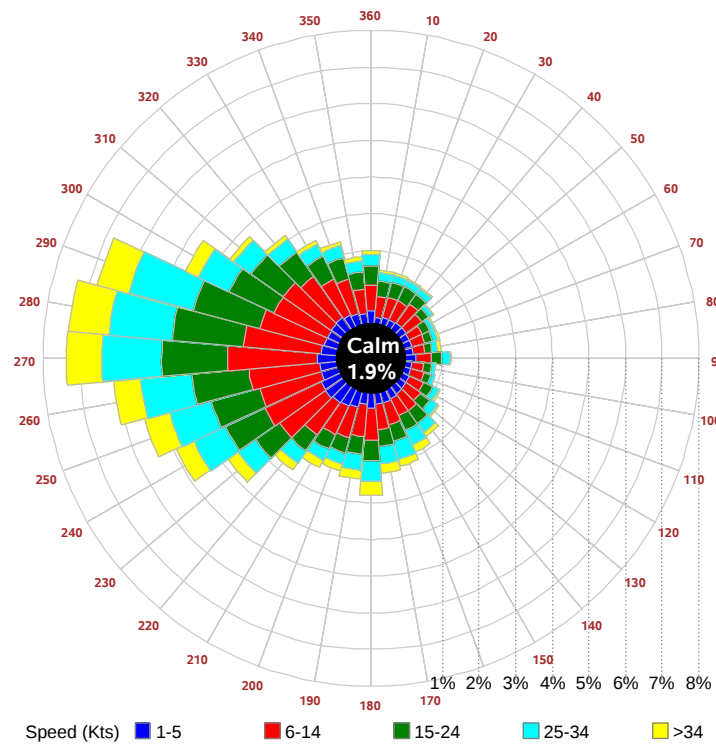
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

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													

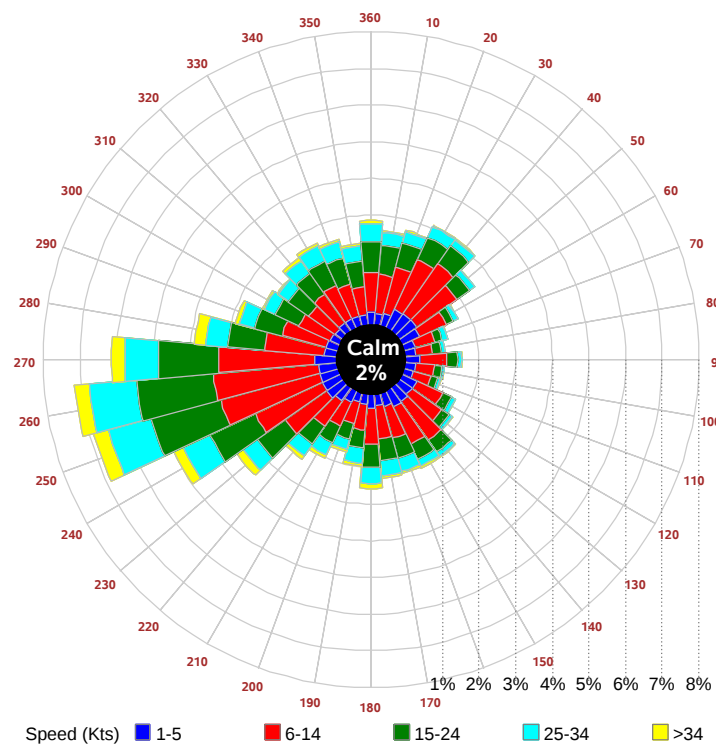
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9												
				March						June		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	
HORIZ.	M.Clear											
	M.Cloudy											
NORTH	M.Clear											
	M.Cloudy											
EAST	M.Clear			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

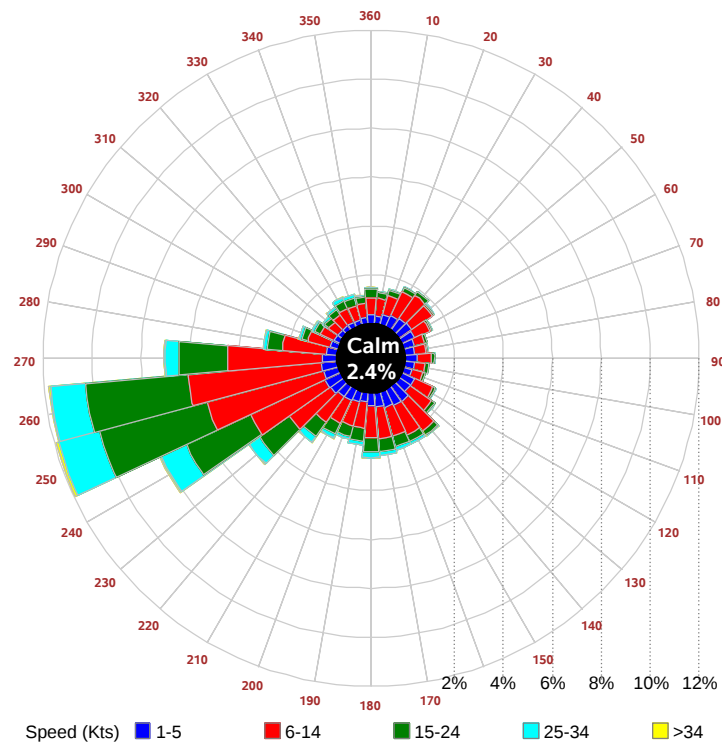
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

