

EL ALTO INTL, BL	
Latitude = 16.51 S	Station ID = ICAO_SLLP
Longitude = 68.19 W	Elevation = 13326 Feet
Period of Record = 1988 To 2017	Average Pressure = 18.57 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	68	43	28	10.7	VRB
0.4% Occurrence	64	43	34	10.3	W
1.0% Occurrence	63	43	34	10.3	W
2.0% Occurrence	61	42	36	10.1	W
Mean Daily Range	23	-	-	-	NNE
97.5% Occurrence	28	24	22	3.9	NNE
99.0% Occurrence	25	21	19	3.9	NNE
99.6% Occurrence	23	19	17	4.2	NNE
Median of Extreme Lows	18	15	13	4.2	NNE

	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	51	58	74	8.8	E
0.4% Occurrence	48	56	64	8.6	E
1.0% Occurrence	48	56	64	8.6	E
2.0% Occurrence	47	55	62	8.4	E

	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	82	59	0.34	5	-
0.4% Occurrence	72	50	0.3	7.4	E
1.0% Occurrence	71	50	0.3	7.4	E
2.0% Occurrence	67	48	0.28	6.8	E

Air Conditioning/ Humid Area Criteria	Threshold	T ≥ 93 °F	T ≥ 80 °F	Twb ≥ 73 °F	Twb ≥ 67 °F
	# of Hours	0	0	0	1

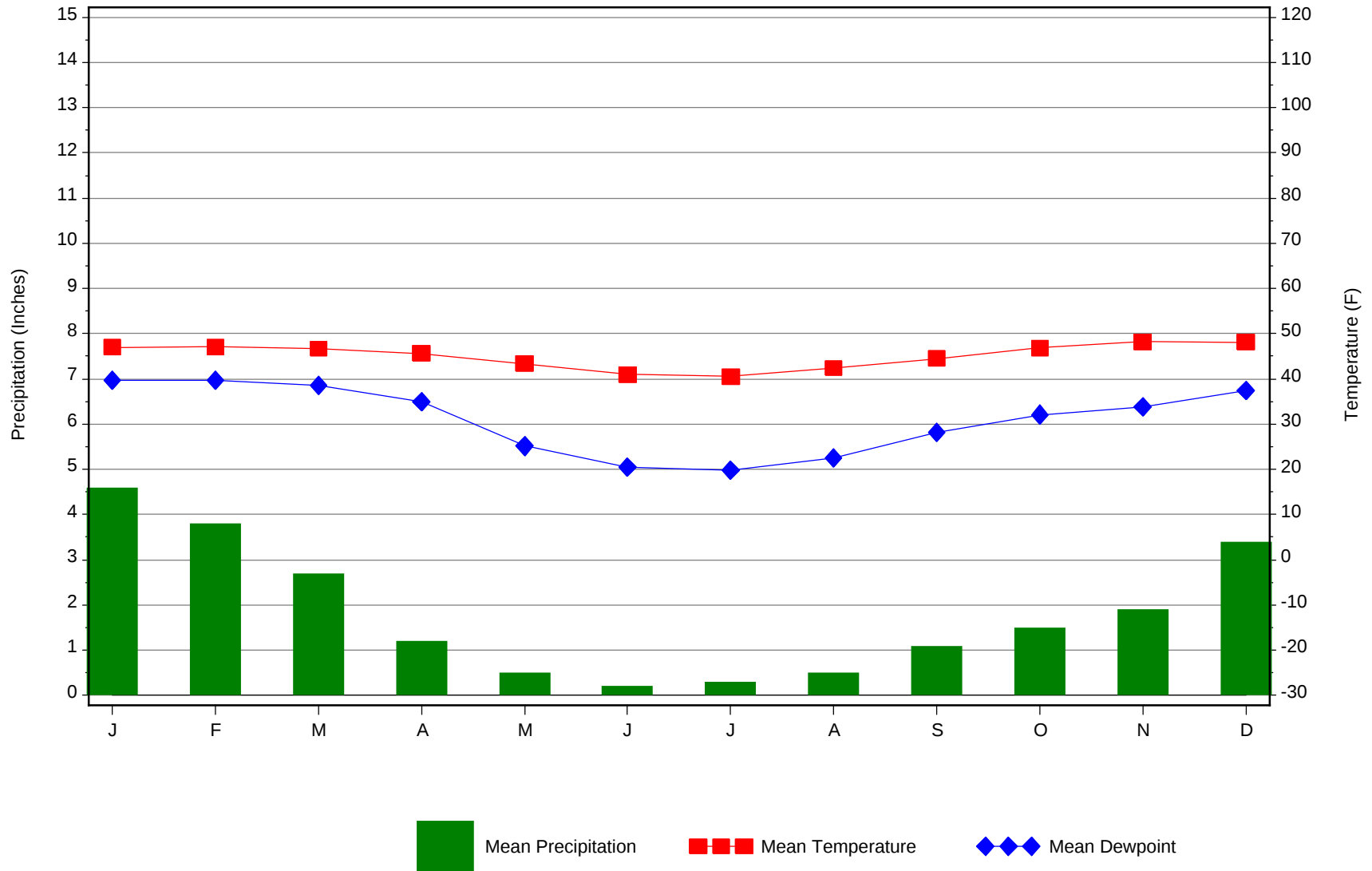
Other Site Data

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	N/A	0.0 + 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 (#)
47.6	N/A	N/A	115

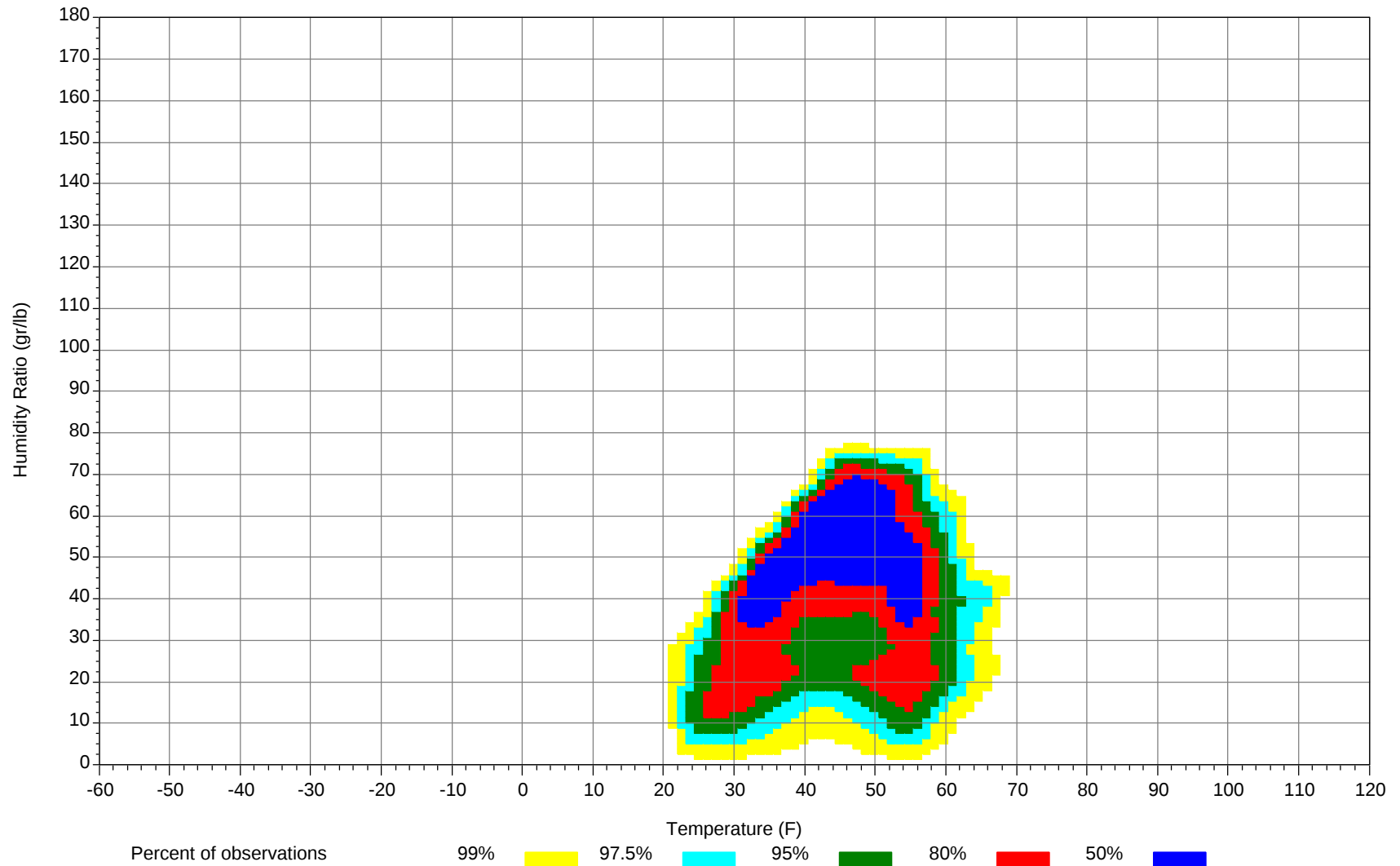
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



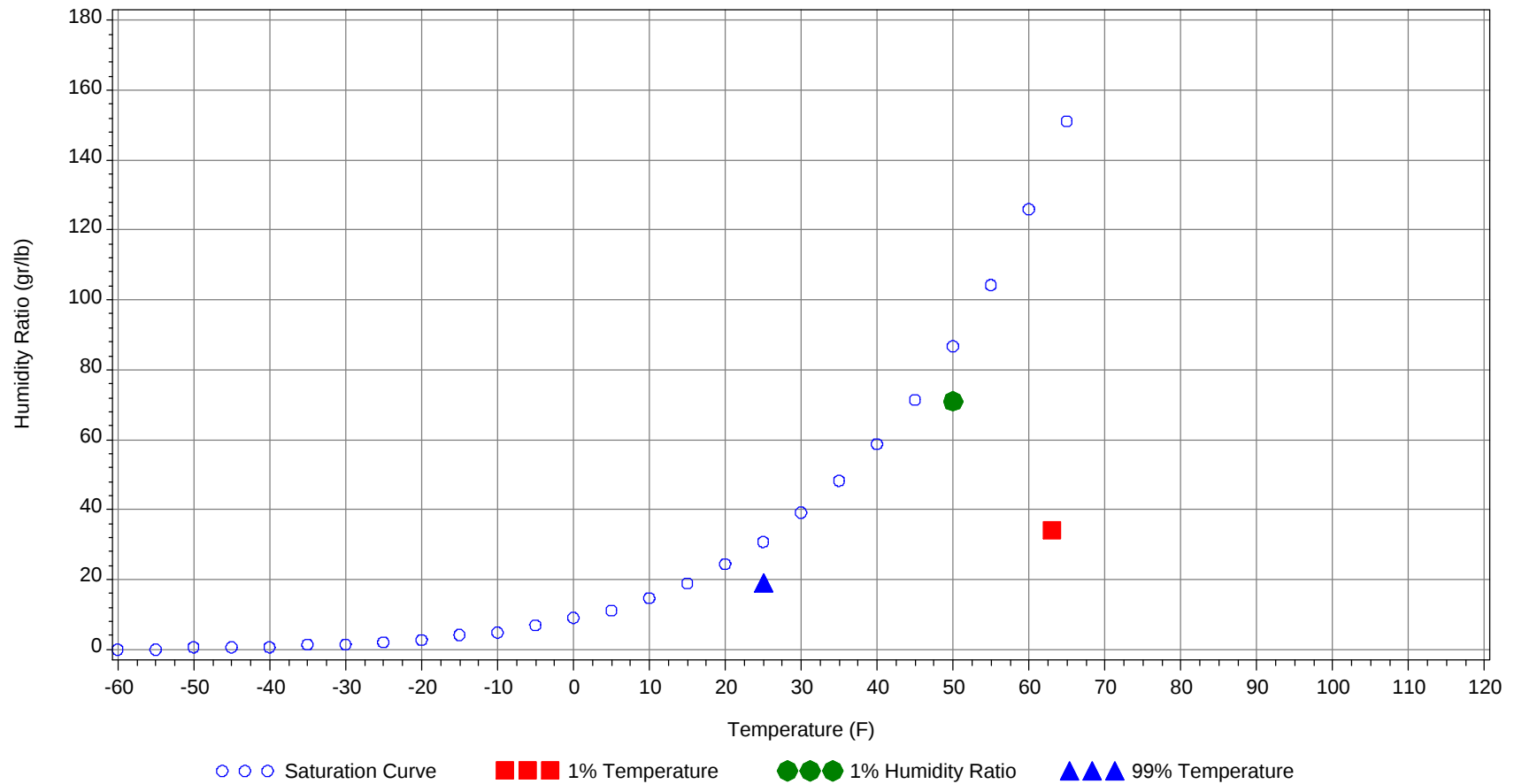
Average Annual Climate



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	63.0		43		34.0	20.4
99.0% Dry Bulb	25.0				19.0	8.8
1.0% Humidity Ratio	71.0	50.0	46.6	45.0		23.0

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)
70/ 74			0	0	70										
65/ 69		1	0	1	45.9		0	0	0	45.8	0	1	0	1	44.9
60/ 64		12	5	17	45.6		12	4	16	46.1	0	16	5	21	45.1
55/ 59	0	58	21	79	45.9		54	18	72	46	0	63	20	83	45.1
50/ 54	1	95	51	147	45	0	87	49	136	44.9	0	92	45	137	44.4
45/ 49	41	68	110	219	43.1	33	60	103	196	43.2	22	63	101	186	42.7
40/ 44	160	13	58	231	40.8	144	9	47	200	40.8	148	11	69	228	40.6
35/ 39	45	2	3	50	37.5	46	1	3	50	37.3	74	1	7	82	37
30/ 34	1	0	0	1	32.8	1		0	1	31.5	3		0	3	30.8
25/ 29											0			0	27
20/ 24															
15/ 19															

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)
70/ 74															
65/ 69		0		0	43.5										
60/ 64	0	17	4	21	42.9		14	2	16	40.3		5	1	6	38.2
55/ 59	0	75	22	97	43		90	24	114	39.3		68	16	84	37.6
50/ 54	0	84	37	121	42.8		77	37	114	38.3	0	79	35	114	36.2
45/ 49	7	51	69	127	41.2	1	47	41	89	36.7	0	52	30	82	34.5
40/ 44	82	11	78	171	39.5	17	16	58	91	35.6	2	23	39	64	33.1
35/ 39	120	1	30	151	35.9	96	3	67	166	33.1	45	11	73	129	31.6
30/ 34	28		1	29	30	90	0	17	107	28.1	100	1	41	142	27.3
25/ 29	3			3	25.2	39		2	41	23.4	77		6	83	22.9
20/ 24						4			4	19.1	14		0	14	18.5
15/ 19						0			0	13.6	2			2	15.2

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)
70/ 74												0		0	41
65/ 69							0	0	0	38.9		1	0	1	40.5
60/ 64		6	1	7	38.3		20	4	24	38.9		26	6	32	40.2
55/ 59		60	17	77	37.1		76	25	101	37.9		76	23	99	39.8
50/ 54		83	36	119	35.8	0	71	34	105	37.1	0	70	36	106	39.6
45/ 49	0	53	31	84	34.3	0	50	40	90	35.6	2	50	56	108	38.1
40/ 44	1	28	37	66	32.6	5	23	49	77	34.2	31	14	62	107	36.9
35/ 39	34	17	74	125	31.3	64	9	71	144	32.6	111	3	50	164	34.4
30/ 34	103	1	45	149	27.6	111	1	24	136	28.4	79	0	7	86	29.5
25/ 29	89		8	97	22.9	58		2	60	23.4	16		0	16	23.6
20/ 24	19		0	19	18.4	8		0	8	18.6	1			1	19
15/ 19	2			2	15	1			1	15.4	0			0	15

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)
70/ 74							0		0	44		0		0	45
65/ 69		2	0	2	41.7		6	2	8	42.4		3	1	4	43.5
60/ 64	0	43	11	54	41.5		47	13	60	42.5		33	8	41	44.5
55/ 59	0	79	25	104	41.9	0	79	28	107	43	0	75	27	102	44.8
50/ 54	1	76	45	122	41.3	3	73	53	129	42.3	3	85	58	146	43.8
45/ 49	17	40	80	137	39.8	36	30	88	154	40.8	53	42	106	201	42.2
40/ 44	78	7	65	150	38.6	107	3	46	156	39.2	138	8	42	188	40.2
35/ 39	126	1	22	149	35.2	83	1	9	93	35.4	53	2	5	60	36.7
30/ 34	25	0	1	26	30.1	11	0	1	12	29	2	0	0	2	31.5
25/ 29	1			1	25.4	0			0	23.8					
20/ 24															
15/ 19															

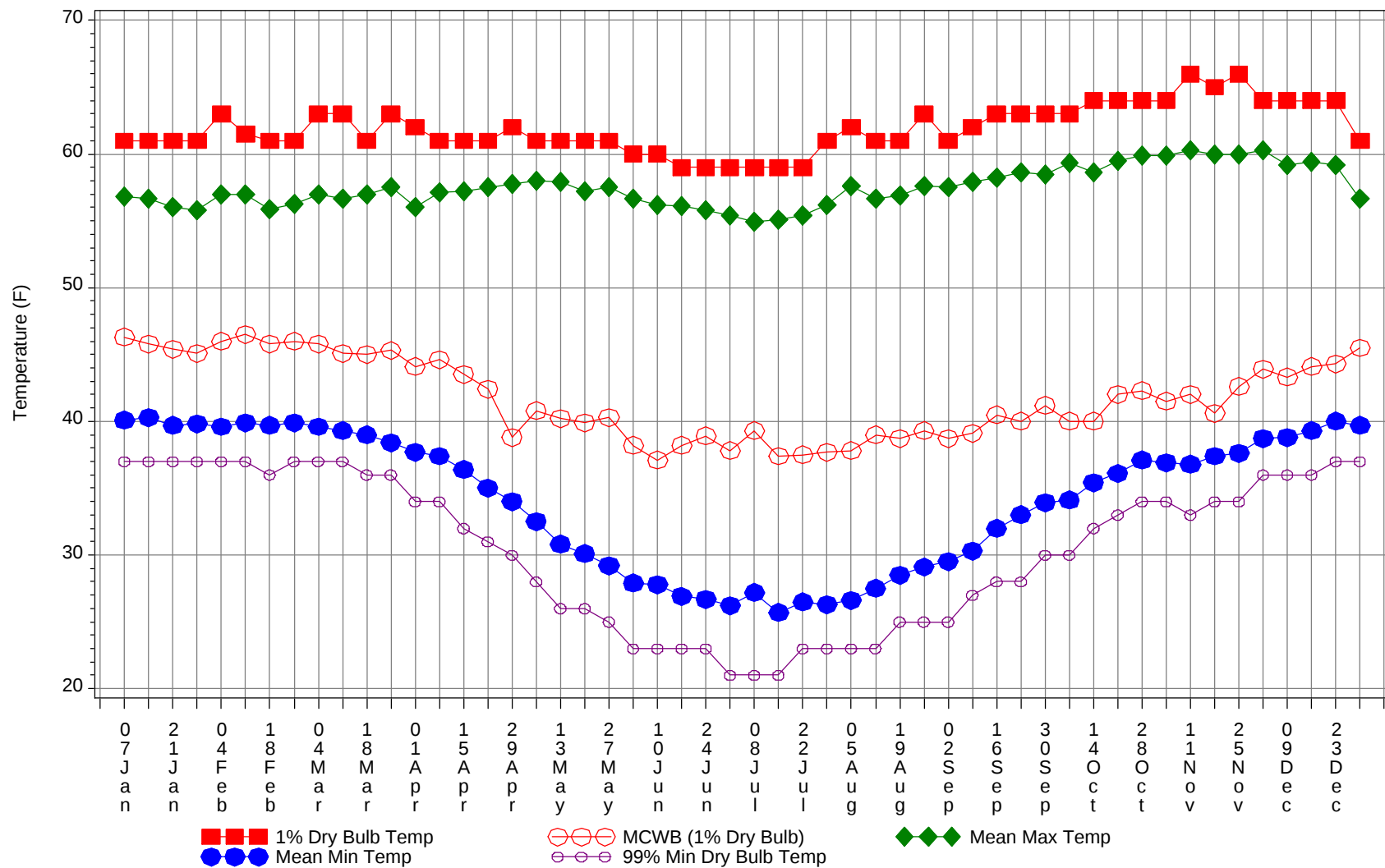
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

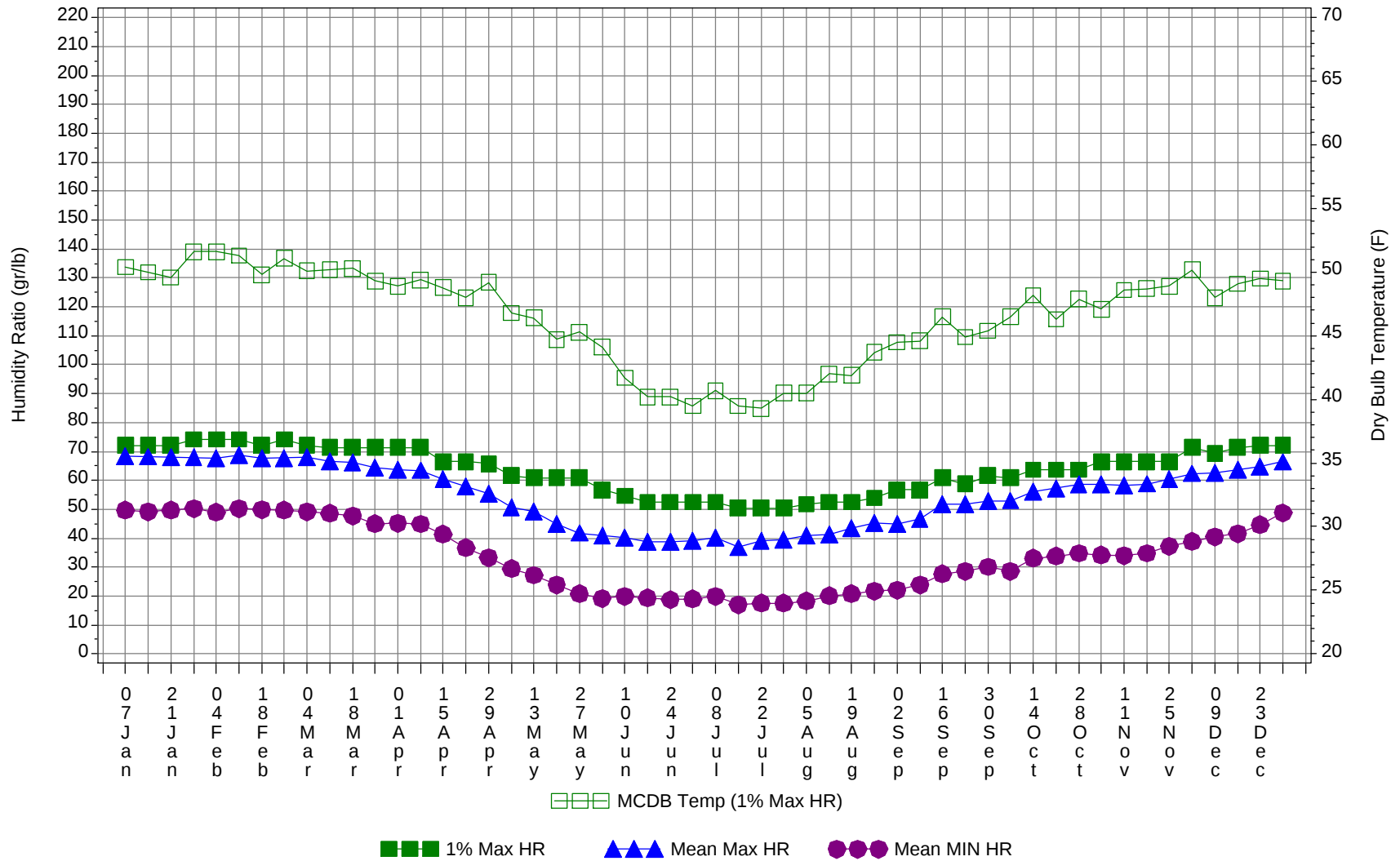
	Annual				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
70/ 74		0	0	0	47.4
65/ 69	0	15	4	19	42.9
60/ 64	0	252	64	316	42.3
55/ 59	0	853	266	1119	41.7
50/ 54	7	971	515	1493	41.3
45/ 49	211	606	855	1672	40.4
40/ 44	915	166	649	1730	38.8
35/ 39	899	52	413	1364	34.3
30/ 34	554	5	137	696	28.3
25/ 29	282		18	300	23.1
20/ 24	46		0	46	18.6
15/ 19	6			6	15.1

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



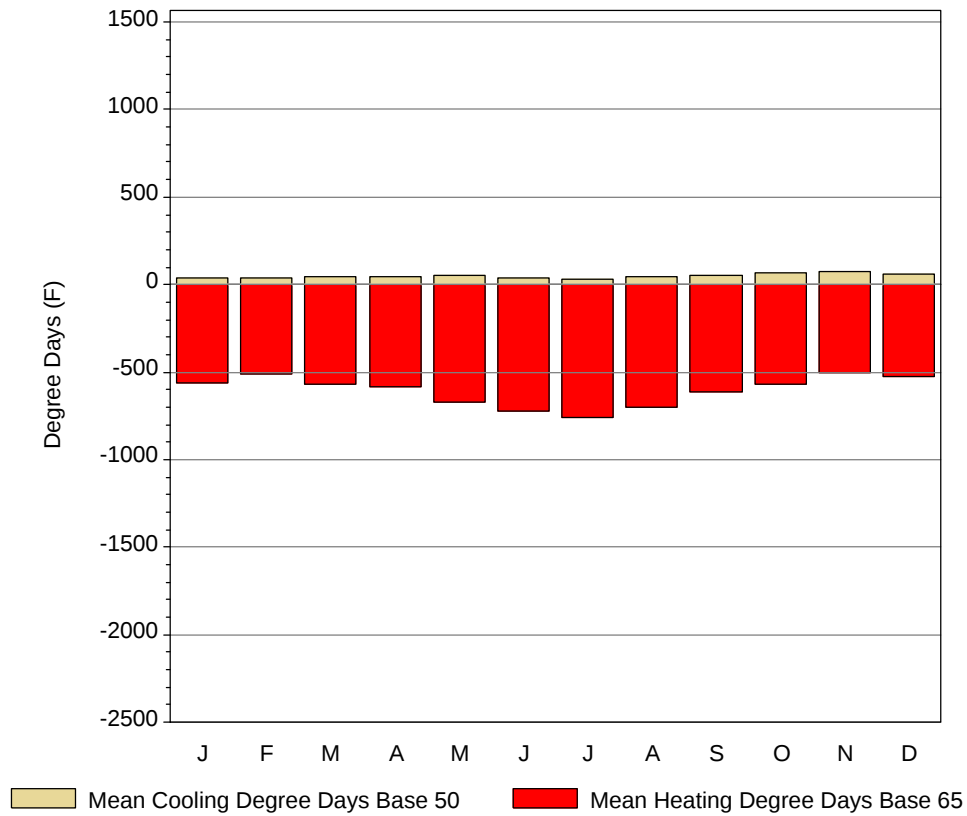
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

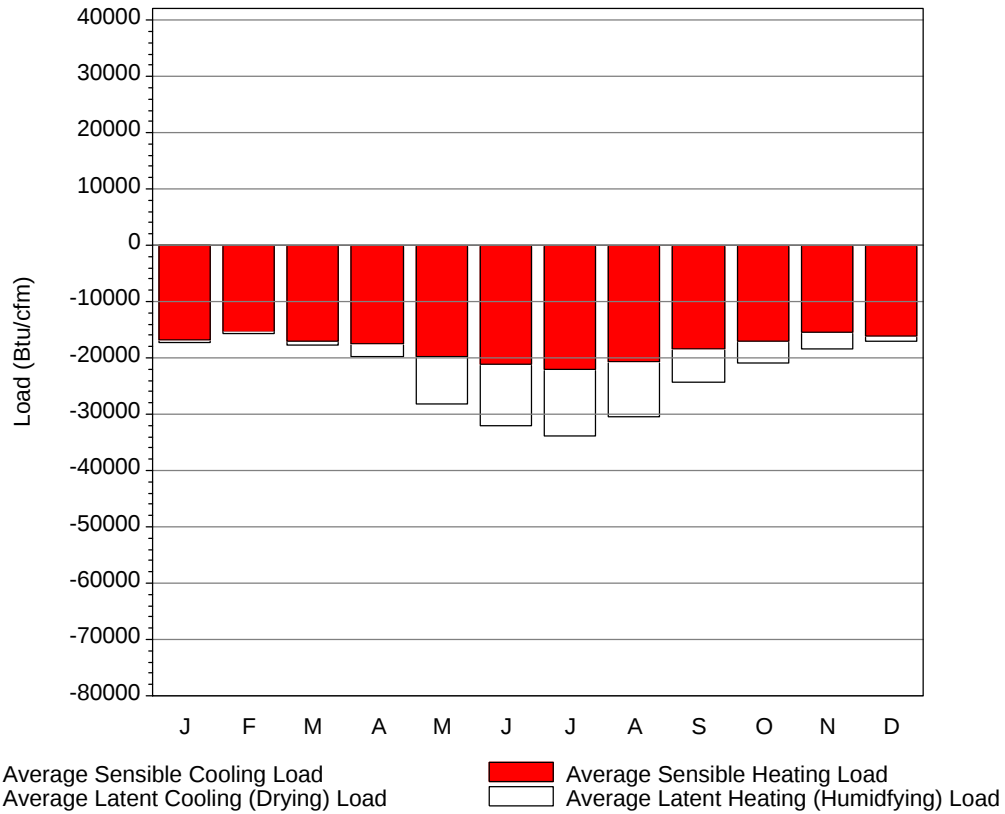
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	61	46.3	56.8	40.1	37	72.1	50.4	68.3	49.7
14-Jan	61	45.8	56.7	40.3	37	72.1	50	68.2	49.2
21-Jan	61	45.4	56	39.7	37	72.1	49.6	68.1	49.7
28-Jan	61	45.1	55.8	39.8	37	74.2	51.6	67.9	50.2
4-Feb	63	46	57	39.6	37	74.2	51.6	67.7	49
11-Feb	61.5	46.5	57	39.9	37	74.2	51.3	68.7	50.3
18-Feb	61	45.8	55.9	39.7	36	72.1	49.8	67.7	49.9
25-Feb	61	46	56.3	39.9	37	74.2	51.1	67.8	49.7
4-Mar	63	45.8	57	39.6	37	72.1	50.1	67.9	49.1
11-Mar	63	45.1	56.7	39.3	37	71.4	50.2	66.7	48.6
18-Mar	61	45	57	39	36	71.4	50.3	66.1	47.7
25-Mar	63	45.3	57.5	38.4	36	71.4	49.3	64.5	45
1-Apr	62	44.1	56	37.7	34	71.4	48.9	63.6	45.2
8-Apr	61	44.6	57.1	37.4	34	71.4	49.4	63.5	44.9
15-Apr	61	43.5	57.2	36.4	32	66.5	48.8	60.5	41.4
22-Apr	61	42.4	57.5	35	31	66.5	48	57.9	36.7
29-Apr	62	38.8	57.8	34	30	65.8	49.2	55.3	33.2
6-May	61	40.8	58	32.5	28	61.6	46.8	50.7	29.5
13-May	61	40.2	57.9	30.8	26	60.9	46.4	49.3	27.2
20-May	61	39.9	57.2	30.1	26	60.9	44.7	44.9	23.9
27-May	61	40.3	57.5	29.2	25	60.9	45.3	41.8	20.8
4-Jun	60	38.2	56.7	27.9	23	56.7	44.1	40.8	19.1
10-Jun	60	37.1	56.2	27.8	23	54.6	41.7	40.1	19.8
17-Jun	59	38.2	56.1	26.9	23	52.5	40.2	38.9	19.3
24-Jun	59	38.9	55.8	26.7	23	52.5	40.2	38.9	18.7
1-Jul	59	37.8	55.4	26.2	21	52.5	39.5	39	19
8-Jul	59	39.3	54.9	27.2	21	52.5	40.7	40.3	19.9
15-Jul	59	37.4	55.1	25.7	21	50.4	39.5	36.8	17
22-Jul	59	37.5	55.4	26.5	23	50.4	39.3	39.2	17.6
29-Jul	61	37.7	56.2	26.3	23	50.4	40.5	39.4	17.6
5-Aug	62	37.8	57.6	26.6	23	51.8	40.5	40.8	18.2
12-Aug	61	39	56.7	27.5	23	52.5	42	41.4	20
19-Aug	61	38.7	56.9	28.5	25	52.5	41.9	43.5	20.8
26-Aug	63	39.3	57.6	29.1	25	53.9	43.7	45.2	21.7
2-Sep	61	38.7	57.5	29.5	25	56.7	44.5	44.9	22.1
9-Sep	62	39.1	57.9	30.3	27	56.7	44.6	46.8	23.9
16-Sep	63	40.5	58.2	32	28	60.9	46.5	51.8	27.6
23-Sep	63	40	58.6	33	28	58.8	44.9	51.7	28.5
30-Sep	63	41.2	58.5	33.9	30	61.6	45.4	52.9	30.1
7-Oct	63	40	59.3	34.1	30	60.9	46.5	53	28.6
14-Oct	64	40	58.6	35.4	32	63.7	48.2	56	33.1
21-Oct	64	42	59.5	36.1	33	63.7	46.3	57.3	33.8
28-Oct	64	42.3	59.9	37.1	34	63.7	47.9	58.6	34.8
4-Nov	64	41.5	59.9	36.9	34	66.5	47.1	58.5	34.2
11-Nov	66	42	60.3	36.8	33	66.5	48.6	58.3	33.9
18-Nov	65	40.6	60	37.4	34	66.5	48.7	58.8	34.8
25-Nov	66	42.6	60	37.6	34	66.5	48.9	60.5	37.3
2-Dec	64	43.9	60.3	38.7	36	71.4	50.2	62.4	38.9
9-Dec	64	43.3	59.2	38.8	36	69.3	48	62.6	40.4
16-Dec	64	44.1	59.4	39.3	36	71.4	49.1	63.8	41.6
23-Dec	64	44.3	59.2	40	37	72.1	49.5	64.9	44.7
31-Dec	61	45.5	56.7	39.7	37	72.1	49.3	66.4	48.7

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	41.2	0.1	558.4
FEB	38.3	0	507.8
MAR	44.6	0.1	568.2
APR	47	0	580.8
MAY	50.1	0	670.6
JUN	35.2	0	722
JUL	33.9	0	761.1
AUG	48.4	0	701.5
SEP	52.8	0.1	615.9
OCT	67.4	0.1	565.3
NOV	77.1	0.5	504.1
DEC	63.1	0.2	525.5
ANN	599.1	1.1	7281.2

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	-16881	1	-298
FEB	0	-15361	0	-321
MAR	0	-17136	0	-640
APR	0	-17387	0	-2337
MAY	0	-19793	0	-8452
JUN	0	-21048	0	-11010
JUL	0	-22138	0	-11753
AUG	0	-20594	0	-9872
SEP	0	-18296	0	-6056
OCT	0	-17061	0	-3834
NOV	0	-15387	0	-3003
DEC	0	-16025	0	-1112
ANN	0	-217107	1	-58688

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													

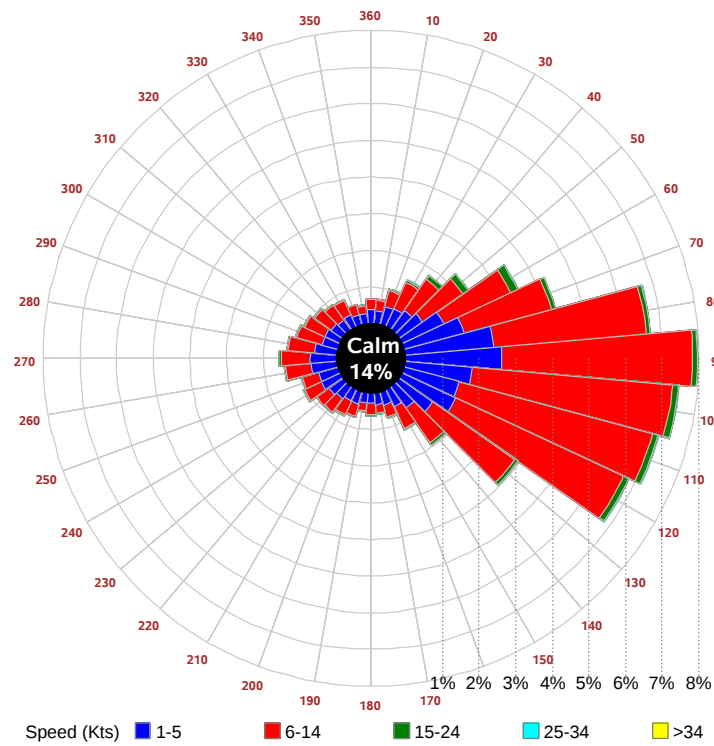
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

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													

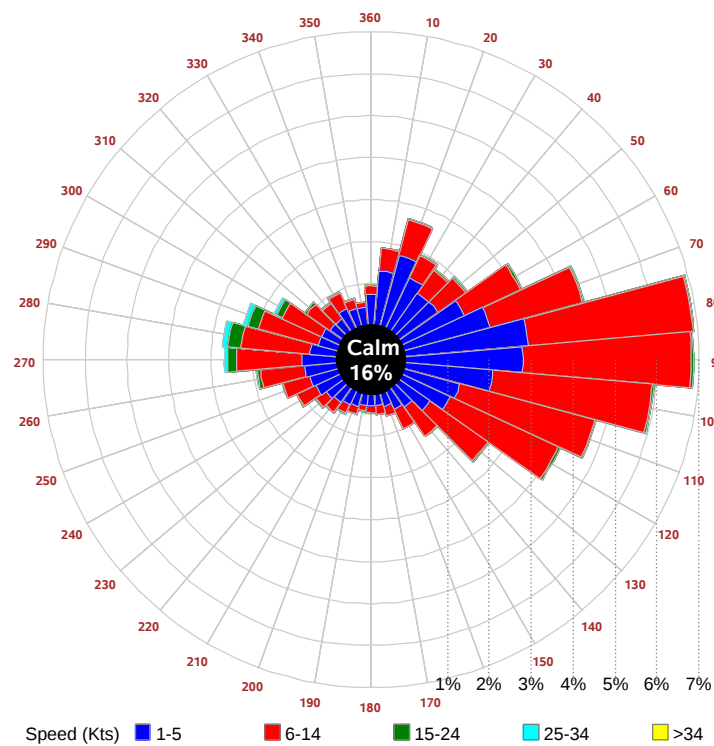
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9												
		March						June				
		9am	11am	1pm	3pm	5pm		9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear											
	M.Cloudy											
NORTH	M.Clear											
	M.Cloudy											
EAST	M.Clear			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

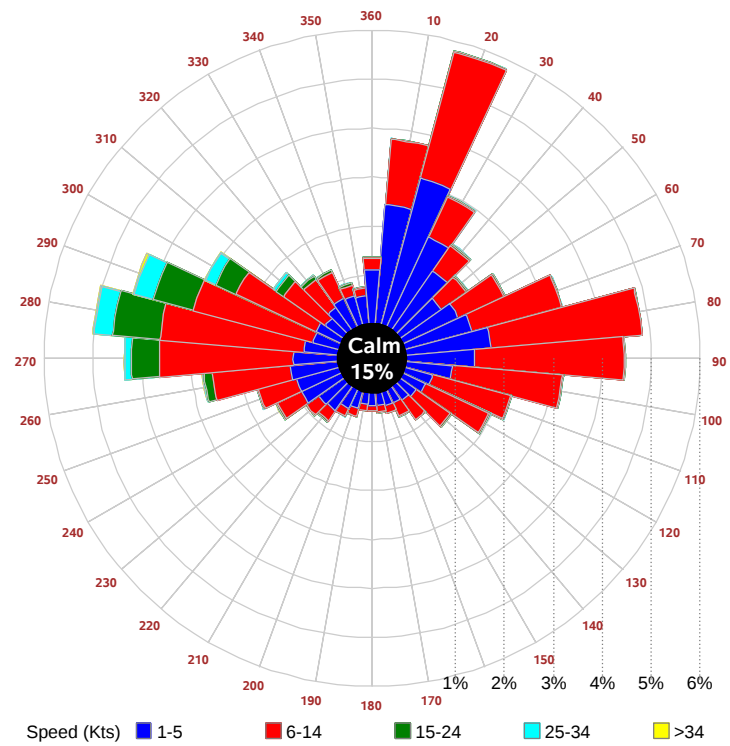
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

