

ST PAUL ISLAND, AK

Latitude = 57.17 N

Longitude = 170.22 W

Period of Record = 1988 To 2017

Station ID = ICAO_PASN

Elevation = 63 Feet

Average Pressure = 29.67 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	59	54	56	11.4	N
0.4% Occurrence	55	52	52	12.9	N
1.0% Occurrence	54	51	52	13	N
2.0% Occurrence	52	50	50	13.1	W
Mean Daily Range	7	-	-	-	N
97.5% Occurrence	10	9	7	18.8	N
99.0% Occurrence	5	4	6	19.2	N
99.6% Occurrence	1	0	4	15.8	N
Median of Extreme Lows	-2	-3	4	16	N

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	54	55	58	12.3	E
0.4% Occurrence	53	54	56	12.6	E
1.0% Occurrence	52	53	54	12.8	WSW
2.0% Occurrence	51	52	53	13	W

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	60	54	0.4	12.9	NE
0.4% Occurrence	58	53	0.39	13	N
1.0% Occurrence	55	52	0.37	13.9	SW
2.0% Occurrence	53	51	0.36	13	S

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

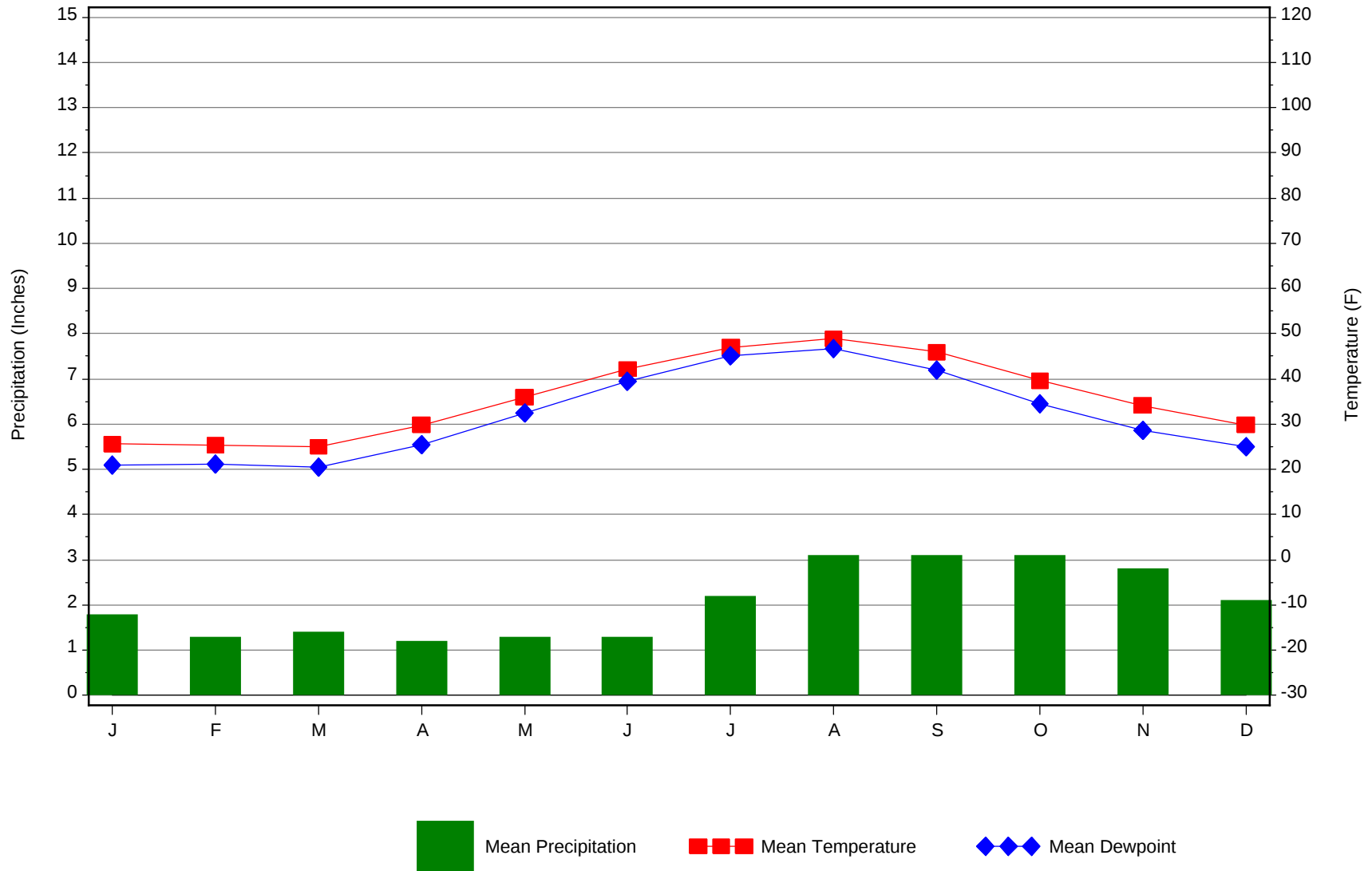
Other Site Data

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
4	0.6	130	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 (#)
38.3	86	35	67

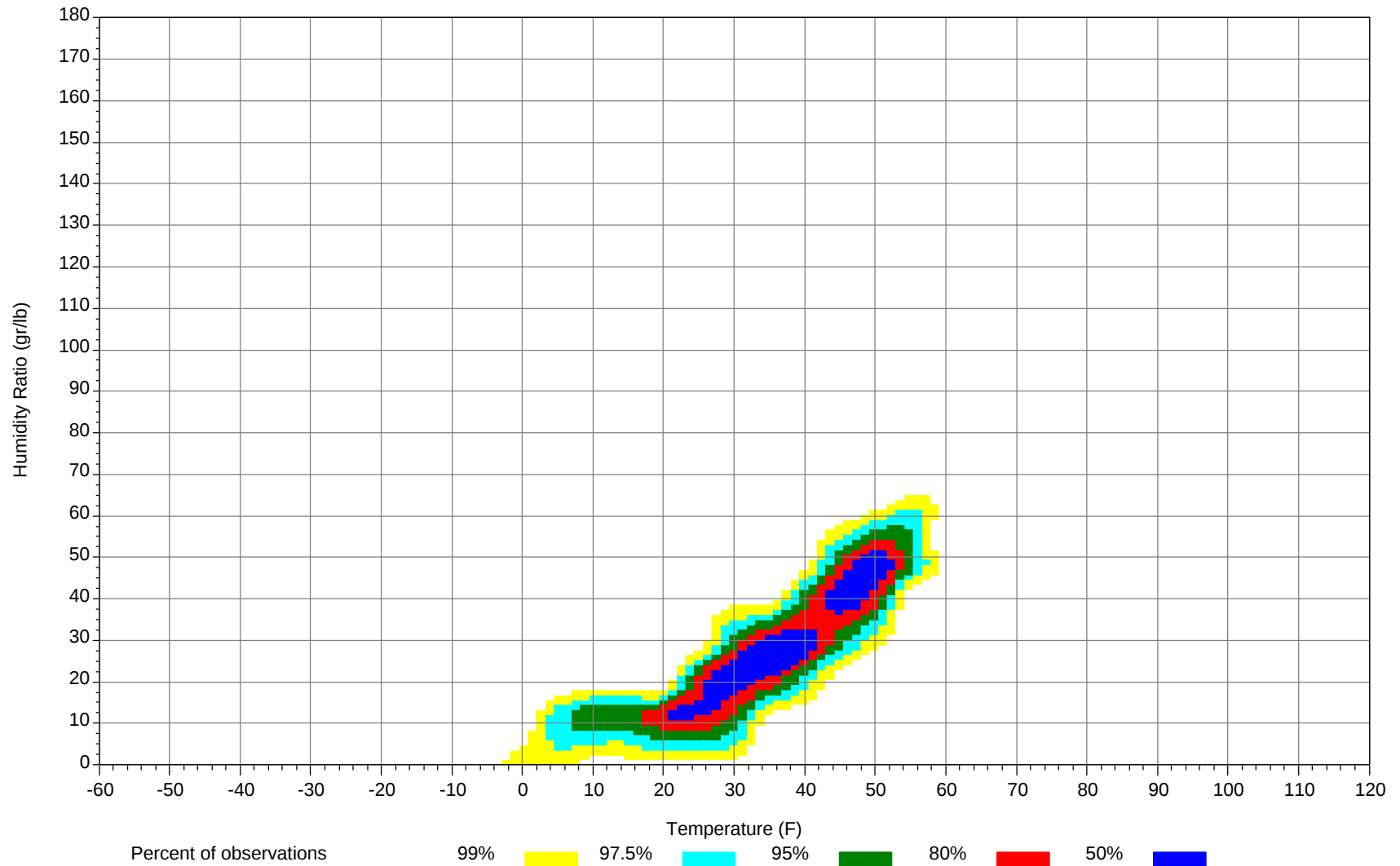
*Note: Temperatures at greater depths can be estimated by adding 1.5°F per 100 feet additional depth.



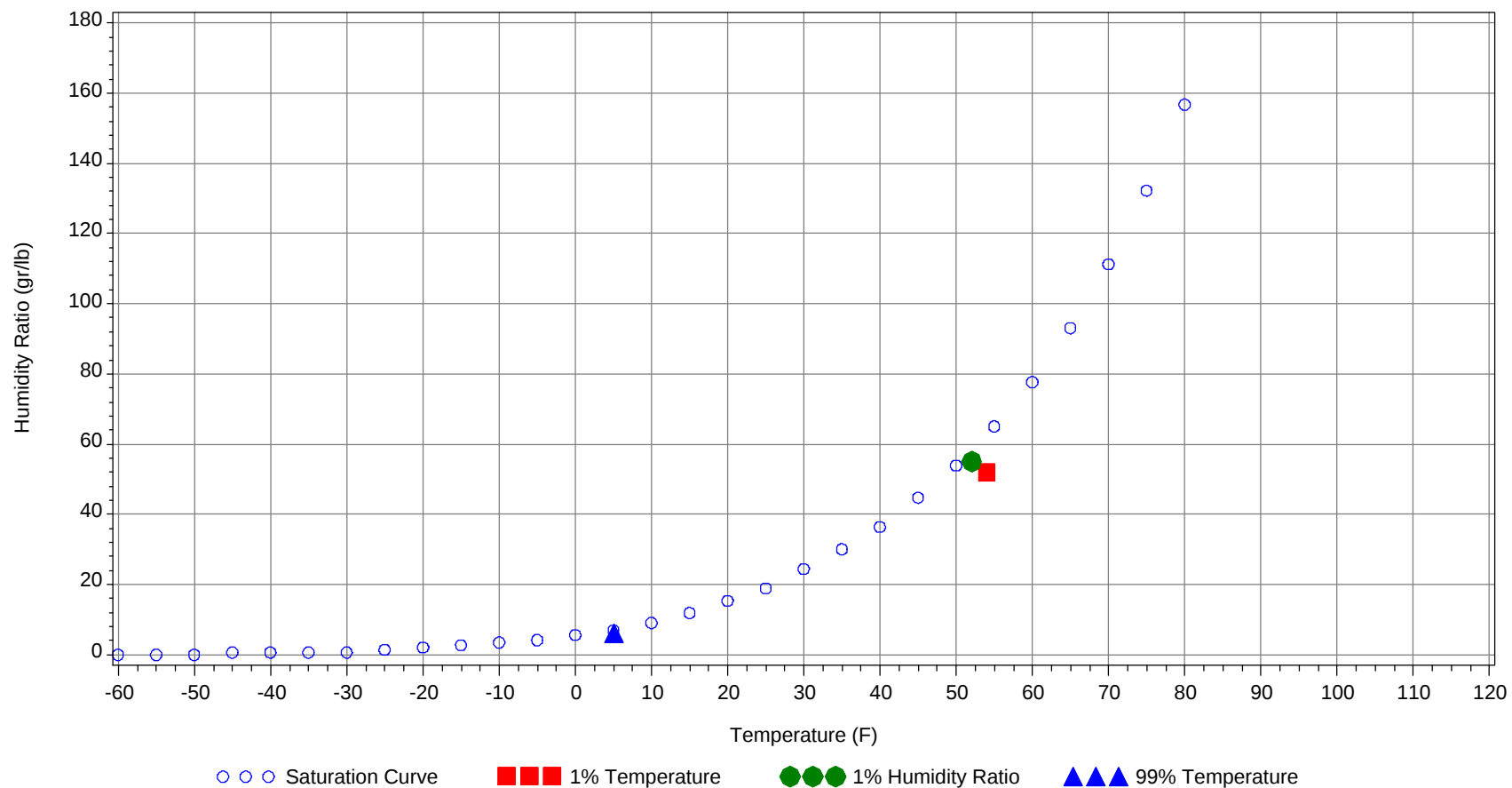
Average Annual Climate



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	54.0		51		52.0	21.0
99.0% Dry Bulb	5.0				6.0	2.1
1.0% Humidity Ratio	55.0	52.0	51.4	50.5		21.1

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)
75/ 79															
70/ 74															
65/ 69															
60/ 64															
55/ 59															
50/ 54															
45/ 49			0	0	34										
40/ 44	1	1	0	2	38.3	0	0	0	0	39.4		1	0	1	38
35/ 39	38	40	39	117	35.2	27	36	33	96	34.9	16	28	24	68	34.7
30/ 34	65	69	68	202	31	75	74	75	224	31.1	77	84	83	244	30.9
25/ 29	48	47	46	141	25.4	37	35	34	106	25.6	52	48	50	150	25.5
20/ 24	29	29	29	87	20.4	21	19	19	59	20.7	29	25	25	79	20.6
15/ 19	30	27	29	86	16.1	25	25	25	75	16.3	32	28	31	91	16.3
10/ 14	19	19	19	57	10.9	15	15	15	45	11.1	17	16	17	50	11.1
5/ 9	12	11	11	34	6.6	12	10	13	35	6.4	17	11	12	40	6.4
0/ 4	5	4	5	14	1.5	8	7	8	23	1.1	7	5	5	17	1.2
-5/ -1	1	1	1	3	-2.9	3	2	1	6	-3.1	2	1	1	4	-3.4
-10/ -6	0	0	0	0	-6.4	1	0	1	2	-6.9	1	0	0	1	-7.1
-15/-11						0		0	0	-11.5	0	0		0	-12

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)
75/ 79															
70/ 74															
65/ 69															
60/ 64												0	0	0	53.4
55/ 59							0		0	47.5		2	1	3	50.1
50/ 54							1	1	2	44.5	0	16	9	25	47.1
45/ 49		0	0	0	41.5	1	16	8	25	42.1	23	95	76	194	44.2
40/ 44	1	8	4	13	38.5	16	60	43	119	39.7	101	88	98	287	41.1
35/ 39	32	64	52	148	35	104	113	118	335	35.9	101	37	52	190	37.4
30/ 34	93	88	94	275	31	93	45	63	201	31.4	13	1	4	18	32.6
25/ 29	62	46	52	160	25.6	28	11	14	53	26.2	1		0	1	27.9
20/ 24	24	16	19	59	20.5	5	2	2	9	21					
15/ 19	16	12	12	40	16.5	1	0	0	1	17.1					
10/ 14	9	4	4	17	11.4										
5/ 9	2	1	1	4	6.9										
0/ 4	1	0	0	1	1.8										
-5/ -1	0	0		0	-2.5										
-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)
75/ 79		0		0	59										
70/ 74		0		0											
65/ 69		0		0	55										
60/ 64		1	0	1	54.8		0	0	0	56					
55/ 59	0	13	7	20	52.7	0	16	7	23	53.1		2	1	3	52.7
50/ 54	16	72	53	141	49.5	50	129	100	279	49.9	15	62	37	114	49
45/ 49	154	142	157	453	45.9	181	102	136	419	46.5	138	145	145	428	45.2
40/ 44	66	19	27	112	42.4	14	1	4	19	41.9	55	24	39	118	40.4
35/ 39	11	1	3	15	38.2	2		1	3	37.8	25	6	16	47	36.1
30/ 34	1			1	33.1	0			0	34	6	1	2	9	31.9
25/ 29											1	0	0	1	27.1
20/ 24													0	0	22.5
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)
75/ 79															
70/ 74															
65/ 69															
60/ 64															
55/ 59															
50/ 54	1	3	1	5	48.3		0		0	44					
45/ 49	32	58	40	130	44.1	2	3	2	7	42.8	0	1	0	1	38.1
40/ 44	70	84	78	232	40.1	31	40	34	105	40.2	5	5	5	15	39.5
35/ 39	92	77	89	258	35.1	78	83	79	240	35.3	68	74	71	213	35.4
30/ 34	46	24	36	106	30.6	79	72	75	226	29.9	72	69	67	208	30.6
25/ 29	7	2	4	13	26.3	39	33	40	112	24.9	51	50	52	153	25.1
20/ 24	0	0	0	0	21	10	8	9	27	20.7	22	21	25	68	20.3
15/ 19	0	0		0	17.7	2	1	1	4	16.6	23	21	22	66	16.3
10/ 14						0	0	0	0	11.8	6	6	6	18	11.3
5/ 9						0	0	0	0	6.9	1	1	2	4	7.1
0/ 4											0	0	0	0	2.7
-5/ -1															
-10/ -6															
-15/-11															

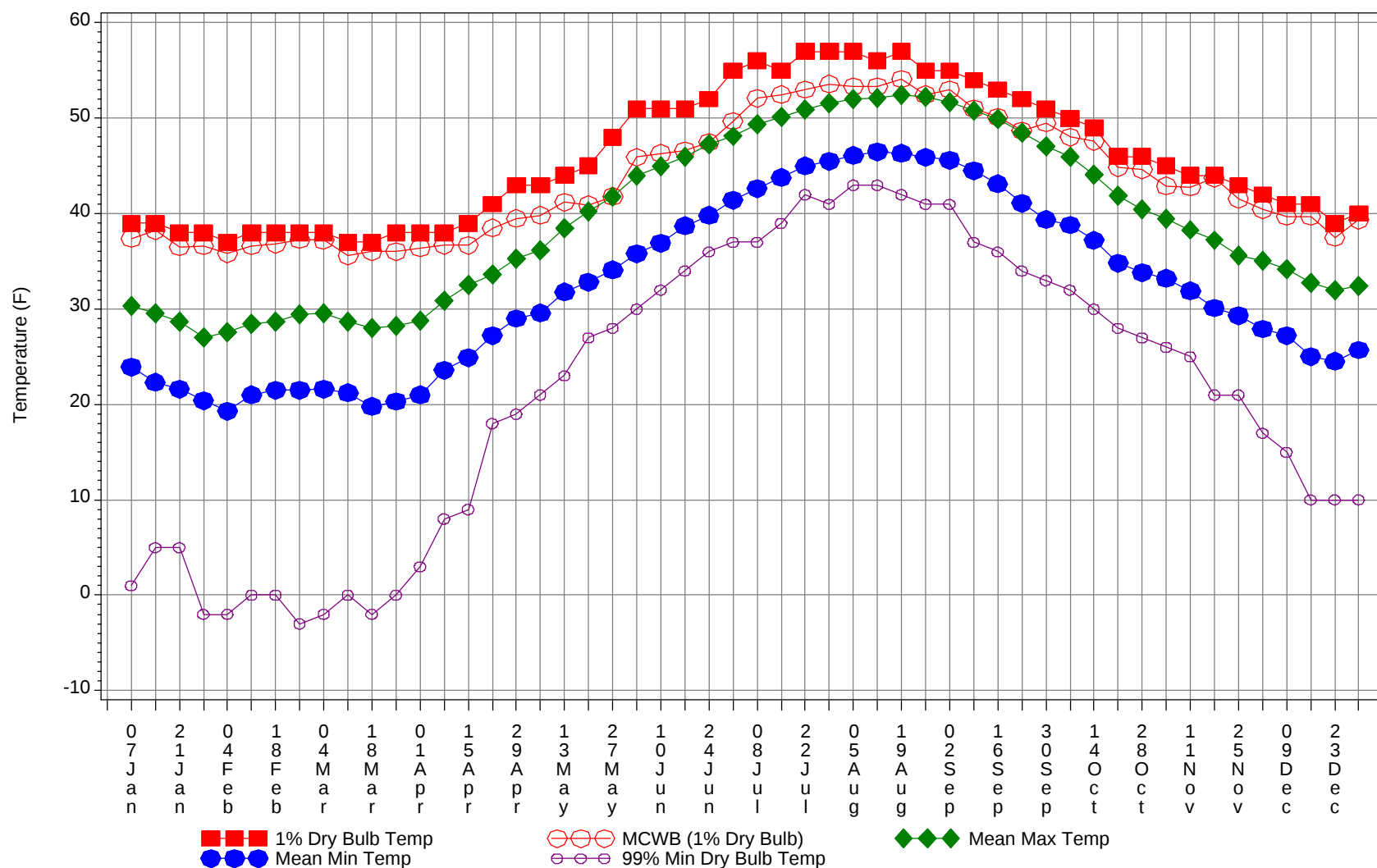
Caution: This summary reflects the typical distribution of temperature in a typical year. It does not reflect the typical moisture distribution. Because wet bulb temperatures are averaged, this summary understates the annual moisture load. For accurate moisture load data, see the long-term humidity summary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

Dry-Bulb Temperature Hours For An Average Year

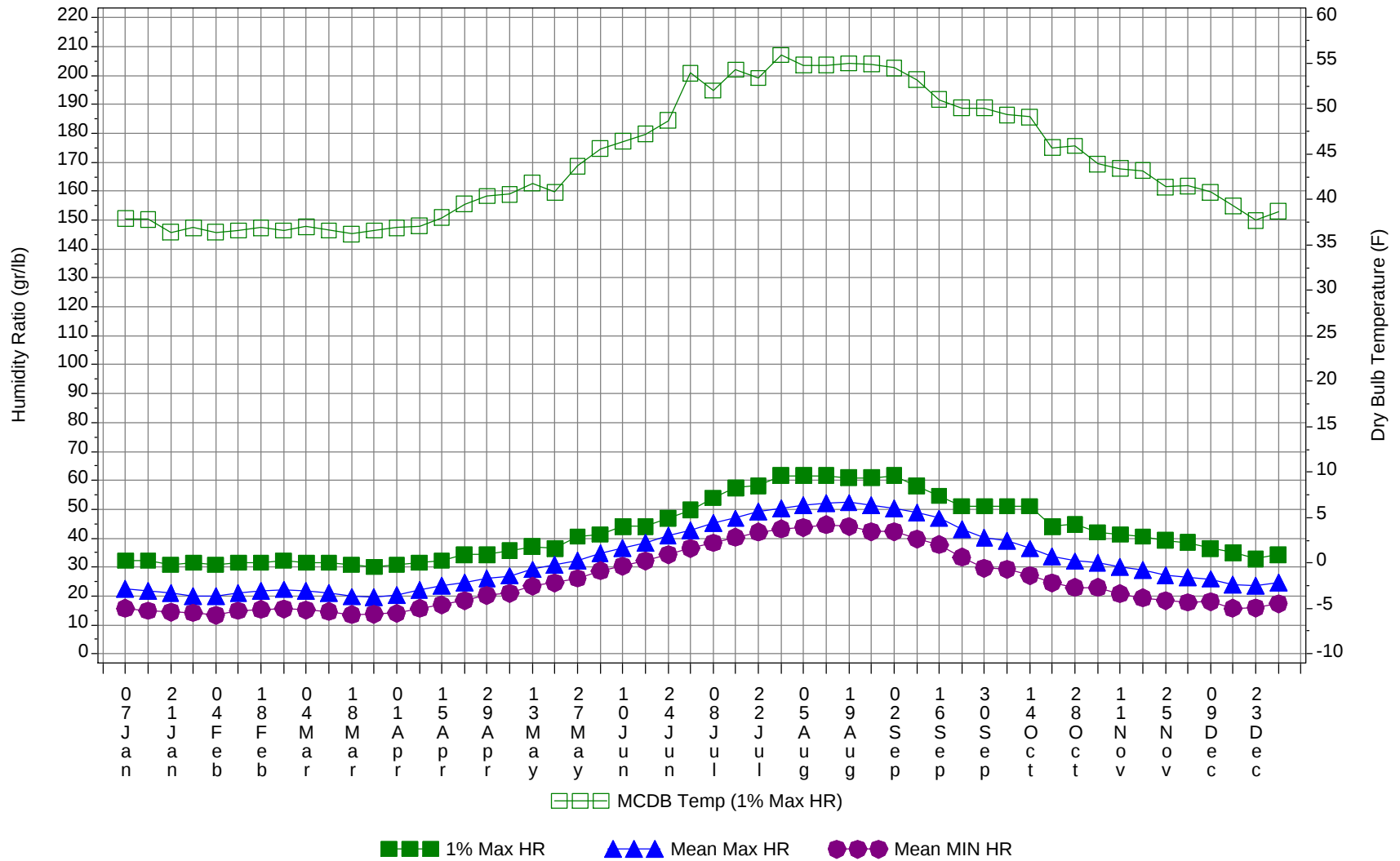
	Annual				
Temperature Range (° F)	01 To 08 LST	09 To 16 LST	17 to 00 LST	Total Obs	M C W B (° F)
75/ 79		0		0	59
70/ 74		0		0	
65/ 69		0		0	55
60/ 64		1	0	1	55
55/ 59	0	34	16	50	52.7
50/ 54	83	282	201	566	49.5
45/ 49	531	563	563	1657	45.5
40/ 44	360	331	333	1024	40.6
35/ 39	593	559	578	1730	35.6
30/ 34	620	527	567	1714	30.9
25/ 29	324	272	292	888	25.4
20/ 24	140	120	129	389	20.5
15/ 19	128	114	120	362	16.3
10/ 14	65	62	60	187	11.1
5/ 9	45	34	38	117	6.5
0/ 4	22	17	18	57	1.2
-5/ -1	5	4	3	12	-3.2
-10/ -6	3	1	1	5	-6.9
-15/-11	0	0	0	0	-11.6

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.

Annual Summary of Temperatures



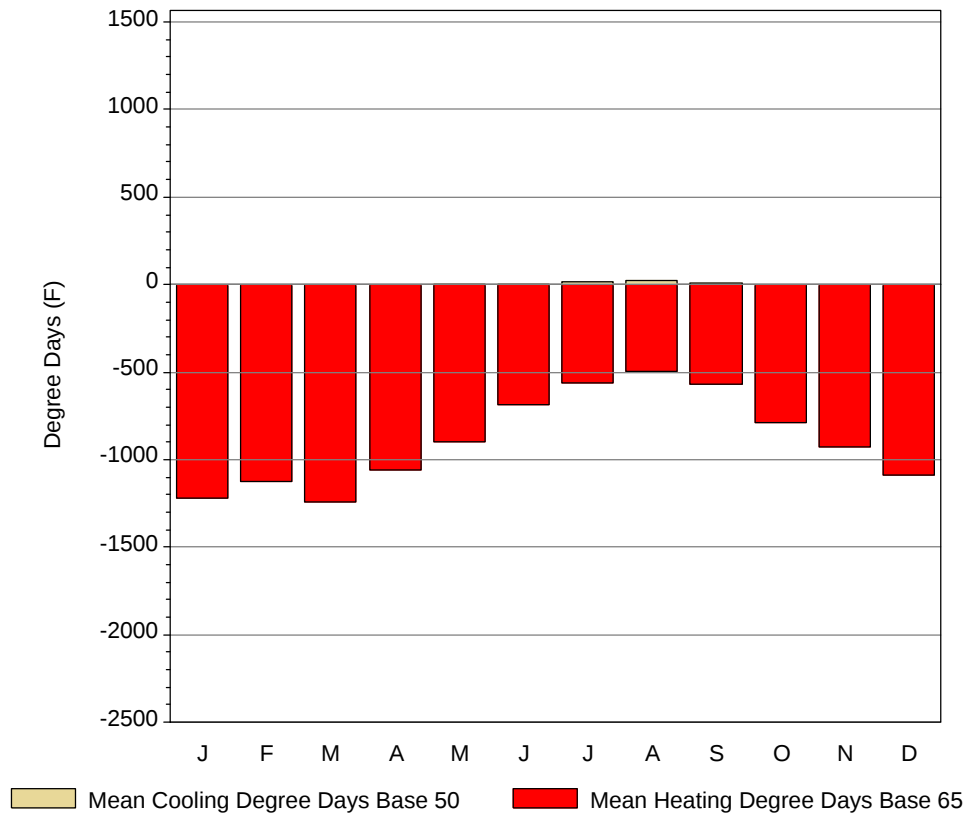
Long Term Humidity and Dry Bulb Temperature Summary



Long Term Humidity and Dry Bulb Temperature Summary

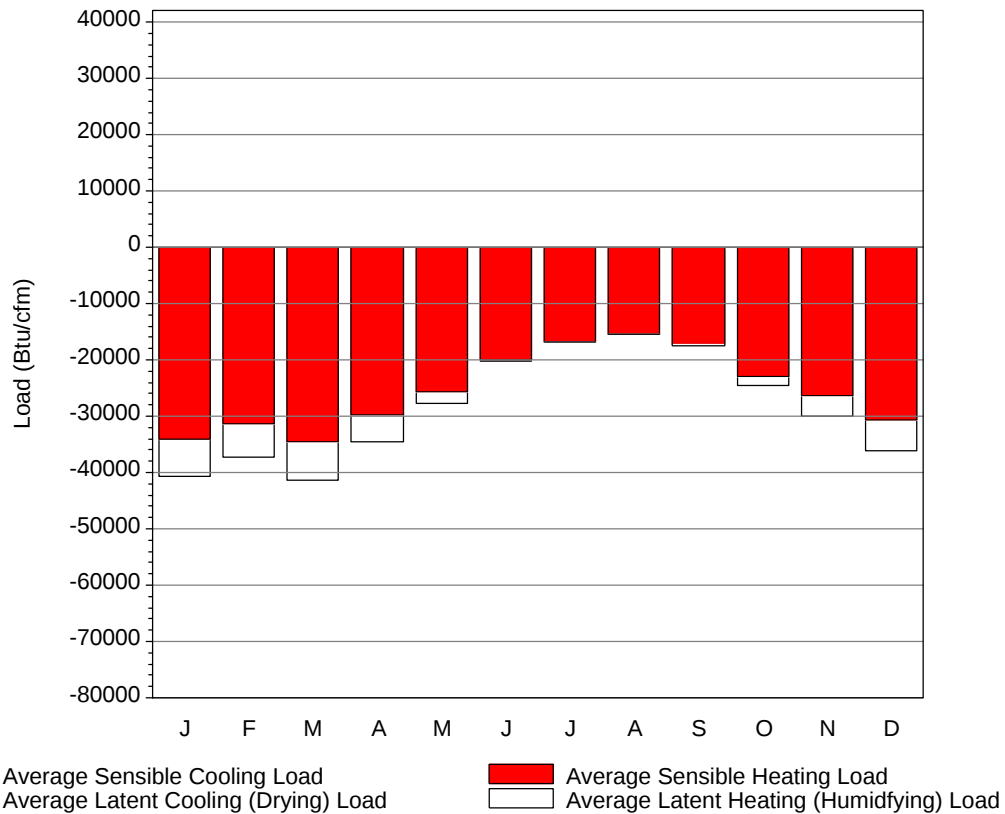
Week Ending	1.0% Temp (° F)	MCWB@ 1% Temp (° F)	Mean Max Temp (° F)	Mean Min Temp (° F)	99% Temp (° F)	1.0% HR (gr/lb)	MCDB@ 1% HR (° F)	Mean Max HR (gr/lb)	Mean Min HR (gr/lb)
7-Jan	39	37.4	30.3	23.9	1	32.2	37.9	22.4	15.7
14-Jan	39	38.2	29.6	22.3	5	32.2	37.8	21.7	14.9
21-Jan	38	36.5	28.7	21.6	5	30.8	36.4	21	14.5
28-Jan	38	36.6	27	20.4	-2	31.5	36.9	20.1	14.2
4-Feb	37	35.8	27.6	19.3	-2	30.8	36.4	19.9	13.3
11-Feb	38	36.6	28.4	21	0	31.5	36.6	21	14.9
18-Feb	38	36.8	28.7	21.5	0	31.5	36.9	21.9	15.4
25-Feb	38	37.3	29.4	21.5	-3	32.2	36.6	22.3	15.6
4-Mar	38	37.2	29.5	21.6	-2	31.5	37	21.8	15.1
11-Mar	37	35.6	28.7	21.2	0	31.5	36.6	21	14.7
18-Mar	37	36	28	19.8	-2	30.8	36.2	19.8	13.5
25-Mar	38	36	28.2	20.3	0	30.1	36.6	19.6	13.8
1-Apr	38	36.4	28.8	21	3	30.8	36.9	20.3	14
8-Apr	38	36.7	30.9	23.6	8	31.5	37.1	22.2	15.7
15-Apr	39	36.7	32.5	24.9	9	32.2	38	23.6	16.9
22-Apr	41	38.5	33.6	27.2	18	34.3	39.5	24.6	18.5
29-Apr	43	39.5	35.3	29	19	34.3	40.4	26.1	20.3
6-May	43	39.8	36.2	29.6	21	35.7	40.6	27	20.9
13-May	44	41.2	38.5	31.8	23	37.1	41.8	29.2	23.4
20-May	45	40.9	40.2	32.8	27	36.4	40.8	30.8	24.6
27-May	48	41.8	41.8	34.1	28	40.6	43.7	32.3	26.1
4-Jun	51	45.9	44	35.8	30	41.3	45.6	34.7	28.7
10-Jun	51	46.3	45	36.9	32	44.1	46.4	36.7	30.4
17-Jun	51	46.6	46	38.7	34	44.1	47.2	38.3	32.2
24-Jun	52	47.5	47.3	39.8	36	46.9	48.7	40.9	34.4
1-Jul	55	49.7	48.1	41.4	37	49.7	53.9	42.8	36.5
8-Jul	56	52.1	49.4	42.6	37	53.9	52	45.3	38.4
15-Jul	55	52.5	50.1	43.8	39	57.4	54.3	46.9	40.3
22-Jul	57	53	50.9	45	42	58.1	53.4	49.2	42.1
29-Jul	57	53.6	51.6	45.5	41	61.6	55.9	50.4	43.2
5-Aug	57	53.3	52	46.1	43	61.6	54.8	51.4	43.7
12-Aug	56	53.3	52.1	46.5	43	61.6	54.8	52	44.7
19-Aug	57	54.1	52.4	46.3	42	60.9	55	52.3	44
26-Aug	55	52.5	52.2	45.9	41	60.9	54.9	51.5	42.2
2-Sep	55	53	51.7	45.6	41	61.6	54.5	50.3	42.2
9-Sep	54	51	50.8	44.5	37	58.1	53.2	48.9	39.7
16-Sep	53	50.1	49.9	43.1	36	54.6	51	46.9	37.7
23-Sep	52	48.7	48.5	41.1	34	51.1	50.1	43.1	33.4
30-Sep	51	49.5	47	39.4	33	51.1	50.1	40.3	29.7
7-Oct	50	48	45.9	38.8	32	51.1	49.3	39	29.3
14-Oct	49	47.6	44.1	37.2	30	51.1	49.1	36.4	27.1
21-Oct	46	44.8	41.9	34.8	28	44.1	45.7	33.7	24.5
28-Oct	46	44.6	40.4	33.8	27	44.8	45.9	32.1	23
4-Nov	45	42.9	39.5	33.2	26	42	43.9	31.4	22.9
11-Nov	44	42.8	38.3	31.9	25	41.3	43.4	30	20.8
18-Nov	44	43.7	37.2	30.1	21	40.6	43.2	29	19.4
25-Nov	43	41.5	35.6	29.3	21	39.2	41.4	27.2	18.5
2-Dec	42	40.4	35	27.9	17	38.5	41.5	26.5	17.8
9-Dec	41	39.7	34.2	27.2	15	36.4	40.8	25.9	18
16-Dec	41	39.7	32.7	25	10	35	39.3	24	15.8
23-Dec	39	37.5	32	24.5	10	32.9	37.7	23.5	15.9
31-Dec	40	39.3	32.4	25.7	10	34.3	38.7	24.8	17.4

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	0	1221
FEB	0	0	1123.2
MAR	0	0	1240.3
APR	0	0	1057.1
MAY	0.1	0	899.1
JUN	2.1	0	683
JUL	13.8	0	558.1
AUG	21.6	0	499.2
SEP	5.4	0	572.5
OCT	0	0	789.2
NOV	0	0	926.1
DEC	0	0	1091
ANN	43	0	10659.8

Average Ventilation and Infiltration Loads (Outside Air vs 75F, 60% RH summer; 68F, 30% RH winter)



	Average Sensible Cooling Load (Btu/cfm)	Average Sensible Heating Load (Btu/cfm)	Average Latent Cooling Load (Btu/cfm)	Average Latent Heating Load (Btu/cfm)
Month	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	0	-34060	0	-6674
FEB	0	-31310	0	-5912
MAR	0	-34560	0	-6888
APR	0	-29734	0	-4883
MAY	0	-25714	0	-2105
JUN	0	-20037	0	-160
JUL	0	-16876	0	-7
AUG	0	-15351	0	-9
SEP	0	-17172	0	-224
OCT	0	-22866	0	-1764
NOV	0	-26338	0	-3742
DEC	0	-30690	0	-5327
ANN	0	-304708	0	-37695

Station Information		Shading Geometry in Dimensionless Units	
City, State, WBAN	STPAULIS., AK 25713	Window:	1.000
Lat, Lon, Elev	57.15N 170.22W 23ft	Overhang:	0.133
Press, Stn Type	14.6psia Secondary	Vert Gap:	0.200

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	160	380	750	1120	1240	1270	1130	910	690	400	190	110	700
	Std.Dev.	22	48	107	166	153	89	84	76	49	32	16	12	47
	Minimum	120	280	580	850	1010	1120	950	760	560	340	150	79	620
	Maximum	200	510	970	1400	1620	1500	1240	1060	760	460	210	140	790
	Diffuse	130	270	520	800	930	990	960	770	500	290	150	88	530
Clear Day	Global	240	560	1130	1840	2380	2610	2470	1970	1320	700	300	170	1310
NORTH	Global	67	150	280	420	510	550	510	400	270	160	81	47	290
	Diffuse	67	150	280	420	490	520	500	390	270	160	81	47	280
Clear Day	Global	63	120	230	390	650	830	730	450	250	150	73	48	330
EAST	Global	120	270	510	680	690	690	610	510	430	270	140	80	420
	Diffuse	85	190	350	510	560	580	550	440	320	200	99	58	330
Clear Day	Global	300	570	990	1430	1680	1770	1700	1460	1090	690	350	230	1020
SOUTH	Global	330	610	860	890	770	730	660	590	630	520	340	240	600
	Diffuse	160	290	460	580	590	590	560	470	380	270	170	120	390
Clear Day	Global	1250	1720	2020	1920	1660	1520	1550	1740	1900	1780	1340	1060	1620
WEST	Global	120	280	510	710	740	740	650	540	440	270	140	80	440
	Diffuse	85	190	350	520	570	590	560	450	320	200	99	59	330
Clear Day	Global	300	570	990	1430	1680	1770	1700	1460	1090	690	350	230	1020

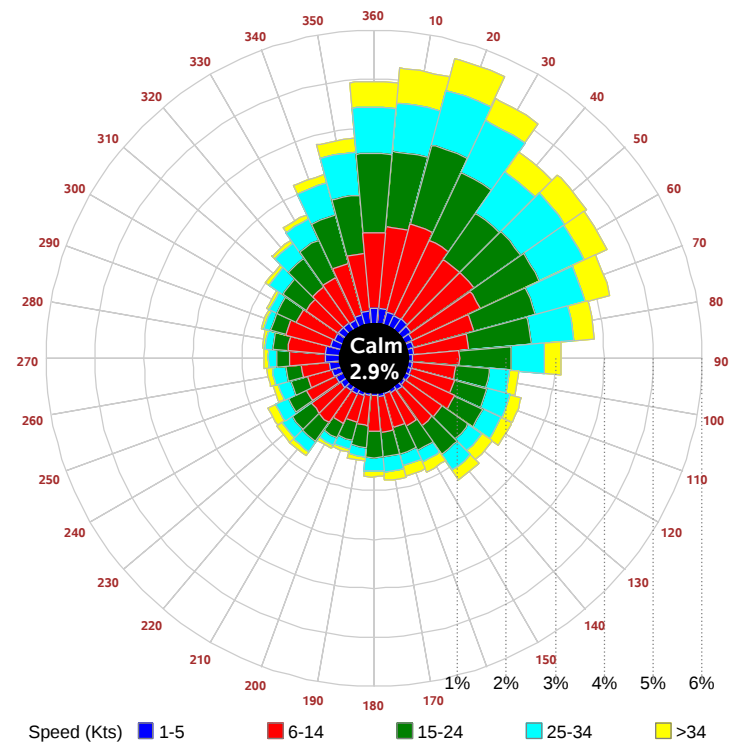
Average Annual Solar Radiation - Nearest Available Site Source: National Renewable Energy Laboratory, Golden CO, 1995

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	96	240	500	780	870	900	790	630	470	260	120	65	480
NORTH	Unshaded	46	100	190	290	350	380	350	280	190	110	56	33	200
	Shaded	46	99	190	280	340	370	340	270	180	110	55	32	190
EAST	Unshaded	79	190	360	480	490	490	430	360	300	190	93	52	290
	Shaded	78	190	350	470	480	480	420	350	300	190	91	52	290
SOUTH	Unshaded	250	460	620	620	530	500	450	410	450	380	260	190	430
	Shaded	250	460	610	620	520	490	440	400	440	380	260	190	420
WEST	Unshaded	80	190	360	510	530	520	460	380	310	190	92	53	310
	Shaded	78	190	360	500	520	510	440	370	300	190	91	52	300

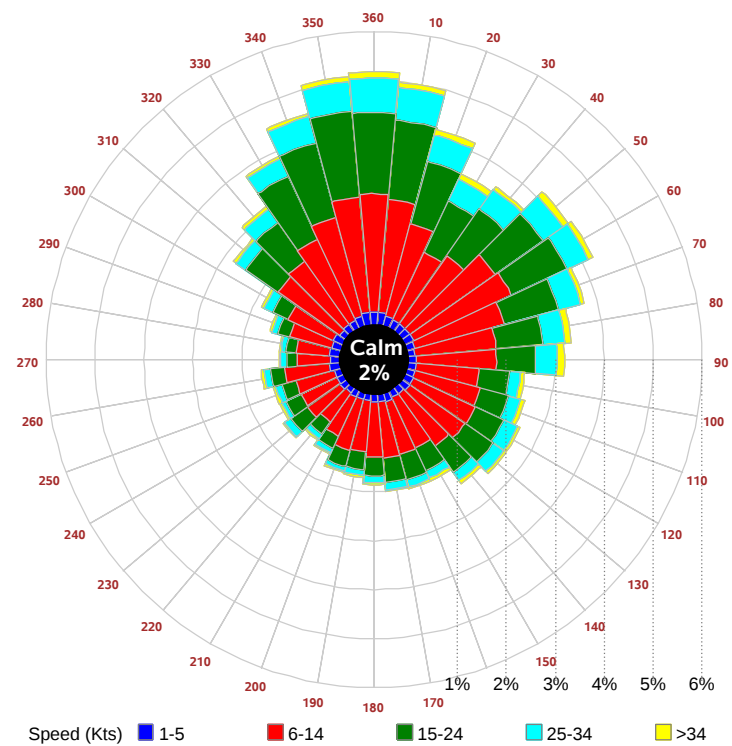
AVERAGE INCIDENT ILLUMINANCE (klux-hr) FOR MOSTLY CLEAR AND MOSTLY CLOUDY CONDITIONS Percentage Uncertainty = 9												
		March					June					
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	
HORIZ.	M.Clear	7	33	49	49	32	29	57	78	84	75	
	M.Cloudy	6	21	33	33	21	14	29	41	43	41	
NORTH	M.Clear	3	9	11	11	9	19	12	14	15	14	
	M.Cloudy	3	9	13	13	9	7	13	17	17	17	
EAST	M.Clear	26	60	33	11	9	67	79	55	15	14	
	M.Cloudy	8	21	19	13	9	11	23	25	17	17	
SOUTH	M.Clear	9	53	82	82	52	8	29	59	70	55	
	M.Cloudy	4	19	33	34	19	6	15	26	28	25	
WEST	M.Clear	3	9	11	33	58	8	12	14	18	60	
	M.Cloudy	3	9	13	20	21	6	13	17	18	26	
M.Clear	(% hrs)	14	16	16	16	17	5	5	5	7	7	

		Sept					Dec					
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm	
HORIZ.	M.Clear	4	27	48	55	46	0	2	12	10	0	
	M.Cloudy	3	16	27	29	26	0	1	8	7	0	
NORTH	M.Clear	2	8	11	12	11	0	1	5	4	0	
	M.Cloudy	1	7	11	12	11	0	1	4	3	0	
EAST	M.Clear	16	57	46	12	11	0	6	13	4	0	
	M.Cloudy	3	17	19	12	11	0	1	5	3	0	
SOUTH	M.Clear	2	34	67	79	62	0	7	45	40	0	
	M.Cloudy	1	12	25	28	23	0	2	12	11	0	
WEST	M.Clear	2	8	11	17	53	0	1	5	15	0	
	M.Cloudy	1	7	11	13	21	0	1	4	6	0	
M.Clear	(% hrs)	7	6	6	7	5	13	11	7	8	10	

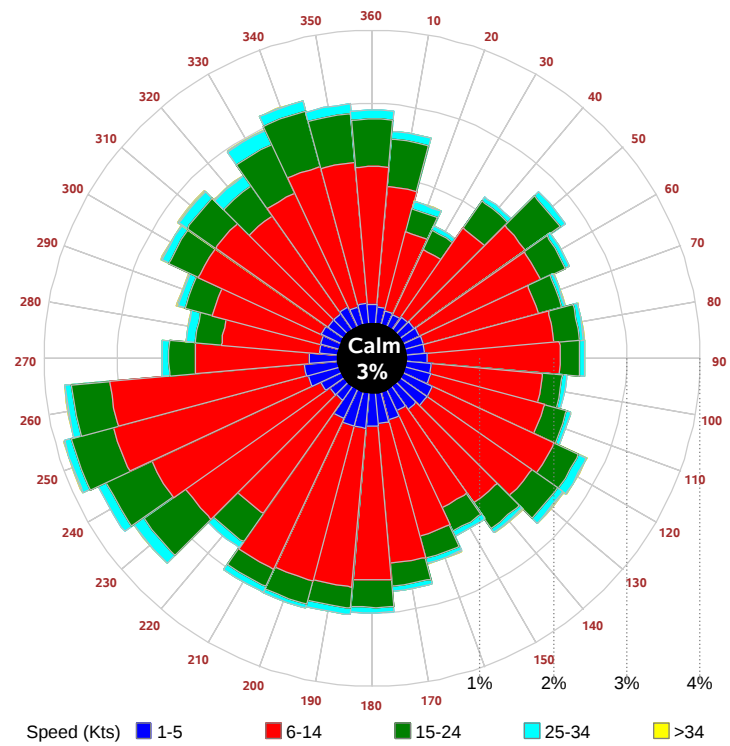
Wind Summary - December, January, and February



Wind Summary - March, April, and May



Wind Summary - June, July, and August



Wind Summary - September, October, and November

