

WELLINGTON INTL, NZ

Latitude = 41.33 S

Longitude = 174.81 E

Period of Record = 1989 To 2017

Station ID = ICAO_NZWN

Elevation = 41 Feet

Average Pressure = 29.90 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	79	66	77	15.4	N
0.4% Occurrence	75	64	72	17.9	N
1.0% Occurrence	72	63	72	18.7	N
2.0% Occurrence	70	62	72	19.4	N
Mean Daily Range	9	-	-	-	NNE
97.5% Occurrence	43	41	34	9.8	NNE
99.0% Occurrence	41	39	32	6.6	NNE
99.6% Occurrence	39	38	30	5	NNE
Median of Extreme Lows	36	36	28	4.6	NNE

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	69	73	98	20.2	N
0.4% Occurrence	67	71	90	19.6	N
1.0% Occurrence	65	70	83	19.4	N
2.0% Occurrence	64	68	80	19	N

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	104	70	0.69	20.5	N
0.4% Occurrence	91	69	0.61	20	N
1.0% Occurrence	85	67	0.57	18.9	N
2.0% Occurrence	82	66	0.54	21.7	N

Air Conditioning/ Humid Area Criteria	Threshold	T ≥ 93 °F	T ≥ 80 °F	Twb ≥ 73 °F	Twb ≥ 67 °F
	# of Hours	0	3	5	35

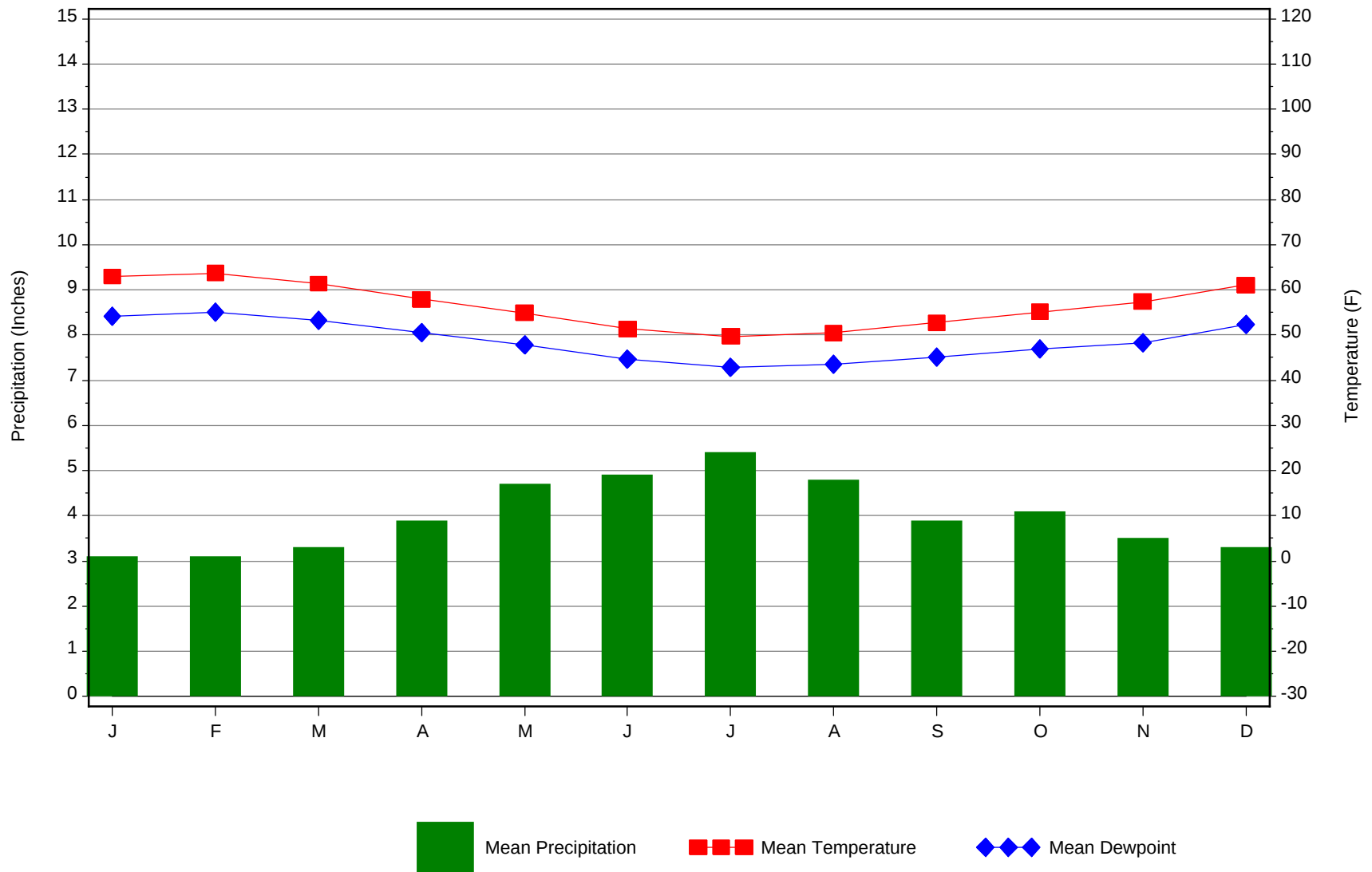
Other Site Data

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
8	N/A	N/A	0.1 + 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 (#)
59	N/A	N/A	0

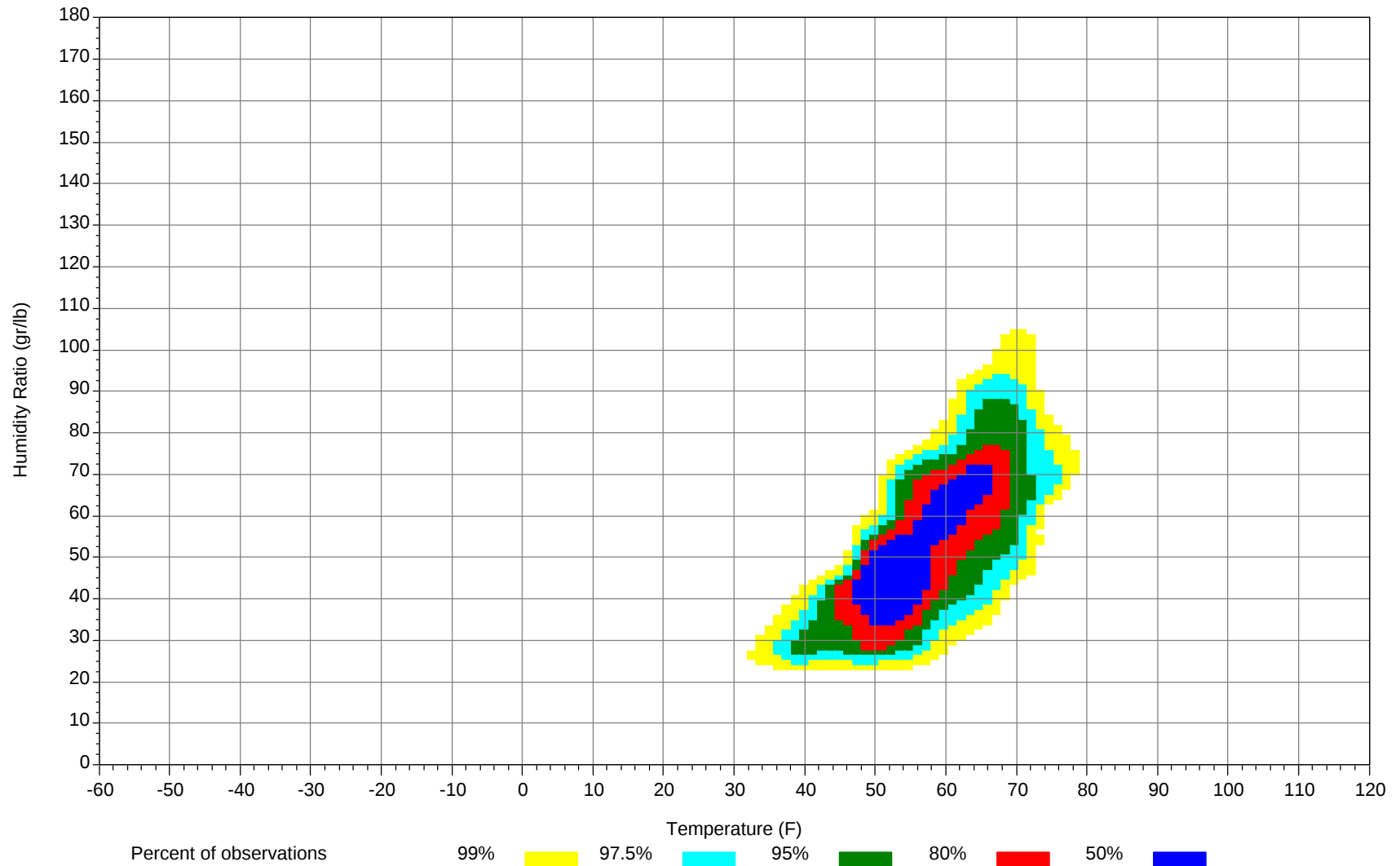
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



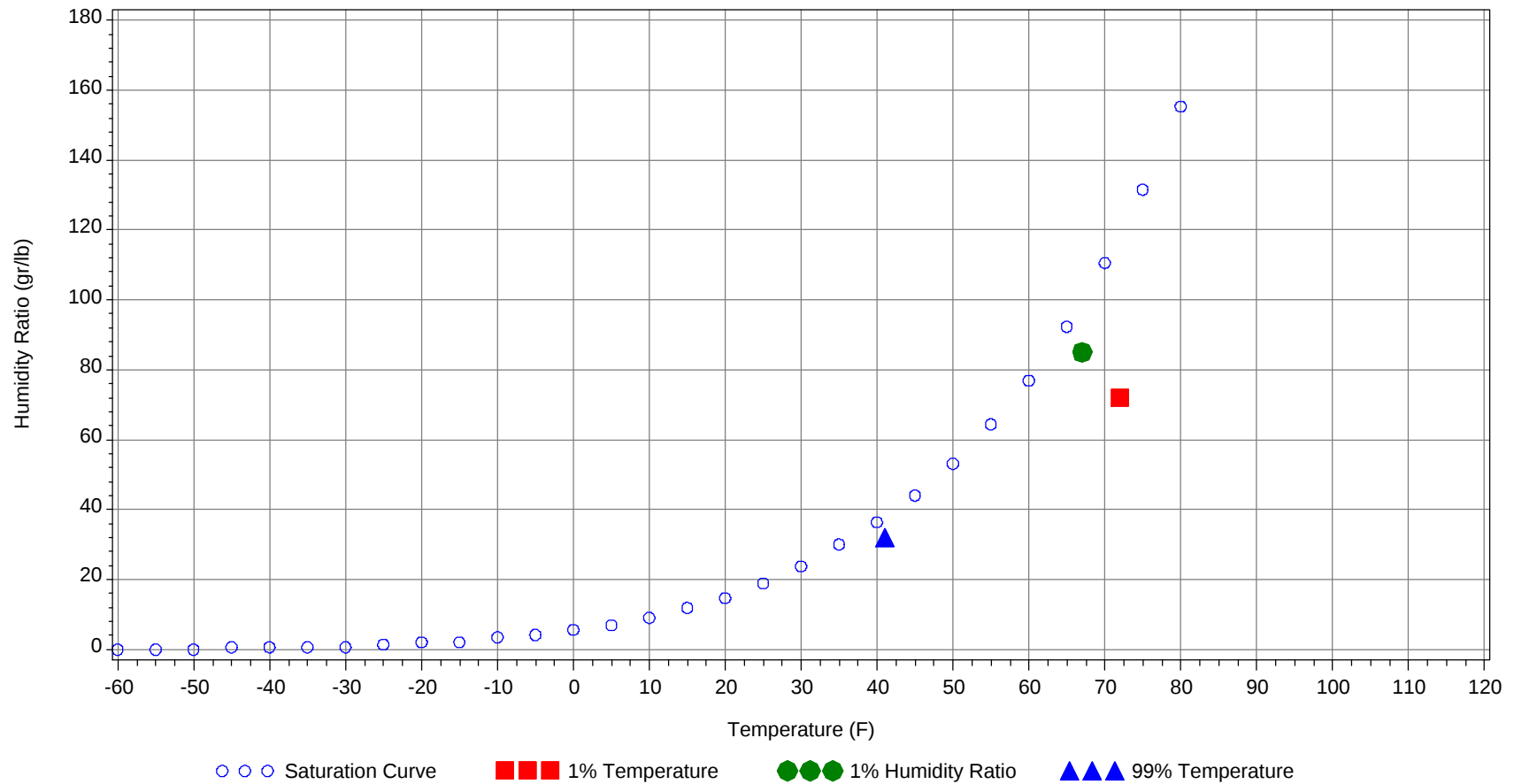
Average Annual Climate



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	72.0		63		72.0	28.4
99.0% Dry Bulb	41.0				32.0	14.8
1.0% Humidity Ratio	85.0	67.0	64.3	62.6		29.5

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)
80/ 84		0	0	0	70		0		0	68		0		0	68
75/ 79	0	10	2	12	64.5		14	2	16	65		5	0	5	64.9
70/ 74	2	56	16	74	62.4	5	60	21	86	63.3	2	39	9	50	62.8
65/ 69	27	73	52	152	61	37	57	56	150	61.6	19	62	36	117	61
60/ 64	116	82	116	314	58	93	73	96	262	58.1	89	93	105	287	57.9
55/ 59	86	25	56	167	53.8	75	18	47	140	53.9	95	46	82	223	53.6
50/ 54	18	2	7	27	49.2	14	1	4	19	49.5	37	4	16	57	49.6
45/ 49	0	0	0	0	45.3	1		0	1	45.6	6	0	0	6	45.3
40/ 44											0			0	42
35/ 39															
30/ 34															

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)
80/ 84															
75/ 79															
70/ 74	0	4	0	4	62.5		0		0	61.7					
65/ 69	2	34	7	43	60.5	0	4	1	5	60.8					
60/ 64	54	94	72	220	57.5	20	65	27	112	57.2	3	13	4	20	56.7
55/ 59	92	83	102	277	53.4	84	107	101	292	52.9	43	79	56	178	52.6
50/ 54	69	24	52	145	48.8	92	61	90	243	48.7	92	102	101	295	48.2
45/ 49	21	2	6	29	45	38	10	25	73	44.5	71	42	66	179	44.2
40/ 44	1		0	1	40.9	12	1	4	17	40.6	23	3	11	37	40.3
35/ 39						2		0	2	37.3	8	0	1	9	37
30/ 34											0			0	32.5

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

	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)
80/ 84															
75/ 79															
70/ 74												0		0	58.5
65/ 69												1	0	1	57
60/ 64	0	2	1	3	55.8		5	0	5	53.6	0	28	3	31	55.1
55/ 59	18	61	26	105	51.8	18	83	36	137	51.6	46	113	77	236	52.2
50/ 54	92	122	112	326	48	104	114	124	342	48.3	111	76	111	298	48.3
45/ 49	89	57	88	234	44	86	43	74	203	43.8	62	21	45	128	43.8
40/ 44	29	5	18	52	40.2	26	3	12	41	40	15	1	4	20	40
35/ 39	19	1	4	24	36.8	14	0	3	17	36.7	5		0	5	36.9
30/ 34	1		0	1	32.8	0	0		0	31.8	0			0	31.8

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

	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)
80/ 84												0	0	0	68.3
75/ 79						0	0	0	0	63.6	0	4	1	5	64.4
70/ 74		1		1	59.2	0	5	1	6	60.7	1	31	7	39	61.9
65/ 69		6	1	7	58.1	1	26	4	31	58.4	13	63	31	107	60.5
60/ 64	6	75	19	100	55.6	26	102	53	181	56.1	88	96	106	290	57.8
55/ 59	92	105	115	312	52.7	111	78	117	306	52.7	100	45	80	225	53.4
50/ 54	102	52	88	242	48.5	79	27	58	164	48.3	42	8	22	72	49
45/ 49	41	9	24	74	43.9	22	1	8	31	44.4	4	0	1	5	45.5
40/ 44	7	0	1	8	40	1		0	1	40.5					
35/ 39	1		0	1	37.1	0			0	37.3					
30/ 34															

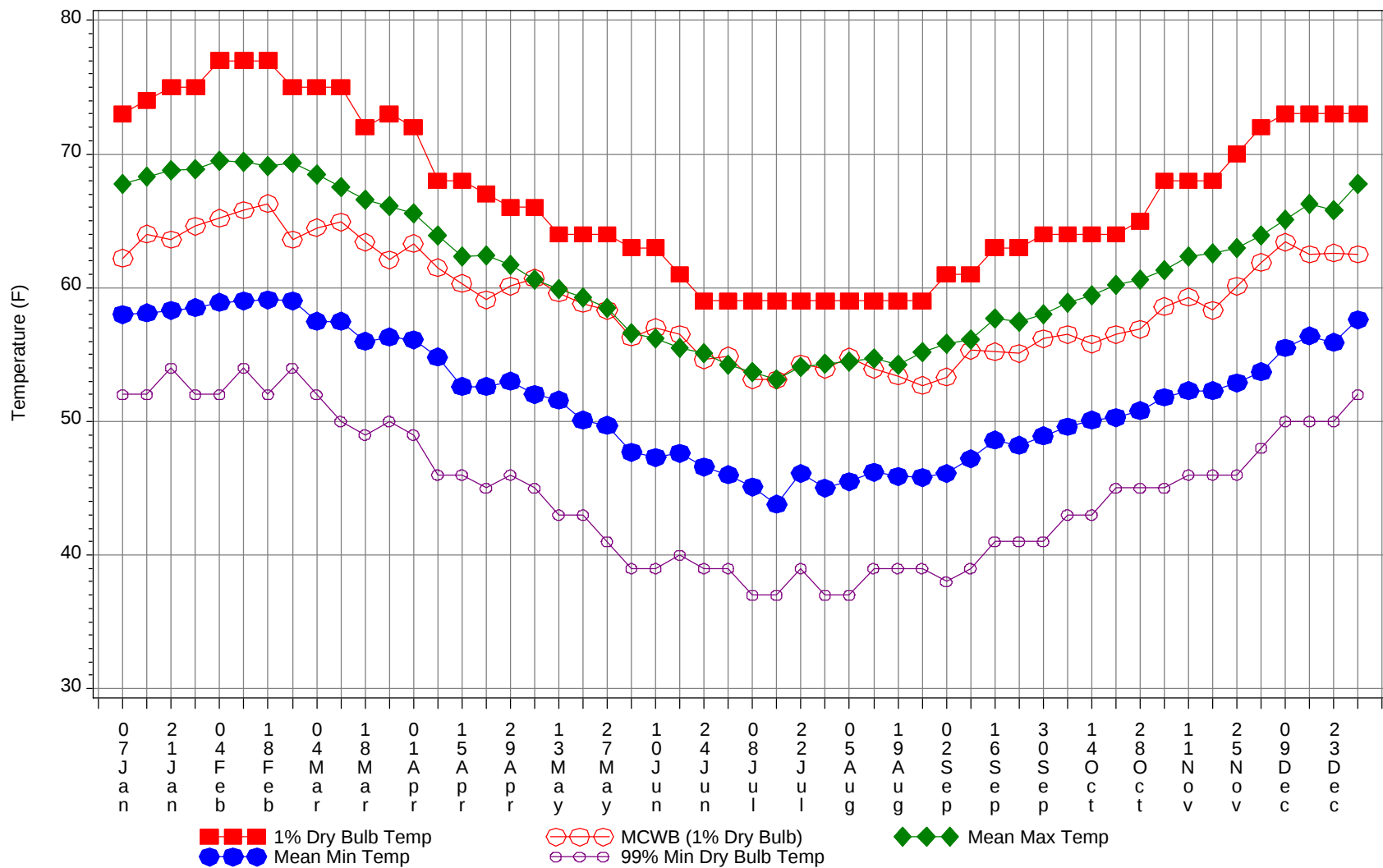
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

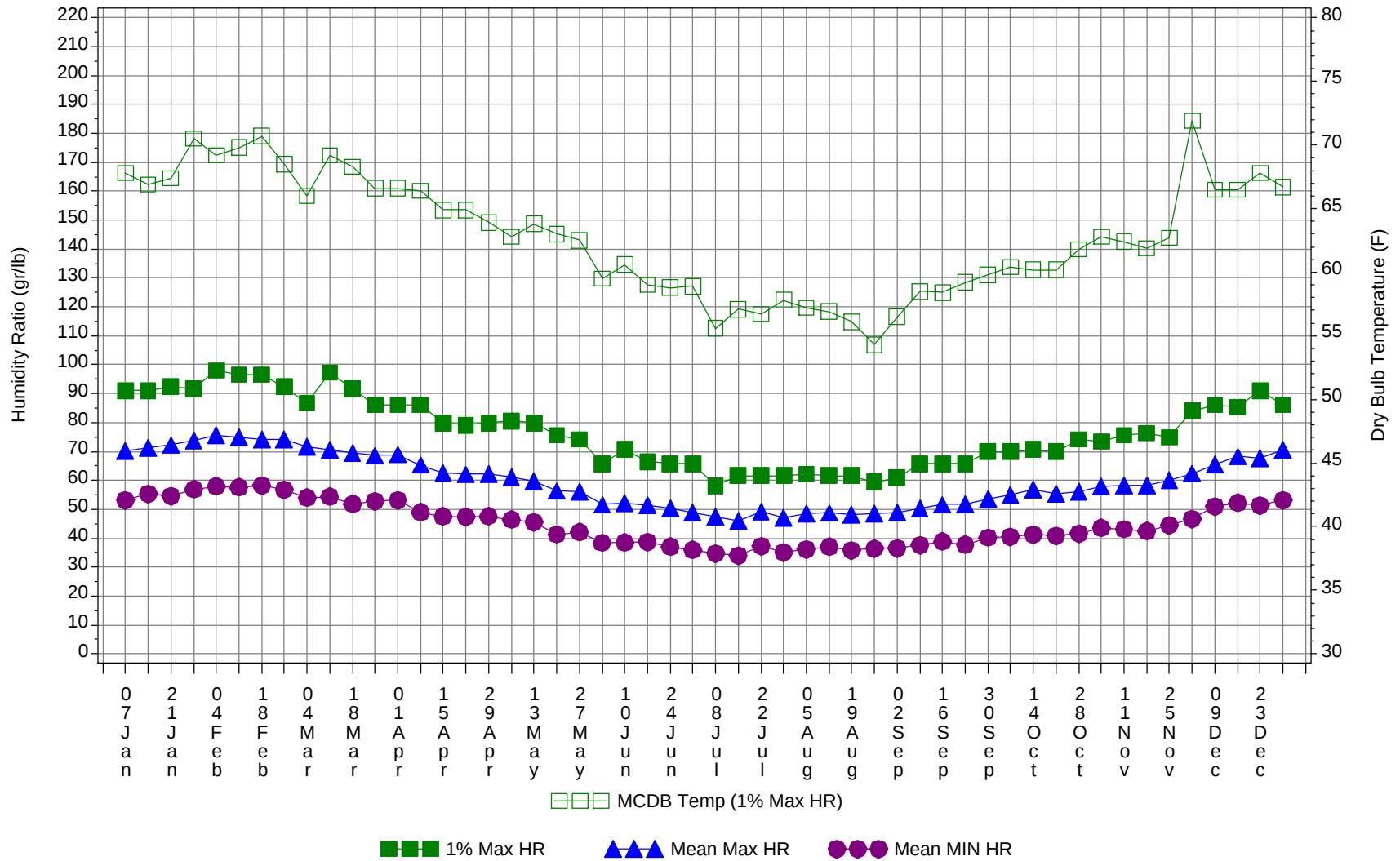
	Annual				
Temperature Range (°F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (°F)
80/ 84		1	0	1	68.6
75/ 79	0	32	4	36	64.7
70/ 74	10	195	52	257	62.7
65/ 69	97	325	186	608	60.9
60/ 64	493	726	597	1816	57.5
55/ 59	858	845	894	2597	52.9
50/ 54	854	597	790	2241	48.4
45/ 49	443	187	339	969	44.1
40/ 44	115	13	50	178	40.2
35/ 39	49	2	8	59	36.8
30/ 34	2	0	0	2	32.5

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



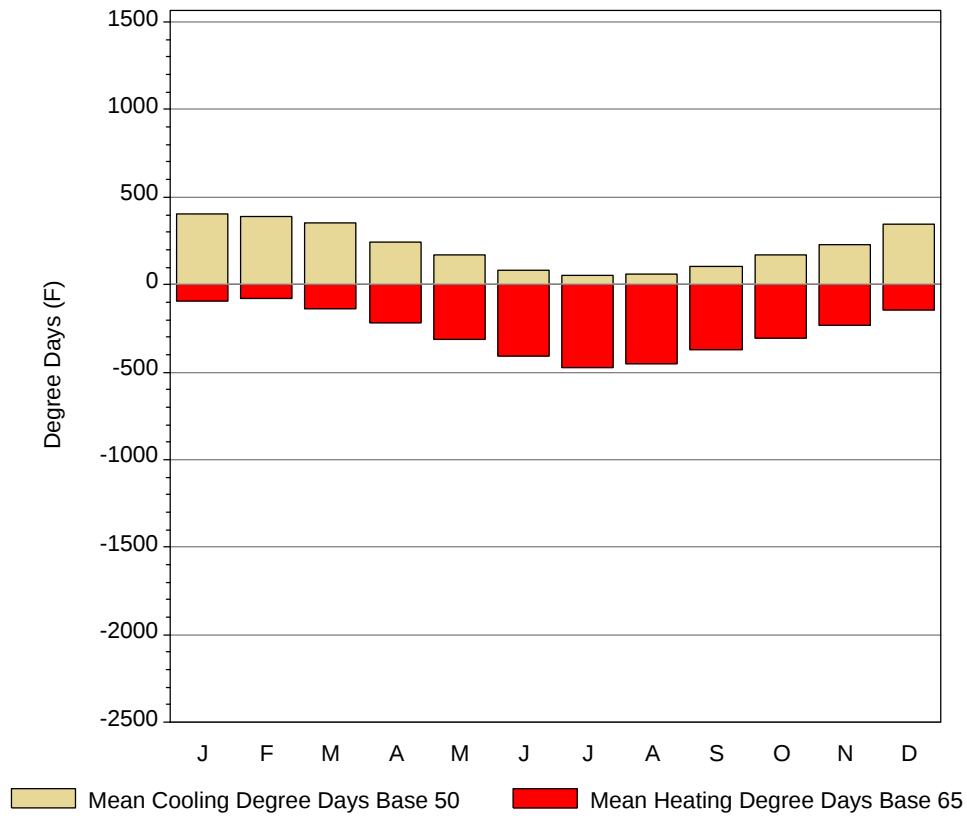
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

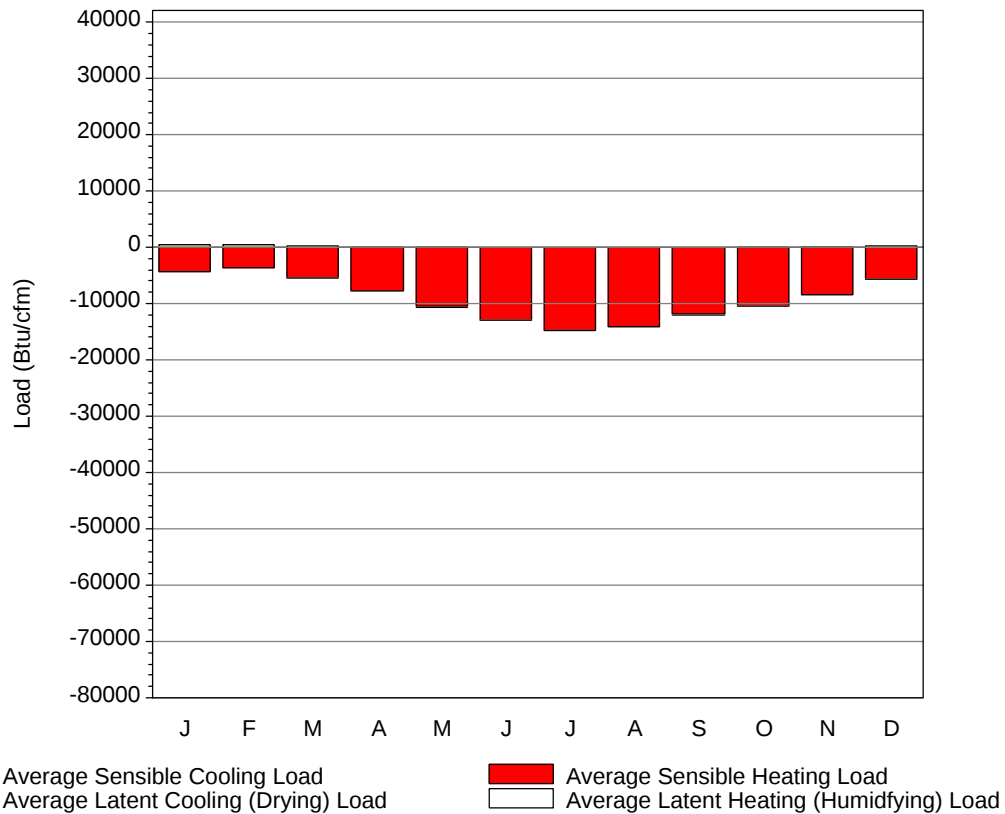
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	73	62.2	67.8	58	52	91	67.8	70.1	53.1
14-Jan	74	64	68.3	58.1	52	91	66.9	71.3	55.3
21-Jan	75	63.6	68.8	58.3	54	92.4	67.4	72.2	54.6
28-Jan	75	64.6	68.9	58.5	52	91.7	70.5	73.7	56.9
4-Feb	77	65.2	69.5	58.9	52	98	69.2	75.6	58
11-Feb	77	65.8	69.4	59	54	96.6	69.8	74.8	57.7
18-Feb	77	66.3	69.1	59.1	52	96.6	70.7	74.3	58.2
25-Feb	75	63.6	69.3	59	54	92.4	68.5	74.1	56.8
4-Mar	75	64.5	68.5	57.5	52	86.8	66	71.7	54
11-Mar	75	64.9	67.5	57.5	50	97.3	69.2	70.7	54.4
18-Mar	72	63.4	66.6	56	49	91.7	68.3	69.5	51.9
25-Mar	73	62.1	66.1	56.3	50	86.1	66.6	68.6	52.7
1-Apr	72	63.3	65.6	56.1	49	86.1	66.6	68.9	53.2
8-Apr	68	61.5	63.9	54.8	46	86.1	66.4	65.3	49
15-Apr	68	60.3	62.3	52.6	46	79.8	64.9	62.5	47.5
22-Apr	67	59.1	62.4	52.6	45	79.1	64.9	62.1	47.4
29-Apr	66	60.1	61.7	53	46	79.8	63.9	62.3	47.6
6-May	66	60.7	60.6	52	45	80.5	62.8	61.3	46.4
13-May	64	59.6	59.9	51.6	43	79.8	63.8	59.6	45.6
20-May	64	58.8	59.3	50.1	43	75.6	63	56.3	41.3
27-May	64	58.3	58.5	49.7	41	74.2	62.5	56.2	42.1
4-Jun	63	56.3	56.6	47.7	39	65.8	59.5	51.6	38.4
10-Jun	63	57	56.2	47.3	39	70.7	60.6	52.2	38.5
17-Jun	61	56.5	55.5	47.6	40	66.5	59	51.4	38.6
24-Jun	59	54.6	55.1	46.6	39	65.8	58.8	50.3	37
1-Jul	59	54.9	54.2	46	39	65.8	58.9	48.8	36
8-Jul	59	53.1	53.7	45.1	37	58.1	55.6	47.4	34.7
15-Jul	59	53.1	53.1	43.8	37	61.6	57.1	46.1	34
22-Jul	59	54.3	54.1	46.1	39	61.6	56.7	49.2	37.2
29-Jul	59	53.9	54.3	45	37	61.6	57.8	47	35
5-Aug	59	54.8	54.5	45.5	37	62.3	57.2	48.5	36.2
12-Aug	59	53.9	54.7	46.2	39	61.6	56.9	48.7	37
19-Aug	59	53.4	54.2	45.9	39	61.6	56.1	48.1	35.8
26-Aug	59	52.7	55.2	45.8	39	59.5	54.3	48.4	36.4
2-Sep	61	53.3	55.8	46.1	38	60.9	56.5	48.9	36.5
9-Sep	61	55.3	56.1	47.2	39	65.8	58.5	50.3	37.6
16-Sep	63	55.2	57.7	48.6	41	65.8	58.4	51.6	38.8
23-Sep	63	55.1	57.5	48.2	41	65.8	59.2	51.7	37.7
30-Sep	64	56.2	58	48.9	41	70	59.8	53.5	40.2
7-Oct	64	56.5	58.9	49.6	43	70	60.4	54.9	40.4
14-Oct	64	55.8	59.4	50.1	43	70.7	60.2	56.9	41.2
21-Oct	64	56.5	60.2	50.3	45	70	60.2	55.5	40.8
28-Oct	65	56.9	60.6	50.8	45	74.2	61.8	56.2	41.6
4-Nov	68	58.6	61.3	51.8	45	73.5	62.8	57.8	43.6
11-Nov	68	59.3	62.3	52.3	46	75.6	62.4	58.2	43.1
18-Nov	68	58.3	62.6	52.3	46	76.3	61.9	58.4	42.4
25-Nov	70	60.1	63	52.9	46	74.9	62.7	60.1	44.5
2-Dec	72	61.9	63.9	53.7	48	84	71.9	62.4	46.6
9-Dec	73	63.4	65.1	55.5	50	86.1	66.5	65.5	50.9
16-Dec	73	62.5	66.3	56.4	50	85.4	66.5	68.2	52.2
23-Dec	73	62.6	65.8	55.9	50	91	67.8	67.6	51.3
31-Dec	73	62.5	67.8	57.6	52	86.1	66.7	70.7	53.2

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	400.9	35.8	94.8
FEB	387.2	42.2	78.7
MAR	355.1	23.6	134.1
APR	242.9	3.7	214.6
MAY	167	0.3	313.5
JUN	81.5	0	407.5
JUL	50.8	0	473.4
AUG	63.7	0	449.2
SEP	106.2	0.1	368.7
OCT	168.4	0.6	308.6
NOV	224.7	3.7	232.8
DEC	343.7	20.1	141.9
ANN	2592.1	130.1	3217.8

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	15	-4262	365	-1
FEB	19	-3581	483	0
MAR	5	-5477	216	-2
APR	0	-7810	55	-4
MAY	0	-10528	16	-30
JUN	0	-12895	0	-72
JUL	0	-14682	0	-110
AUG	0	-14055	0	-97
SEP	0	-11888	0	-75
OCT	0	-10395	1	-38
NOV	1	-8292	9	-26
DEC	7	-5734	183	-2
ANN	47	-109599	1328	-457

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													

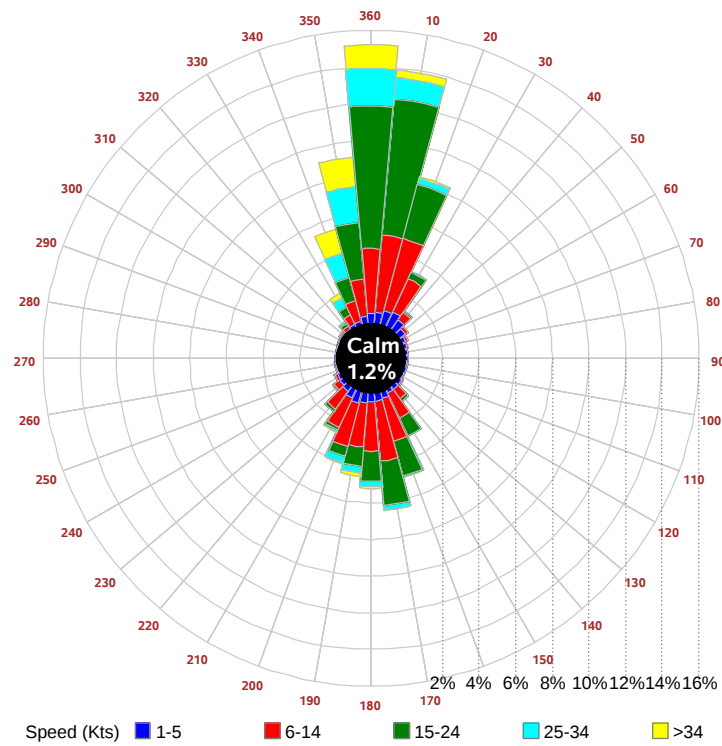
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

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													

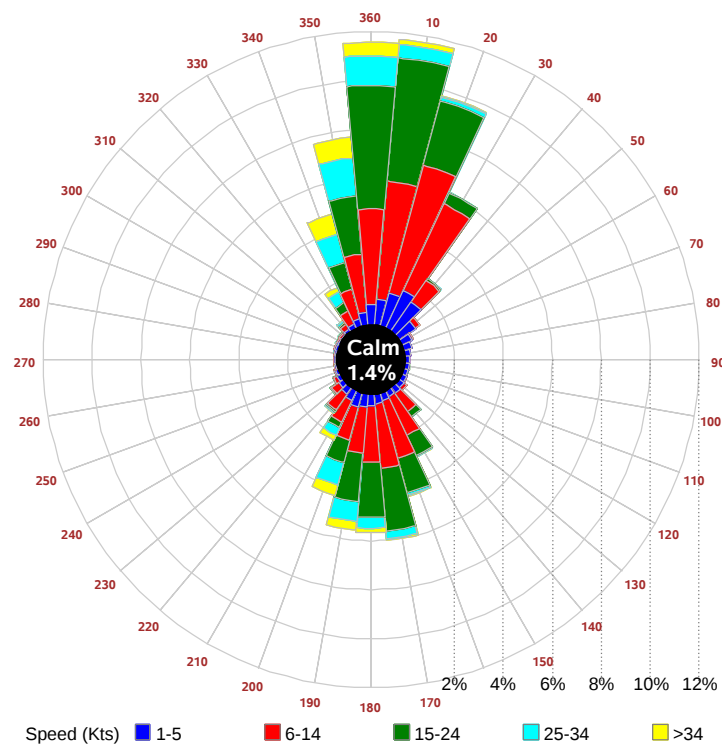
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS, Percentage Uncertainty = 9												
		March						June				
		9am	11am	1pm	3pm	5pm		9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear											
	M.Cloudy											
NORTH	M.Clear											
	M.Cloudy											
EAST	M.Clear			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

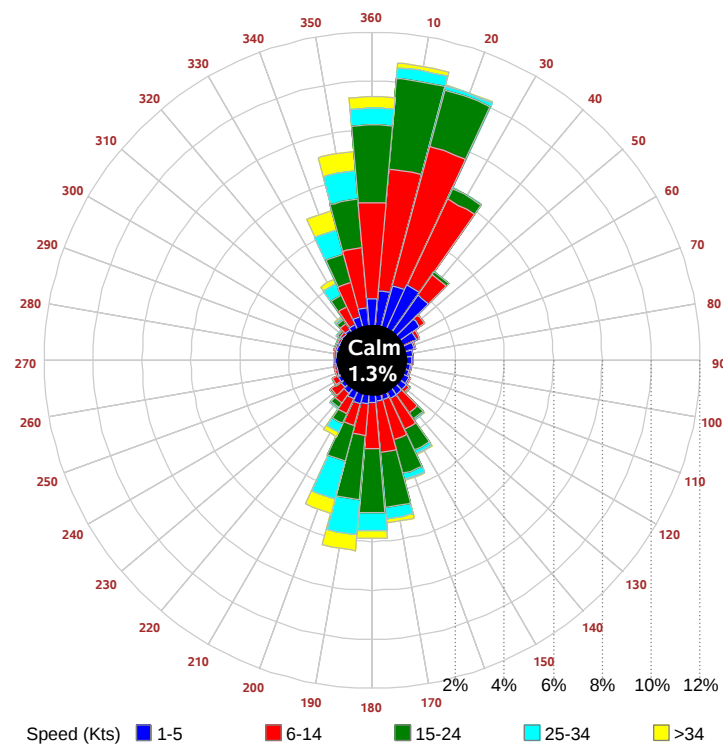
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

