

NURNBERG, GM	
Latitude = 49.50 N	Station ID = ICAO_EDDN
Longitude = 11.08 E	Elevation = 1046 Feet
Period of Record = 1988 To 2017	Average Pressure = 28.92 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	93	68	67	6.6	VRB
0.4% Occurrence	88	67	66	6.4	VRB
1.0% Occurrence	84	65	66	6.5	VRB
2.0% Occurrence	81	64	66	6.5	VRB
Mean Daily Range	16	-	-	-	E
97.5% Occurrence	23	22	15	5.2	E
99.0% Occurrence	18	17	12	4.4	E
99.6% Occurrence	12	11	8	4	E
Median of Extreme Lows	7	6	7	3.8	N

	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	71	84	92	6	VRB
0.4% Occurrence	69	83	85	5.9	VRB
1.0% Occurrence	67	79	82	5.7	VRB
2.0% Occurrence	66	77	80	5.7	VRB

	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	107	76	0.69	5.4	VRB
0.4% Occurrence	94	72	0.61	4.9	VRB
1.0% Occurrence	88	70	0.57	4.8	VRB
2.0% Occurrence	83	69	0.54	5.1	VRB

Air Conditioning/ Humid Area Criteria	Threshold	T ≥ 93 °F	T ≥ 80 °F	Twb ≥ 73 °F	Twb ≥ 67 °F
	# of Hours	13	203	6	119

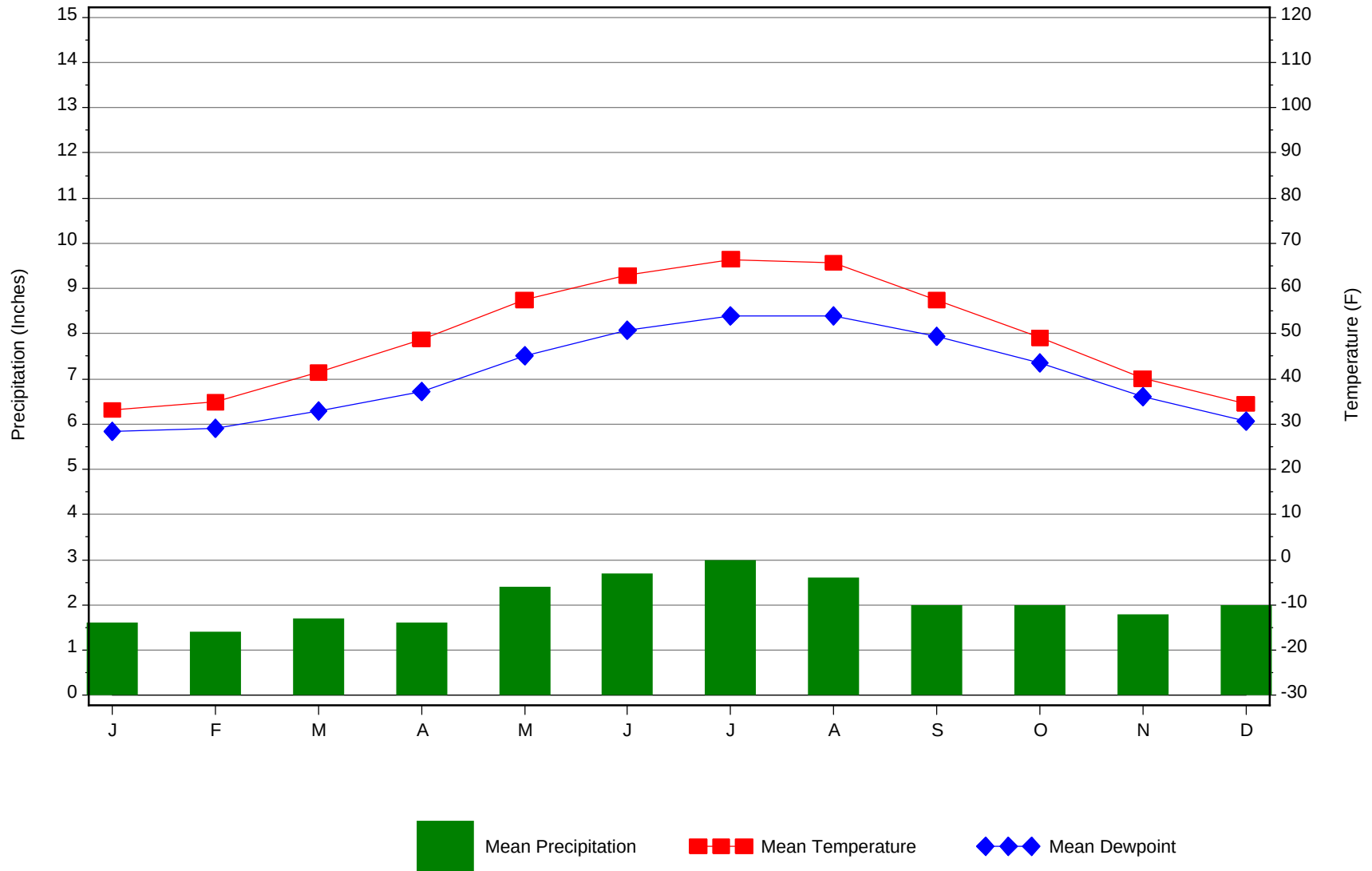
Other Site Data

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 + 0.2
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 (#)
51.9	N/A	N/A	48

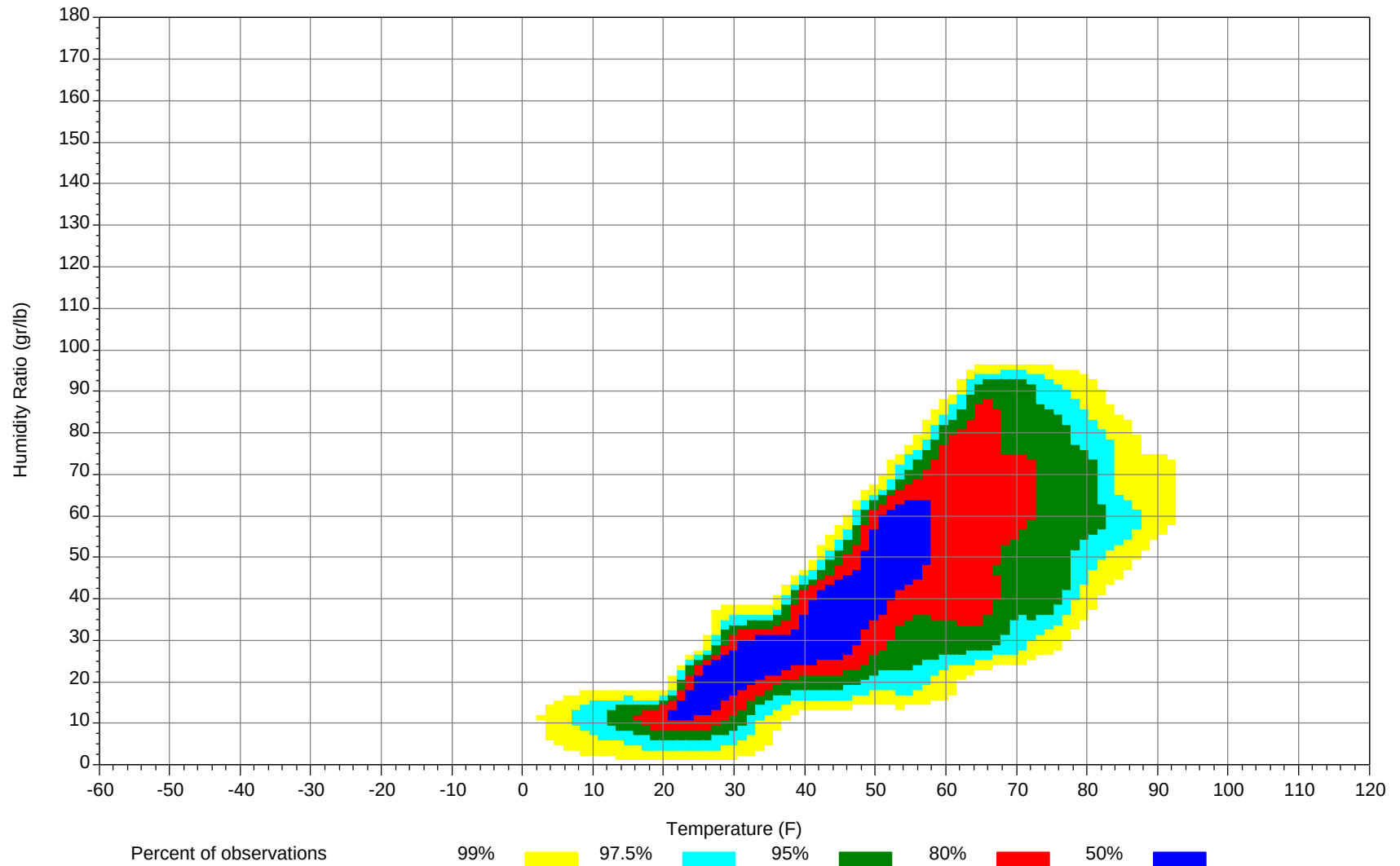
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



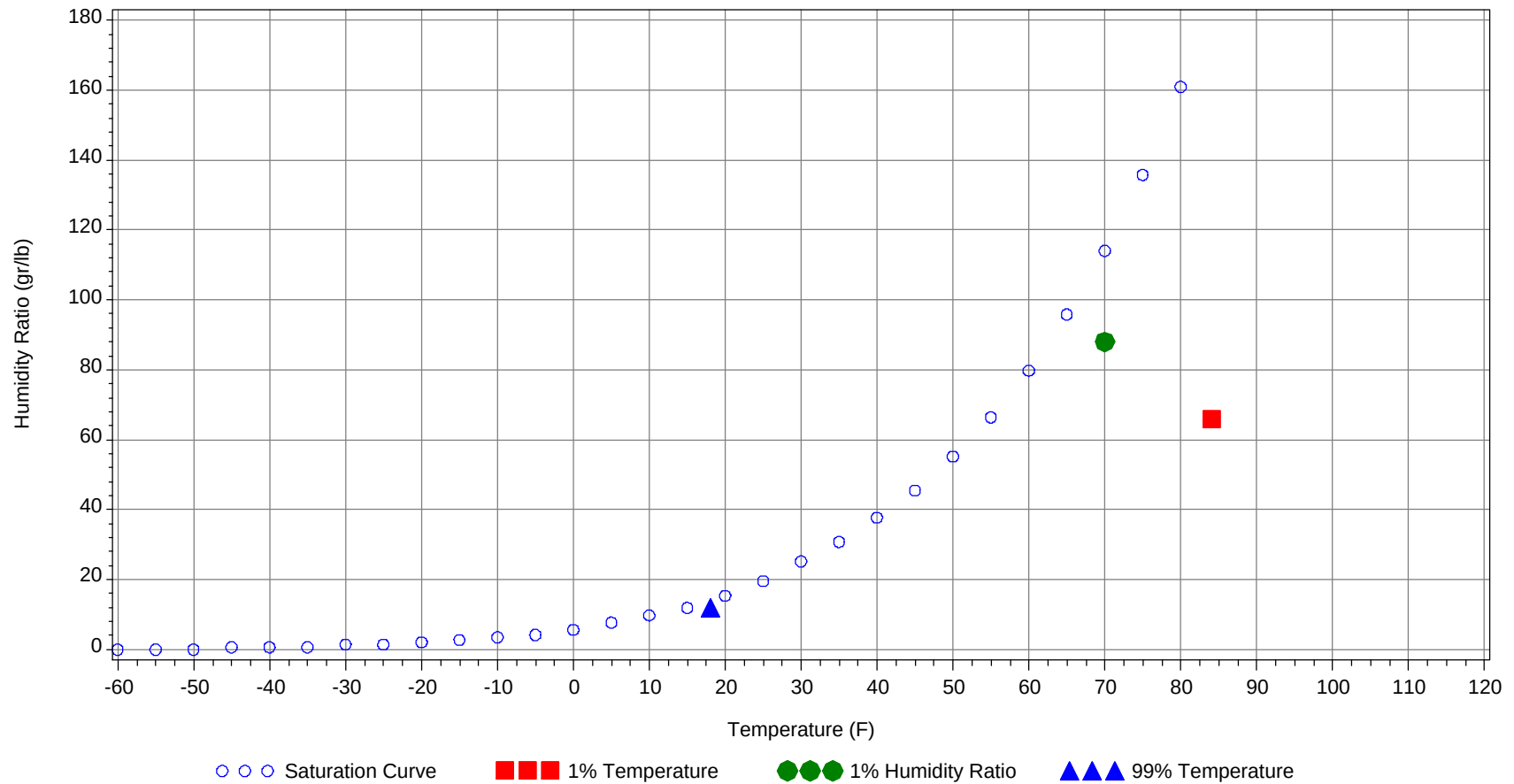
Average Annual Climate



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	84.0		65		66.0	30.6
99.0% Dry Bulb	18.0				12.0	6.1
1.0% Humidity Ratio	88.0	70.0	65.2	62.6		30.6

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)
95/ 99															
90/ 94															
85/ 89															
80/ 84															
75/ 79															
70/ 74												1	0	1	53.9
65/ 69												3	1	4	51.5
60/ 64							1	0	1	49.7		12	6	18	49.8
55/ 59	0	2	0	2	49.6	0	5	2	7	47.5	1	22	14	37	47.6
50/ 54	5	10	6	21	47.1	3	15	10	28	45.4	8	40	31	79	45.7
45/ 49	13	25	21	59	42.9	12	31	23	66	42.3	34	58	55	147	42.4
40/ 44	24	31	27	82	39.4	21	34	31	86	38.9	38	41	46	125	38.7
35/ 39	48	59	55	162	35.5	48	52	57	157	35	63	42	50	155	34.9
30/ 34	61	58	63	182	30.7	61	48	55	164	30.6	60	23	31	114	30.4
25/ 29	43	37	42	122	25.5	42	23	29	94	25.5	33	6	10	49	25.6
20/ 24	24	16	20	60	20.9	15	8	10	33	20.7	7	1	2	10	20.9
15/ 19	16	7	10	33	16.7	11	4	5	20	16.5	4	0	1	5	17
10/ 14	9	2	3	14	11.7	7	2	2	11	11.4	1	0	0	1	12
5/ 9	4	1	1	6	6.7	2	1	1	4	6.6	1	0	0	1	6
0/ 4	1	0	0	1	1.6	1	0	0	1	1.3	0			0	1.8
-5/ -1	0	0		0	-3.5	0	0		0	-3.4					
-10/ -6		0		0	-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

	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							0	0	0	64.7		3	1	4	67.9
85/ 89		0	0	0	60		1	1	2	64.4		6	3	9	66.6
80/ 84		0	0	0	59.1		7	3	10	62.4	0	18	11	29	64.5
75/ 79		5	2	7	56.3		20	10	30	59.9	1	32	20	53	62.4
70/ 74		12	6	18	54.9	1	37	24	62	57.4	6	45	35	86	60.1
65/ 69	0	14	9	23	53.4	3	34	24	61	55.7	13	38	33	84	58.6
60/ 64	1	32	22	55	50.9	15	53	47	115	53.9	50	49	57	156	56.6
55/ 59	8	41	35	84	48.6	53	49	59	161	51.7	72	36	51	159	53.3
50/ 54	31	52	50	133	46.2	78	33	49	160	48.5	65	11	24	100	49.9
45/ 49	60	43	55	158	42.8	58	13	25	96	44.3	27	1	4	32	45.4
40/ 44	48	24	31	103	39	25	1	6	32	40.3	5	0	0	5	41
35/ 39	52	14	22	88	35.4	12	0	2	14	36.8	1			1	37.7
30/ 34	30	2	7	39	30.7	4		0	4	31.8					
25/ 29	10	0	1	11	26	0			0	28					
20/ 24	1			1	21.2										
15/ 19	0			0	17.3										
10/ 14															
5/ 9															
0/ 4															
-5/ -1															
-10/ -6															

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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)
95/ 99		1	0	1	68.9		2	1	3	67.9					
90/ 94		6	3	9	67.5		5	3	8	67.6		0		0	65.5
85/ 89		12	7	19	66		9	5	14	66.2		1	0	1	64.6
80/ 84	0	29	17	46	64.9	0	27	15	42	64.9		6	2	8	63.8
75/ 79	2	44	31	77	63.2	1	44	29	74	63.3		15	6	21	62.4
70/ 74	11	52	46	109	61.5	9	53	41	103	61.5	0	29	14	43	60.4
65/ 69	31	41	45	117	60.3	24	44	45	113	60.2	1	32	22	55	58.4
60/ 64	77	42	58	177	58.1	72	45	61	178	58.3	19	61	50	130	56.4
55/ 59	80	19	34	133	54.4	81	18	36	135	54.8	57	59	68	184	53.4
50/ 54	38	2	8	48	50.6	46	3	12	61	50.5	79	30	54	163	50
45/ 49	8		0	8	46.1	14	0	1	15	46.1	52	7	22	81	45.6
40/ 44	1			1	41.9	2			2	41.9	22	1	3	26	41.4
35/ 39						0			0	37.5	8	0	0	8	37.4
30/ 34											1			1	33.4
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)
95/ 99															
90/ 94															
85/ 89															
80/ 84															
75/ 79		1	0	1	62.5										
70/ 74		6	1	7	59.9										
65/ 69	0	11	3	14	58.2		0		0	55.8					
60/ 64	2	34	15	51	55.8		3	0	3	54.7					
55/ 59	20	54	44	118	53	2	11	5	18	51.3	0	1	0	1	49.6
50/ 54	54	62	64	180	49.3	12	30	18	60	48.2	5	10	7	22	47.4
45/ 49	67	48	60	175	44.7	34	58	51	143	44.1	18	28	23	69	43.6
40/ 44	42	19	33	94	40.4	49	46	48	143	40.3	25	36	32	93	39.9
35/ 39	37	10	21	68	36.3	65	54	62	181	36	61	66	63	190	35.9
30/ 34	21	2	6	29	31.3	47	28	38	113	31.2	65	63	68	196	30.9
25/ 29	6	0	1	7	26.7	20	8	14	42	26.1	40	28	36	104	25.8
20/ 24	0			0	22.4	7	2	2	11	21.5	13	9	10	32	21.1
15/ 19						3	0	1	4	17	10	4	7	21	17
10/ 14						1	0	0	1	12.3	6	2	2	10	11.5
5/ 9											2	1	1	4	6.6
0/ 4											1	0	0	1	1.7
-5/ -1											0	0		0	-2.4
-10/ -6											0	0		0	-6.8

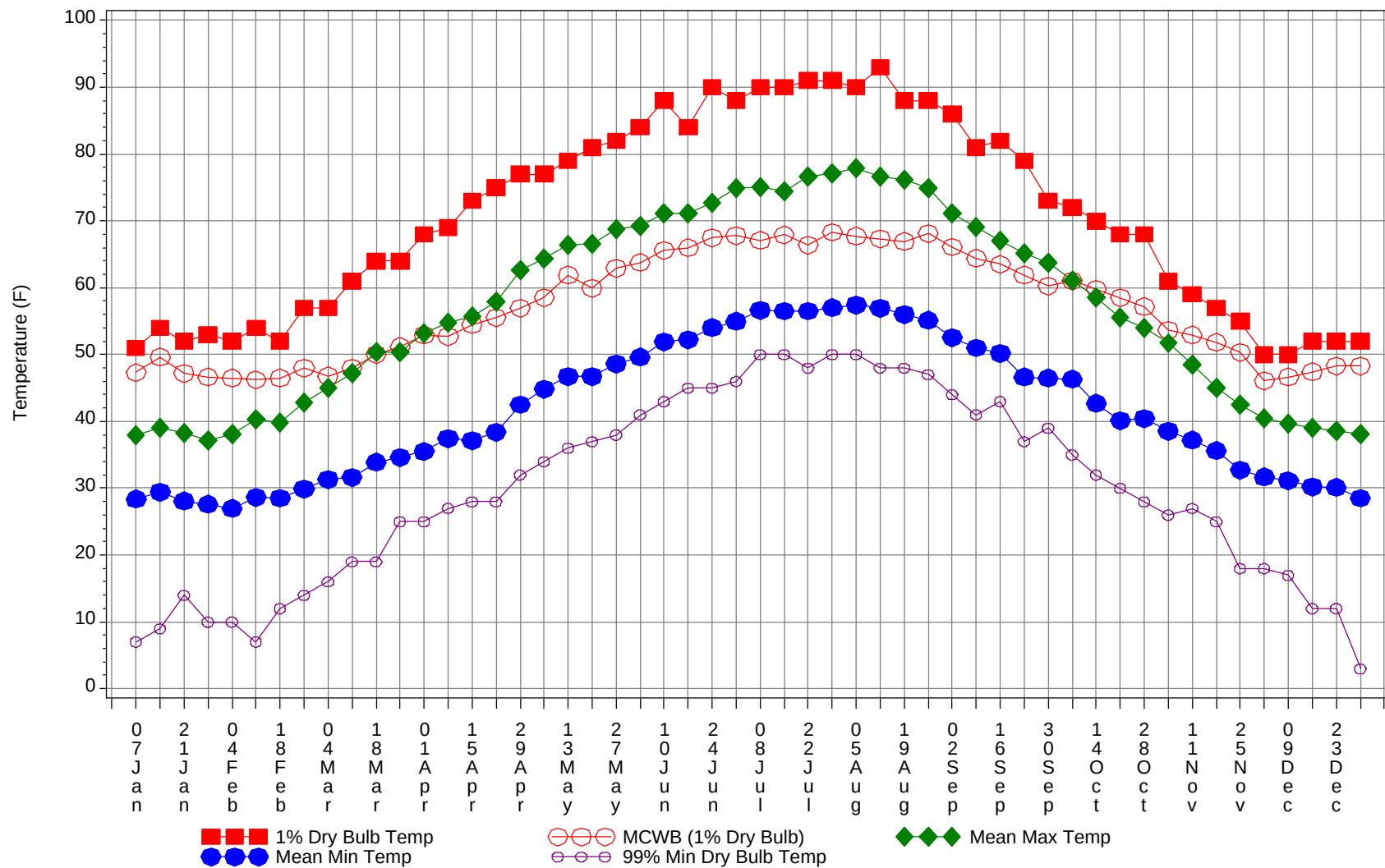
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

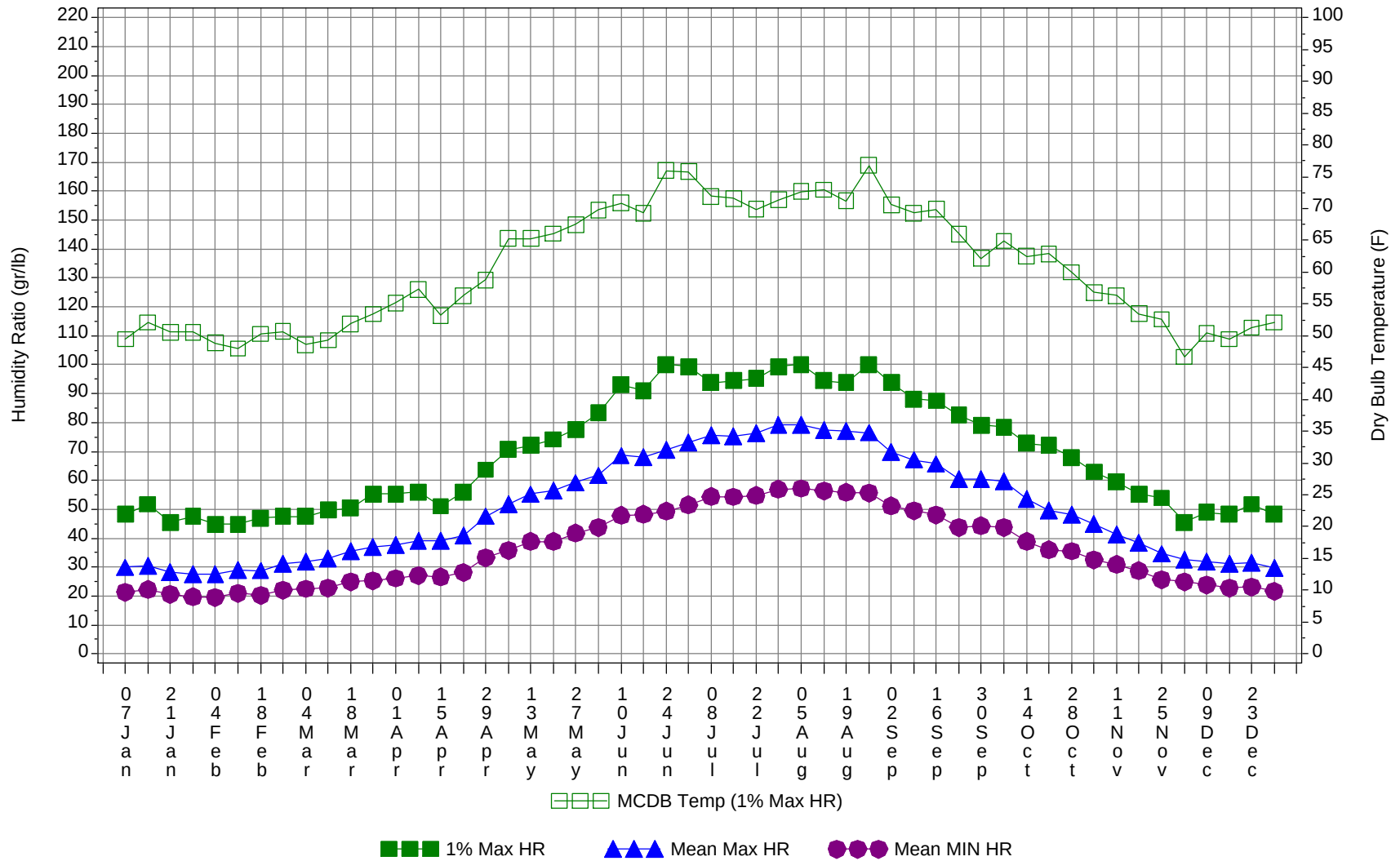
	Annual				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
95/ 99		2	1	3	68.2
90/ 94		15	7	22	67.6
85/ 89		28	16	44	66.1
80/ 84	0	86	47	133	64.6
75/ 79	4	160	97	261	62.4
70/ 74	27	235	167	429	60.2
65/ 69	73	217	182	472	58.7
60/ 64	236	331	316	883	56.3
55/ 59	374	318	347	1039	52.7
50/ 54	423	297	332	1052	48.6
45/ 49	396	314	339	1049	43.8
40/ 44	301	233	257	791	39.6
35/ 39	397	296	332	1025	35.6
30/ 34	350	224	269	843	30.8
25/ 29	194	102	134	430	25.7
20/ 24	67	35	44	146	20.9
15/ 19	44	16	23	83	16.8
10/ 14	23	6	7	36	11.6
5/ 9	8	3	2	13	6.6
0/ 4	4	1	1	6	1.5
-5/ -1	1	0		1	-2.9
-10/ -6	0	0		0	-6.7

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



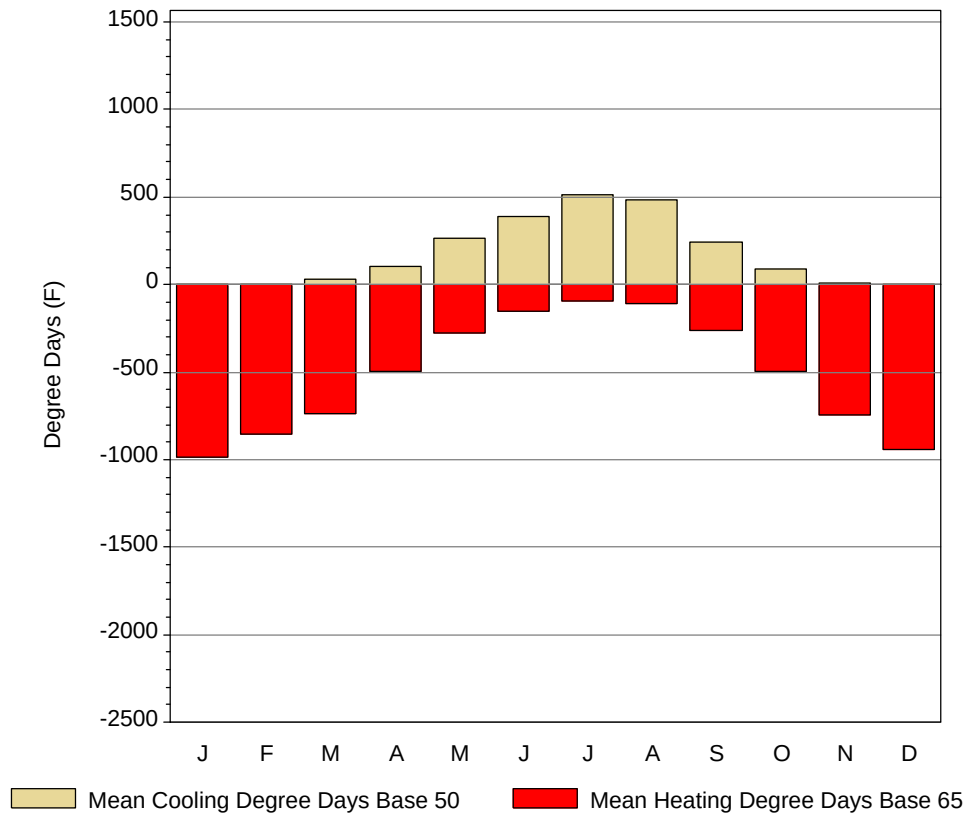
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

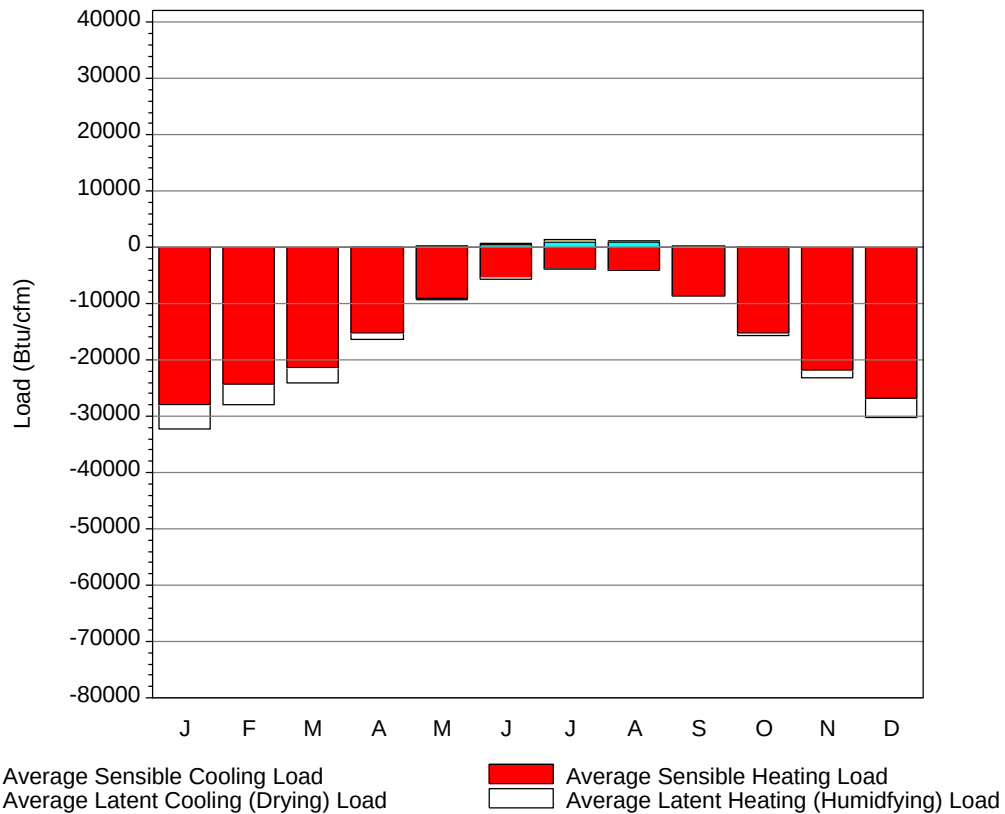
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	51	47.3	37.9	28.4	7	48.3	49.5	29.9	21.3
14-Jan	54	49.6	39	29.4	9	51.8	52.1	30.5	22.2
21-Jan	52	47.2	38.2	28.1	14	45.5	50.6	28.2	20.6
28-Jan	53	46.6	37.1	27.6	10	47.6	50.6	27.6	19.7
4-Feb	52	46.5	38.1	27	10	44.8	48.9	27.5	19.5
11-Feb	54	46.2	40.3	28.6	7	44.8	48	29	20.9
18-Feb	52	46.5	39.9	28.5	12	46.9	50.3	28.8	20.3
25-Feb	57	48	42.8	29.9	14	47.6	50.7	31.1	22
4-Mar	57	46.8	45	31.3	16	47.6	48.6	31.9	22.5
11-Mar	61	48	47.2	31.6	19	49.7	49.3	32.9	22.7
18-Mar	64	50	50.3	33.9	19	50.4	51.9	35.4	25
25-Mar	64	51.2	50.4	34.6	25	55.3	53.4	36.9	25.3
1-Apr	68	52.9	53.2	35.5	25	55.3	55.2	37.6	26.1
8-Apr	69	52.7	54.8	37.4	27	56	57.3	39	27.1
15-Apr	73	54.5	55.7	37.1	28	51.1	53.2	39	26.5
22-Apr	75	55.5	57.9	38.4	28	56	56.3	40.8	28.1
29-Apr	77	56.9	62.6	42.5	32	63.7	58.8	47.6	33.2
6-May	77	58.5	64.3	44.8	34	70.7	65.3	51.7	35.7
13-May	79	61.9	66.4	46.7	36	72.1	65.3	55.2	38.8
20-May	81	59.9	66.5	46.7	37	74.2	66.1	56.4	38.8
27-May	82	62.9	68.7	48.6	38	77.7	67.5	59.2	41.7
4-Jun	84	63.8	69.3	49.6	41	83.3	69.8	61.7	43.7
10-Jun	88	65.6	71.2	51.9	43	93.1	70.9	68.6	47.9
17-Jun	84	66	71.2	52.2	45	91	69.3	68.1	48.2
24-Jun	90	67.5	72.7	54	45	100.1	76	70.5	49.3
1-Jul	88	67.8	74.9	55	46	99.4	75.8	73	51.5
8-Jul	90	67.1	75.1	56.6	50	93.8	71.9	75.6	54.4
15-Jul	90	67.9	74.5	56.5	50	94.5	71.6	75.3	54.3
22-Jul	91	66.4	76.7	56.5	48	95.2	69.9	76.3	54.7
29-Jul	91	68.3	77.1	57	50	99.4	71.4	79.3	56.9
5-Aug	90	67.7	77.9	57.4	50	100.1	72.7	79.1	57.2
12-Aug	93	67.3	76.7	56.9	48	94.5	73	77.4	56.4
19-Aug	88	66.9	76.1	56	48	93.8	71.2	77	55.8
26-Aug	88	68.1	74.9	55.1	47	100.1	76.8	76.5	55.7
2-Sep	86	66.1	71.1	52.5	44	93.8	70.6	69.8	51.1
9-Sep	81	64.4	69.1	51	41	88.2	69.3	67.1	49.5
16-Sep	82	63.5	67	50.2	43	87.5	69.9	65.7	48.1
23-Sep	79	61.9	65.1	46.6	37	82.6	66	60.4	43.8
30-Sep	73	60.2	63.7	46.5	39	79.1	62.2	60.4	44.3
7-Oct	72	61	61	46.3	35	78.4	64.9	59.8	43.8
14-Oct	70	59.8	58.6	42.7	32	72.8	62.5	53.7	38.9
21-Oct	68	58.5	55.5	40.1	30	72.1	62.9	49.7	35.9
28-Oct	68	57.2	54	40.4	28	67.9	60	48.1	35.5
4-Nov	61	53.6	51.7	38.5	26	63	56.8	45	32.6
11-Nov	59	52.9	48.4	37.2	27	59.5	56.3	41.4	30.9
18-Nov	57	51.8	45	35.6	25	55.3	53.5	38.3	28.7
25-Nov	55	50.3	42.5	32.7	18	53.9	52.6	34.6	25.7
2-Dec	50	46.1	40.5	31.7	18	45.5	46.7	32.7	25
9-Dec	50	46.6	39.7	31.1	17	49	50.4	31.9	23.8
16-Dec	52	47.4	39	30.2	12	48.3	49.5	31.1	22.7
23-Dec	52	48.3	38.6	30.1	12	51.8	51.3	31.6	23.2
31-Dec	52	48.3	38.1	28.5	3	48.3	52.1	29.8	21.6

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	1.8	0	988
FEB	4.2	0	851.7
MAR	28.7	0.7	734.3
APR	103.6	10.5	498.7
MAY	264.9	44.3	277.5
JUN	392.7	89.7	153.4
JUL	510.7	137.5	92.9
AUG	487.6	127.1	106.7
SEP	246.2	32.1	259.1
OCT	90.4	3.5	497.1
NOV	10.5	0	747.5
DEC	1.4	0	945.2
ANN	2142.7	445.4	6152.1

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	-28020	0	-4150
FEB	0	-24274	0	-3550
MAR	0	-21430	0	-2574
APR	13	-15126	0	-1279
MAY	146	-9144	8	-205
JUN	507	-5542	223	-18
JUL	915	-3737	474	-2
AUG	830	-4162	419	-1
SEP	103	-8702	56	-12
OCT	1	-15239	2	-457
NOV	0	-21709	0	-1478
DEC	0	-26910	0	-3272
ANN	2515	-183995	1182	-16998

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													

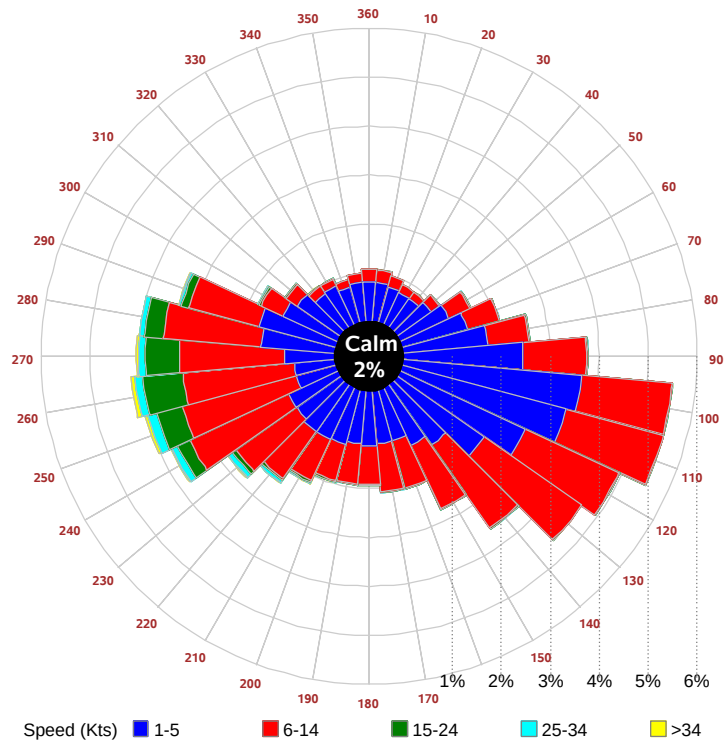
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

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													

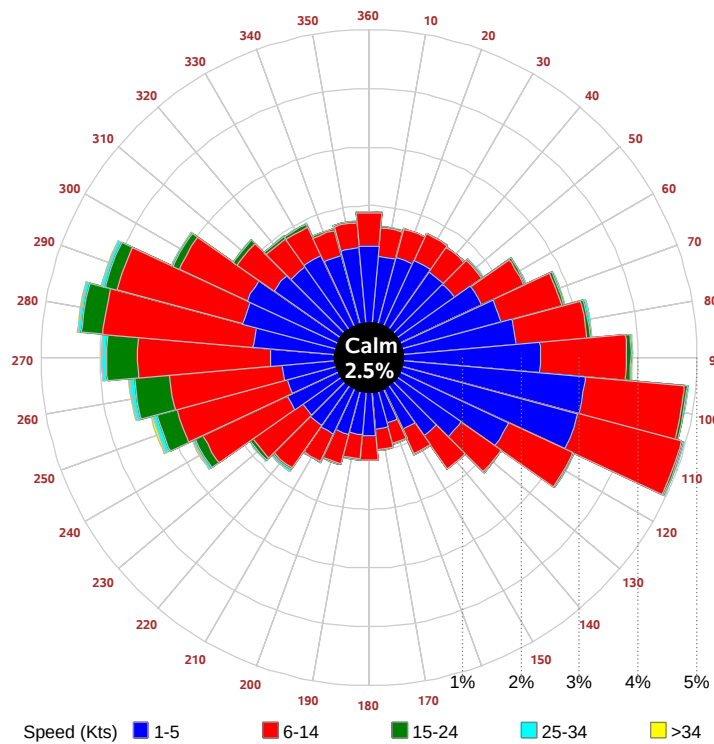
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9												
				March						June		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	
HORIZ.	M.Clear											
	M.Cloudy											
NORTH	M.Clear											
	M.Cloudy											
EAST	M.Clear			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

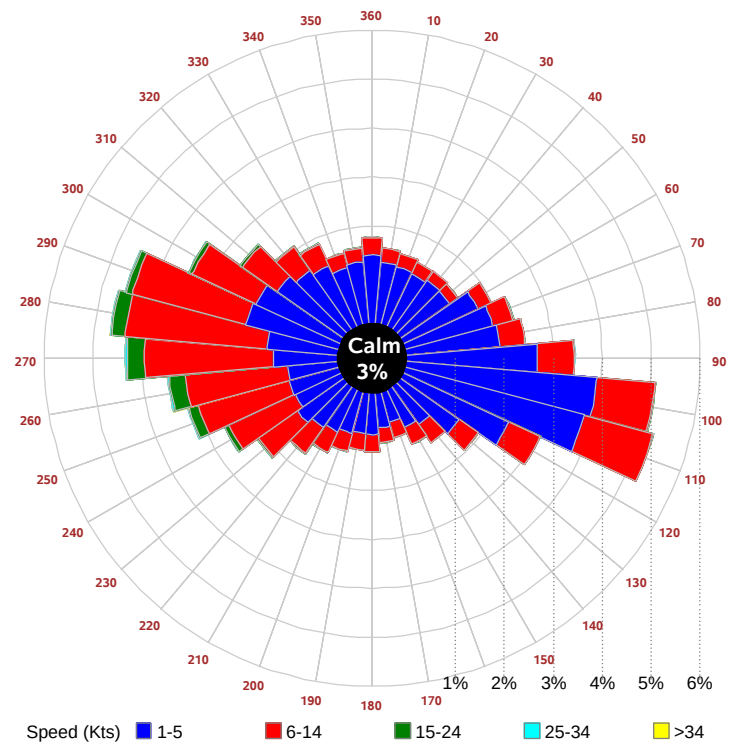
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

