

BENINA AIRPORT, LY	Station ID = ICAO_HLLB
Latitude = 32.10 N	Elevation = 433 Feet
Longitude = 20.27 E	Average Pressure = 29.55 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	106	72	67	15.1	S
0.4% Occurrence	99	70	65	16.2	S
1.0% Occurrence	95	69	69	16.1	N
2.0% Occurrence	93	69	69	16.5	N
Mean Daily Range	17	-	-	-	SSE
97.5% Occurrence	48	46	42	6.8	SSE
99.0% Occurrence	46	44	39	5.8	SSE
99.6% Occurrence	45	44	39	5.9	SSE
Median of Extreme Lows	41	40	34	5.4	ESE

	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	81	93	140	15.2	N
0.4% Occurrence	77	86	124	14.9	N
1.0% Occurrence	76	85	120	15.4	N
2.0% Occurrence	75	84	116	15.3	N

	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	146	85	0.94	13.2	N
0.4% Occurrence	133	81	0.88	12.5	N
1.0% Occurrence	125	80	0.82	12.6	N
2.0% Occurrence	120	79	0.79	12.8	N

Air Conditioning/ Humid Area Criteria	Threshold	T ≥ 93 °F	T ≥ 80 °F	Twb ≥ 73 °F	Twb ≥ 67 °F
	# of Hours	177	1591	523	2046

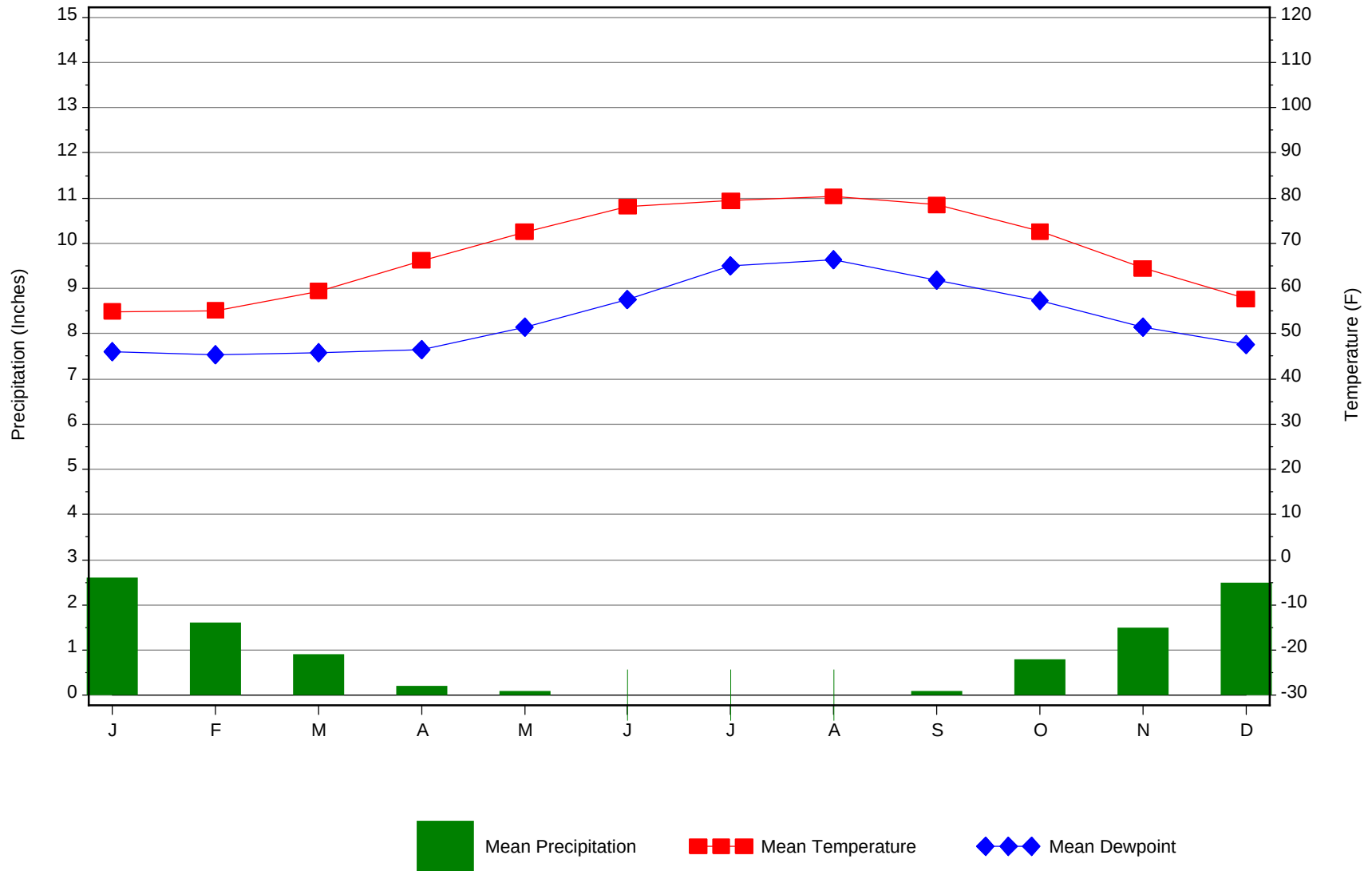
Other Site Data

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
10	N/A	N/A	2.1 + 1.7
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 (#)
70.7	N/A	N/A	0

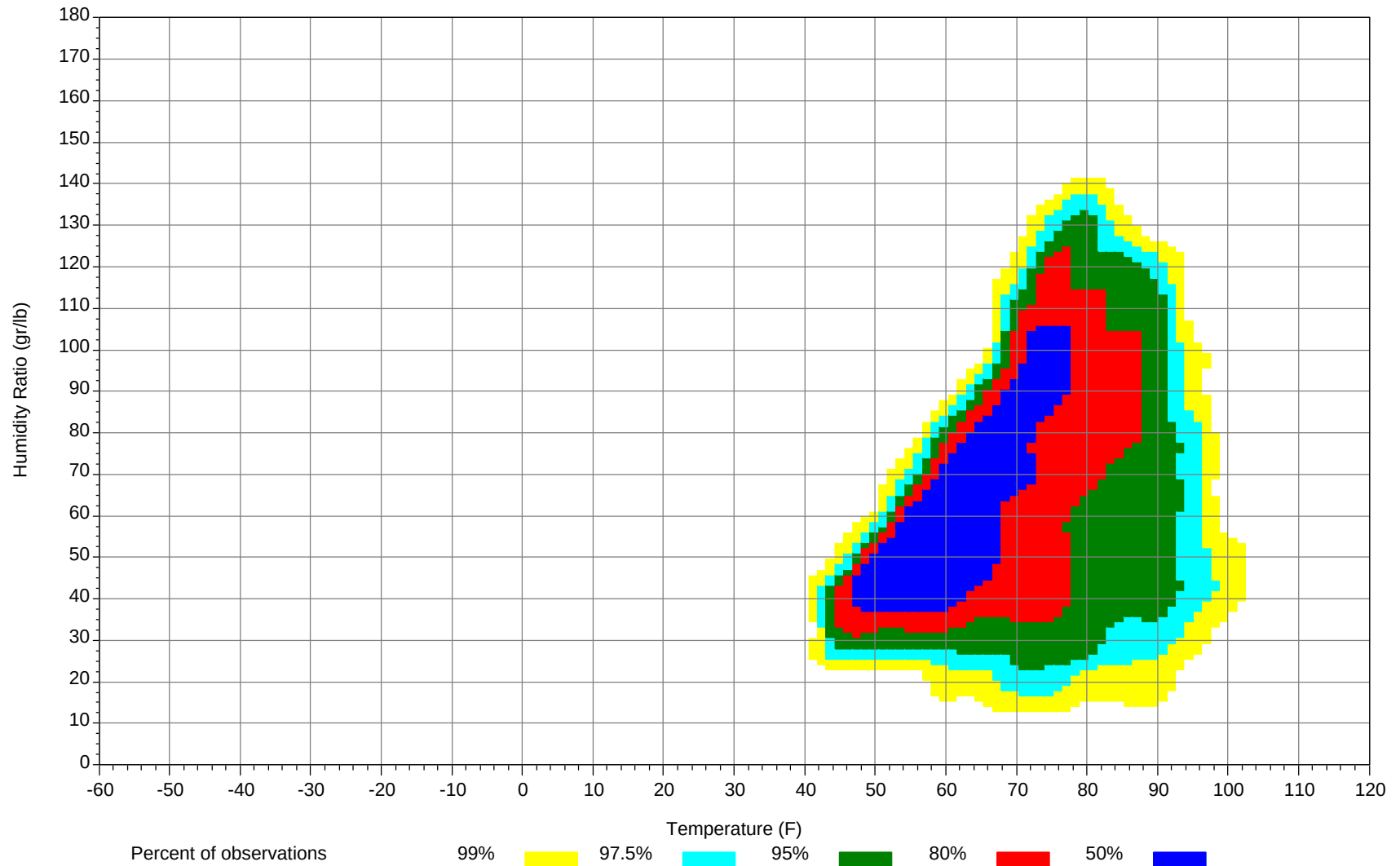
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



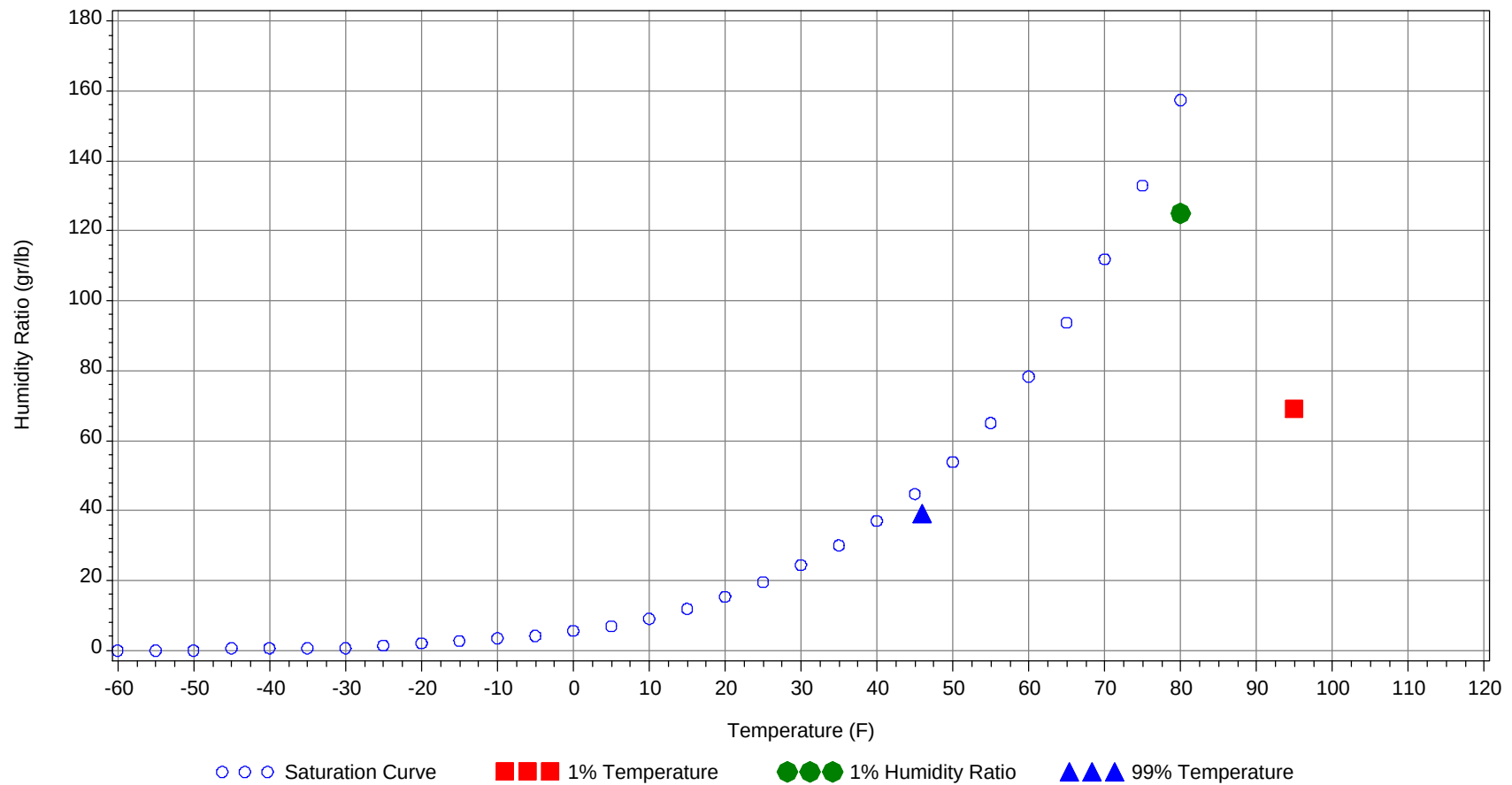
Average Annual Climate



Long Term Psychrometric Summary



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	95.0		69		69.0	33.4
99.0% Dry Bulb	46.0				39.0	17.2
1.0% Humidity Ratio	125.0	80.0	75	73.0		38.7

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)
110/114															
105/109															
100/104															
95/ 99															
90/ 94												1	0	1	64.1
85/ 89							0	0	0	59.7		3	1	4	61.1
80/ 84							1	0	1	59.4	0	7	3	10	59.1
75/ 79	0	0	0	0	54.1	0	2	1	3	57.4	2	16	9	27	57.6
70/ 74	0	3	1	4	54.3	0	8	4	12	56.4	6	34	16	56	56.4
65/ 69	0	17	4	21	55.3	1	17	9	27	54.8	7	48	23	78	55.5
60/ 64	4	88	35	127	54	7	70	32	109	53.8	19	74	57	150	54.1
55/ 59	37	90	99	226	51.7	31	79	75	185	51.5	61	51	83	195	51.8
50/ 54	119	42	87	248	49	89	39	78	206	48.6	93	13	47	153	48.8
45/ 49	79	8	20	107	45.3	84	8	23	115	45	55	2	8	65	45.1
40/ 44	9	0	1	10	41.3	10	0	1	11	40.8	6		0	6	41.2
35/ 39	0	0	0	0	37.2	1		0	1	37.6	0		0	0	38.3

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)
110/114							0		0	83		0		0	70.9
105/109							0	0	0	73.8		3	1	4	70.3
100/104		1	0	1	65.2		3	2	5	69.3		7	3	10	70.6
95/ 99		1	1	2	64.5	0	11	4	15	66.4	0	17	6	23	68.5
90/ 94		8	3	11	63.1	1	21	9	31	64.4	2	34	13	49	67.2
85/ 89	0	12	7	19	61.8	3	28	15	46	63.6	7	47	22	76	67
80/ 84	3	26	14	43	60.1	11	43	25	79	62.4	19	65	45	129	66.2
75/ 79	11	32	25	68	58.5	23	52	35	110	61.4	34	50	63	147	65.3
70/ 74	19	53	29	101	57	35	54	52	141	60.2	79	16	66	161	64.6
65/ 69	23	57	36	116	56.2	46	27	57	130	59.7	70	1	20	91	62.5
60/ 64	48	37	68	153	55	79	7	42	128	57.8	26	0	1	27	59.3
55/ 59	74	11	48	133	52.3	41	1	8	50	54	2		0	2	55
50/ 54	50	1	9	60	49.1	9	0	0	9	50.6					
45/ 49	11		0	11	45.2	0	0		0	47.5					
40/ 44	0			0	42.6										
35/ 39															

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)
110/114							0	0	0	83.3					
105/109		0	0	0	73.2		0	0	0	84.4		0	0	0	71.1
100/104		3	1	4	72.6	0	2	1	3	74		3	1	4	71.6
95/ 99	0	13	3	16	71.5	0	11	2	13	71.9		13	3	16	70.5
90/ 94	0	32	10	42	71	1	45	9	55	71.9	0	31	10	41	69.8
85/ 89	2	72	24	98	71.2	1	94	30	125	72	2	54	19	75	69.8
80/ 84	11	97	74	182	70.6	11	79	90	180	71.8	15	91	58	164	69
75/ 79	70	28	106	204	70.2	93	16	106	215	71	53	39	92	184	68.1
70/ 74	131	2	29	162	68	129	1	10	140	68.4	102	8	50	160	66.1
65/ 69	32	0	1	33	64.5	13	0	0	13	64.9	59	1	5	65	62.9
60/ 64	2			2	60.3						8	0	0	8	59.3
55/ 59											0			0	56.5
50/ 54															
45/ 49															
40/ 44															
35/ 39															

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

	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)
110/114															
105/109															
100/104		0	0	0	66										
95/ 99		3	1	4	68.7										
90/ 94		13	3	16	67.1		1	0	1	63.7					
85/ 89	0	23	7	30	66.5	0	3	1	4	62.9		0	0	0	63.5
80/ 84	4	58	22	84	65.9	1	9	4	14	61.6		0	0	0	59.9
75/ 79	16	82	55	153	64.9	2	31	9	42	61.1	0	2	1	3	57.7
70/ 74	53	51	88	192	63.6	8	79	33	120	60.3	0	13	4	17	57.4
65/ 69	81	14	52	147	61.8	20	65	58	143	58.7	2	50	14	66	56.8
60/ 64	78	4	19	101	58.8	79	40	87	206	56.6	17	92	62	171	54.9
55/ 59	15	0	2	17	54.9	97	11	42	150	53.6	81	66	103	250	52.4
50/ 54	1		0	1	50.9	30	1	6	37	49.6	112	22	56	190	49.1
45/ 49						4		0	4	45	33	2	8	43	45.2
40/ 44						0			0	40.6	1	0	0	1	40.9
35/ 39												0		0	39

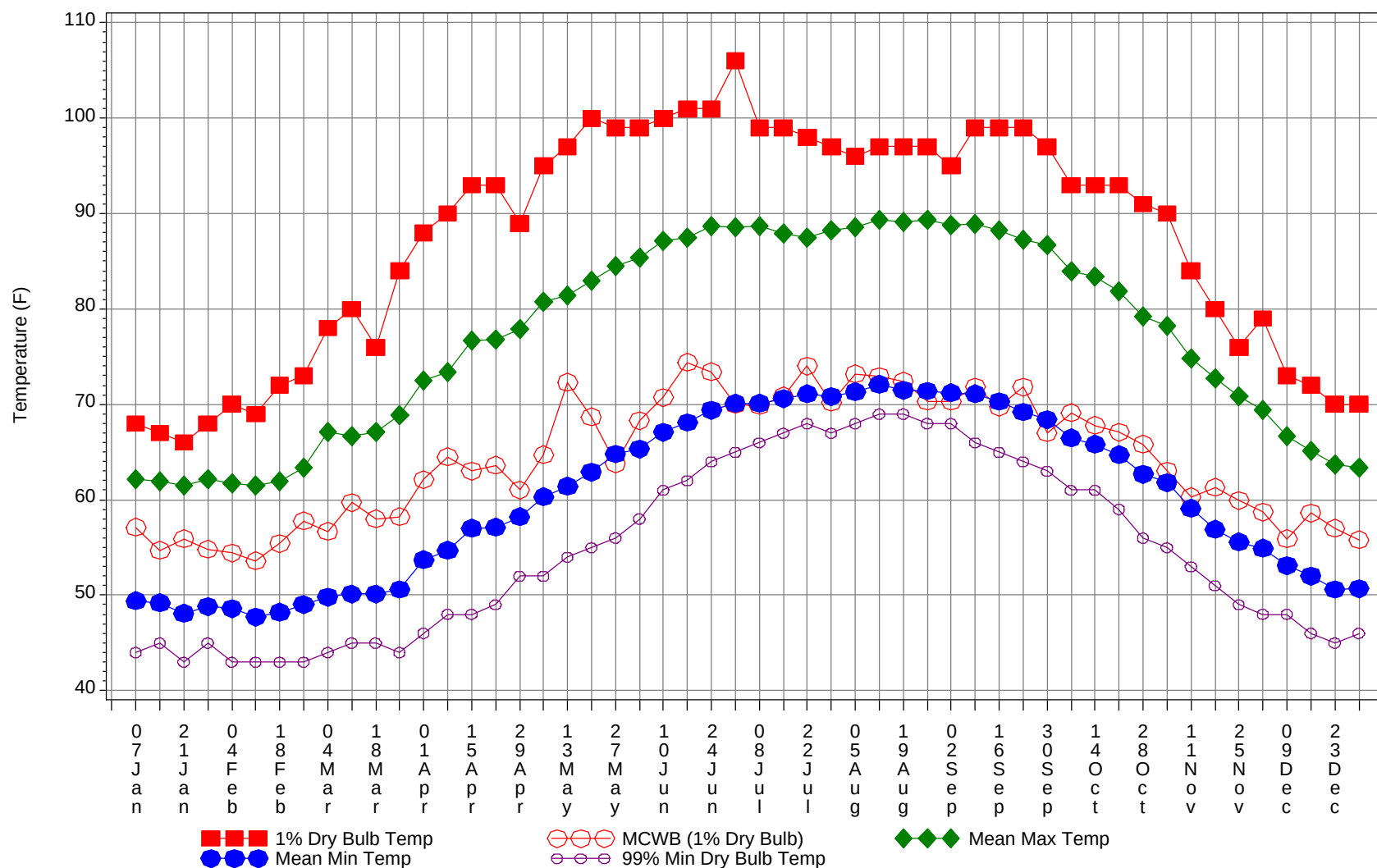
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

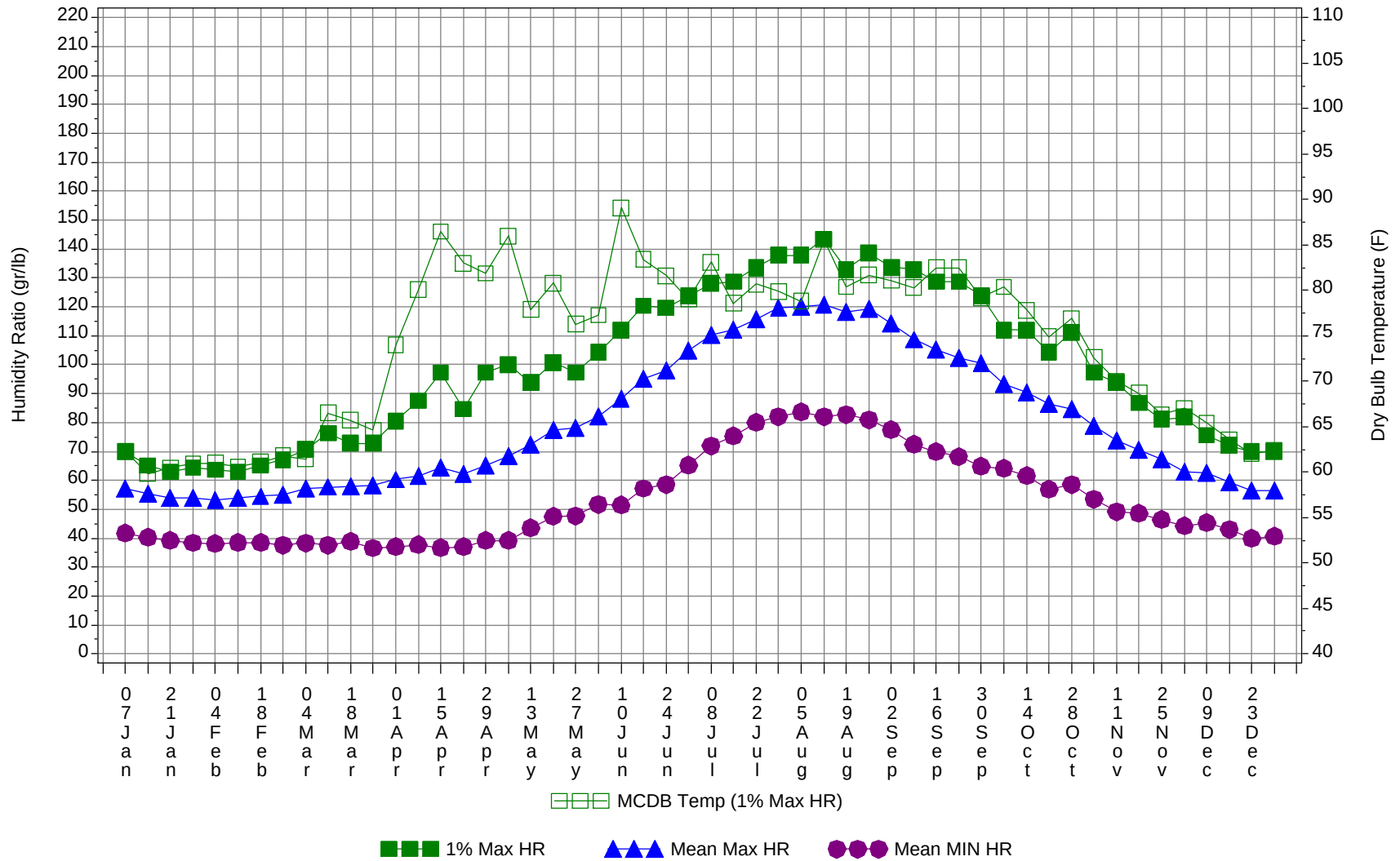
	Annual				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
110/114		0	0	0	75.6
105/109		4	1	5	72.1
100/104	0	19	7	26	71
95/ 99	1	68	20	89	69.4
90/ 94	4	183	57	244	68.7
85/ 89	17	330	124	471	68.9
80/ 84	72	467	329	868	67.9
75/ 79	298	348	492	1138	66.4
70/ 74	551	324	377	1252	63.3
65/ 69	351	301	282	934	59.3
60/ 64	368	420	408	1196	55.7
55/ 59	446	316	468	1230	52.3
50/ 54	513	120	290	923	48.9
45/ 49	271	20	61	352	45.2
40/ 44	27	1	3	31	41.1
35/ 39	1	0	0	1	37.7

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



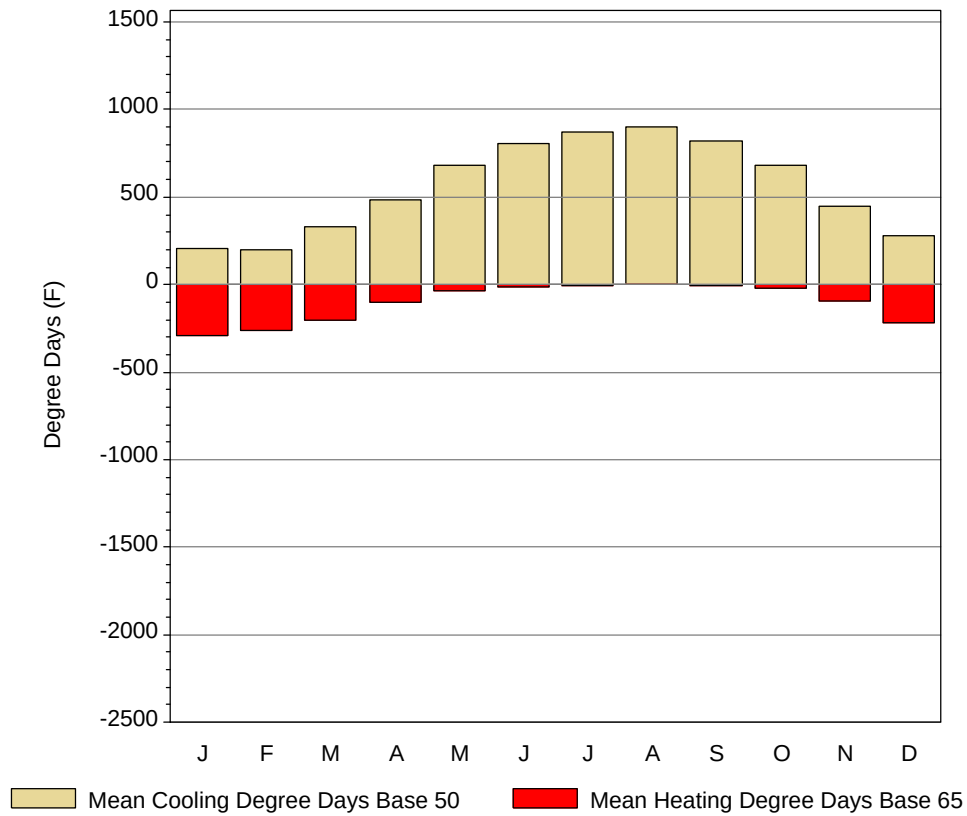
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

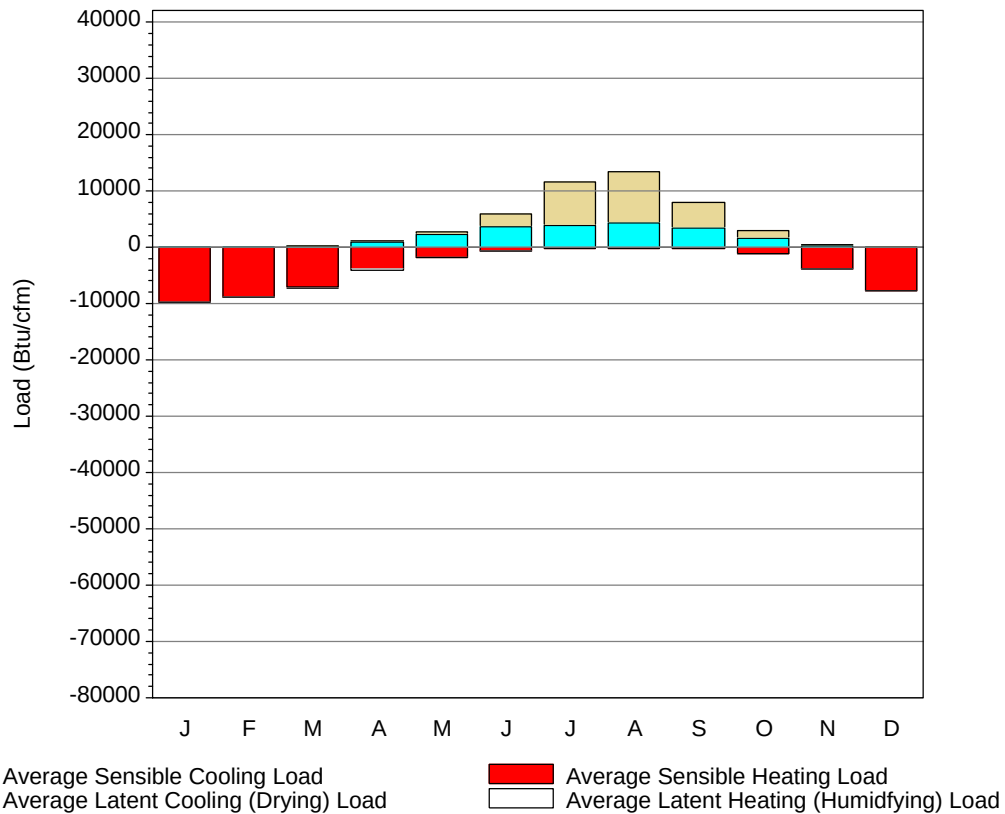
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	68	57.1	62.1	49.4	44	70	62.3	57.2	41.8
14-Jan	67	54.7	61.9	49.2	45	65.1	59.8	55.3	40.3
21-Jan	66	55.9	61.5	48.1	43	63	60.5	53.9	39.2
28-Jan	68	54.8	62.1	48.8	45	64.4	60.9	54	38.4
4-Feb	70	54.4	61.7	48.6	43	63.7	61	53.2	38.1
11-Feb	69	53.6	61.5	47.7	43	63	60.6	53.9	38.5
18-Feb	72	55.4	61.9	48.2	43	65.1	61.1	54.5	38.5
25-Feb	73	57.8	63.4	49	43	67.2	61.8	54.9	37.5
4-Mar	78	56.7	67.1	49.8	44	70.7	61.4	57.2	38.3
11-Mar	80	59.7	66.7	50.1	45	76.3	66.5	57.7	37.5
18-Mar	76	58	67.1	50.1	45	72.8	65.7	57.8	38.8
25-Mar	84	58.2	68.9	50.6	44	72.8	64.6	58.2	36.6
1-Apr	88	62.1	72.5	53.7	46	80.5	74	60.3	37
8-Apr	90	64.5	73.4	54.7	48	87.5	80.1	61.6	37.7
15-Apr	93	63	76.7	57	48	97.3	86.5	64.4	36.7
22-Apr	93	63.6	76.8	57.1	49	84.7	83	62.3	37
29-Apr	89	61	77.9	58.2	52	97.3	81.9	65.1	39.2
6-May	95	64.7	80.8	60.3	52	100.1	86	68.3	39.2
13-May	97	72.3	81.4	61.4	54	93.8	77.9	72.3	43.5
20-May	100	68.7	83	62.9	55	100.8	80.8	77.4	47.6
27-May	99	63.8	84.5	64.8	56	97.3	76.3	78.2	47.7
4-Jun	99	68.3	85.4	65.3	58	104.3	77.3	82.1	51.7
10-Jun	100	70.7	87.1	67.1	61	112	89.1	88.2	51.5
17-Jun	101	74.4	87.5	68.1	62	120.4	83.4	95.1	57.2
24-Jun	101	73.4	88.7	69.4	64	119.7	81.6	97.9	58.6
1-Jul	106	70	88.6	70.1	65	123.9	79	104.8	65.2
8-Jul	99	69.9	88.7	70.1	66	128.1	83.1	110.3	71.9
15-Jul	99	70.9	87.9	70.6	67	128.8	78.6	112.1	75.3
22-Jul	98	74	87.5	71.1	68	133.7	80.7	115.7	80
29-Jul	97	70.2	88.2	70.8	67	137.9	79.9	119.8	82.1
5-Aug	96	73.2	88.6	71.3	68	137.9	78.8	120	83.6
12-Aug	97	72.9	89.3	72.1	69	143.5	85.6	120.7	82
19-Aug	97	72.4	89.1	71.5	69	133	80.4	118.4	82.7
26-Aug	97	70.3	89.4	71.4	68	138.6	81.7	119.4	81
2-Sep	95	70.3	88.8	71.2	68	133.7	81.1	114.3	77.5
9-Sep	99	71.8	88.9	71.1	66	133	80.3	108.7	72.5
16-Sep	99	69.7	88.2	70.3	65	128.8	82.5	105.2	70
23-Sep	99	71.8	87.3	69.2	64	128.8	82.5	102.5	68.2
30-Sep	97	67	86.7	68.4	63	123.9	79.2	100.5	64.8
7-Oct	93	69.1	84	66.5	61	112	80.4	93.4	64.1
14-Oct	93	67.8	83.4	65.8	61	112	77.8	90.5	61.6
21-Oct	93	67.1	81.9	64.7	59	104.3	74.9	86.5	56.9
28-Oct	91	65.8	79.2	62.7	56	111.3	76.9	84.7	58.5
4-Nov	90	63	78.2	61.8	55	97.3	72.6	78.9	53.4
11-Nov	84	60.3	74.8	59.1	53	93.8	70	73.7	49.1
18-Nov	80	61.3	72.7	56.9	51	86.8	68.7	70.7	48.6
25-Nov	76	59.9	70.8	55.6	49	81.2	66.3	67.2	46.5
2-Dec	79	58.7	69.4	54.9	48	81.9	67	63.1	44.2
9-Dec	73	55.9	66.7	53.1	48	75.6	65.4	62.5	45.4
16-Dec	72	58.6	65.1	52	46	72.1	63.6	59.5	43
23-Dec	70	57	63.7	50.6	45	70	62	56.4	40
31-Dec	70	55.8	63.4	50.7	46	70	62.4	56.6	40.7

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	205.1	16	289.7
FEB	196	20.8	264.1
MAR	327.3	58.1	203.7
APR	486.2	133.9	98.7
MAY	680.1	252.6	37.5
JUN	802.9	363	10.1
JUL	873.1	411.6	3.5
AUG	901.1	436.5	0.4
SEP	818.7	372	3.3
OCT	685.1	242.2	22.2
NOV	450	90	90.3
DEC	279.4	26.9	216.4
ANN	6705	2423.6	1239.9

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	5	-9730	0	-49
FEB	67	-8826	0	-75
MAR	265	-7136	17	-168
APR	925	-3847	123	-275
MAY	2268	-1763	453	-112
JUN	3631	-549	2321	-21
JUL	3899	-244	7627	0
AUG	4245	-95	9174	0
SEP	3435	-296	4464	0
OCT	1596	-1187	1465	-7
NOV	332	-3744	146	-29
DEC	73	-7695	4	-55
ANN	20741	-45112	25794	-791

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													

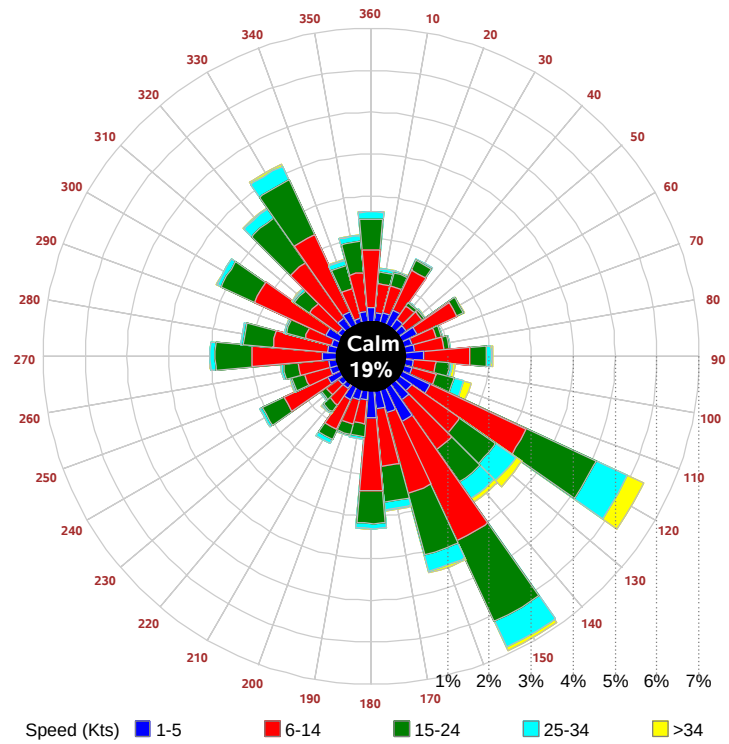
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

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													

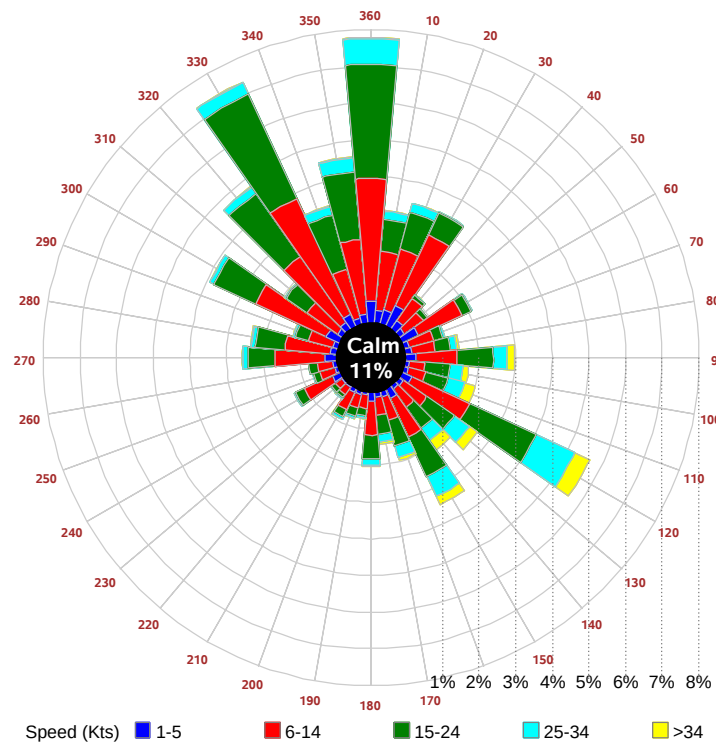
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9												
				March						June		
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	
HORIZ.	M.Clear											
	M.Cloudy											
NORTH	M.Clear											
	M.Cloudy											
EAST	M.Clear			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

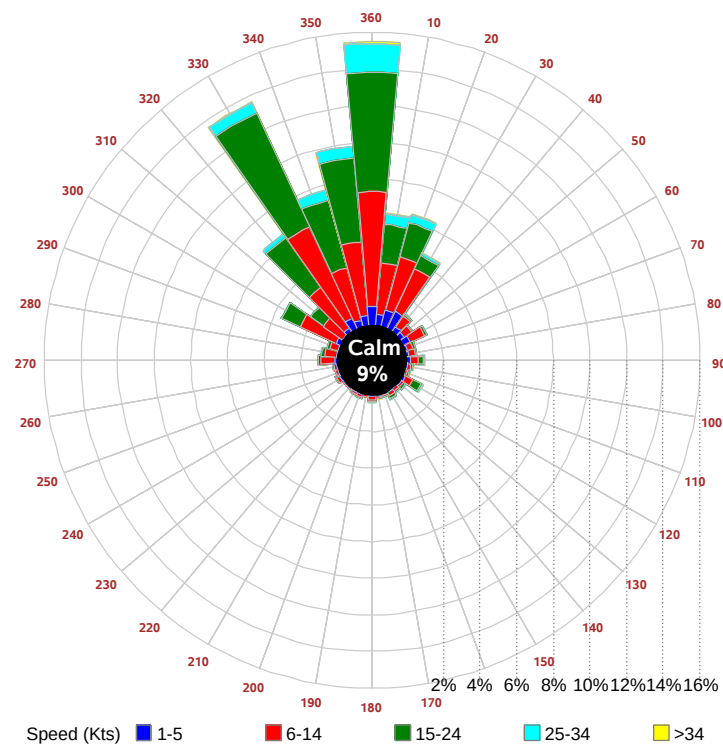
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

