

SPRINGFIELD/CAPITAL IL

Latitude = 39.85 N

WMO No. 724390

Longitude = 89.67 W

Elevation = 614 feet

Period of Record = 1973 to 1996

Average Pressure = 29.34 inches Hg

Design Criteria Data

	Design Value	Mean Coincident (Average) Values			
		Wet Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Dry Bulb Temperature (T)	(°F)				
Median of Extreme Highs	97	78	119	12.0	WSW
0.4% Occurrence	94	77	117	11.4	SW
1.0% Occurrence	91	76	114	11.2	S
2.0% Occurrence	88	74	108	10.9	S
Mean Daily Range	18	-	-	-	-
97.5% Occurrence	10	9	6	10.5	W
99.0% Occurrence	2	1	4	10.1	W
99.6% Occurrence	-4	-5	3	9.9	W
Median of Extreme Lows	-12	-12	2	11.1	W
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Humidity Ratio (gr/lb)	Wind Speed (mph)	Prevailing Direction (NSEW)
Wet Bulb Temperature (T_{wb})	(°F)				
Median of Extreme Highs	81	91	144	10.0	SW
0.4% Occurrence	80	90	140	10.3	SW
1.0% Occurrence	78	88	130	10.6	S
2.0% Occurrence	76	85	123	10.0	S
	Design Value	Mean Coincident (Average) Values			
		Dry Bulb Temperature (°F)	Vapor Pressure (in. Hg)	Wind Speed (mph)	Prevailing Direction (NSEW)
Humidity Ratio (HR)	(gr/lb)				
Median of Extreme Highs	153	88	1.00	8.8	SW
0.4% Occurrence	144	87	0.94	9.4	S
1.0% Occurrence	134	84	0.88	9.7	S
2.0% Occurrence	130	83	0.85	9.3	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		51	865	629	1640

Other Site Data

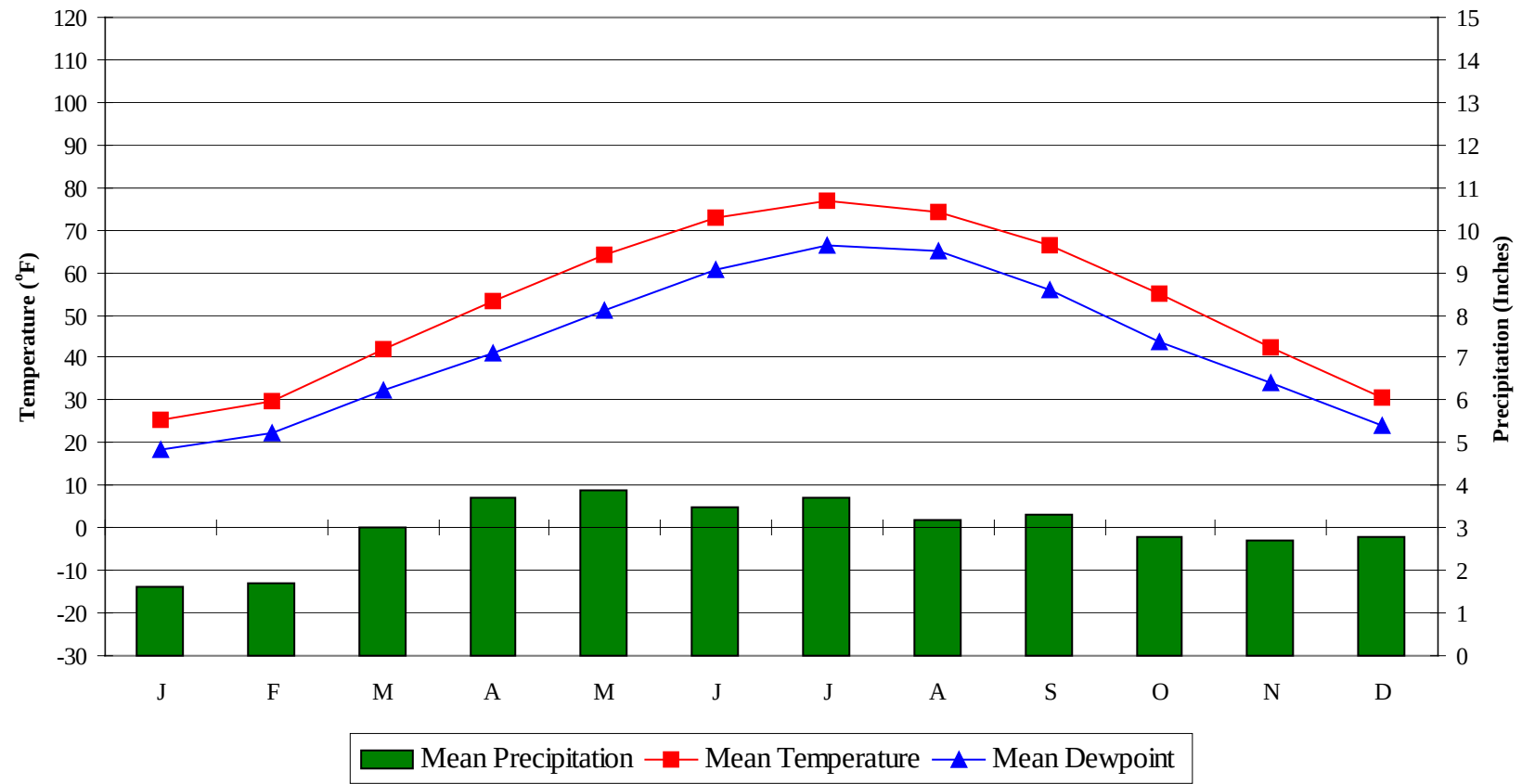
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
6	3.3	90	2.6 + 0.9
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
55.3	N/A	21	51

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

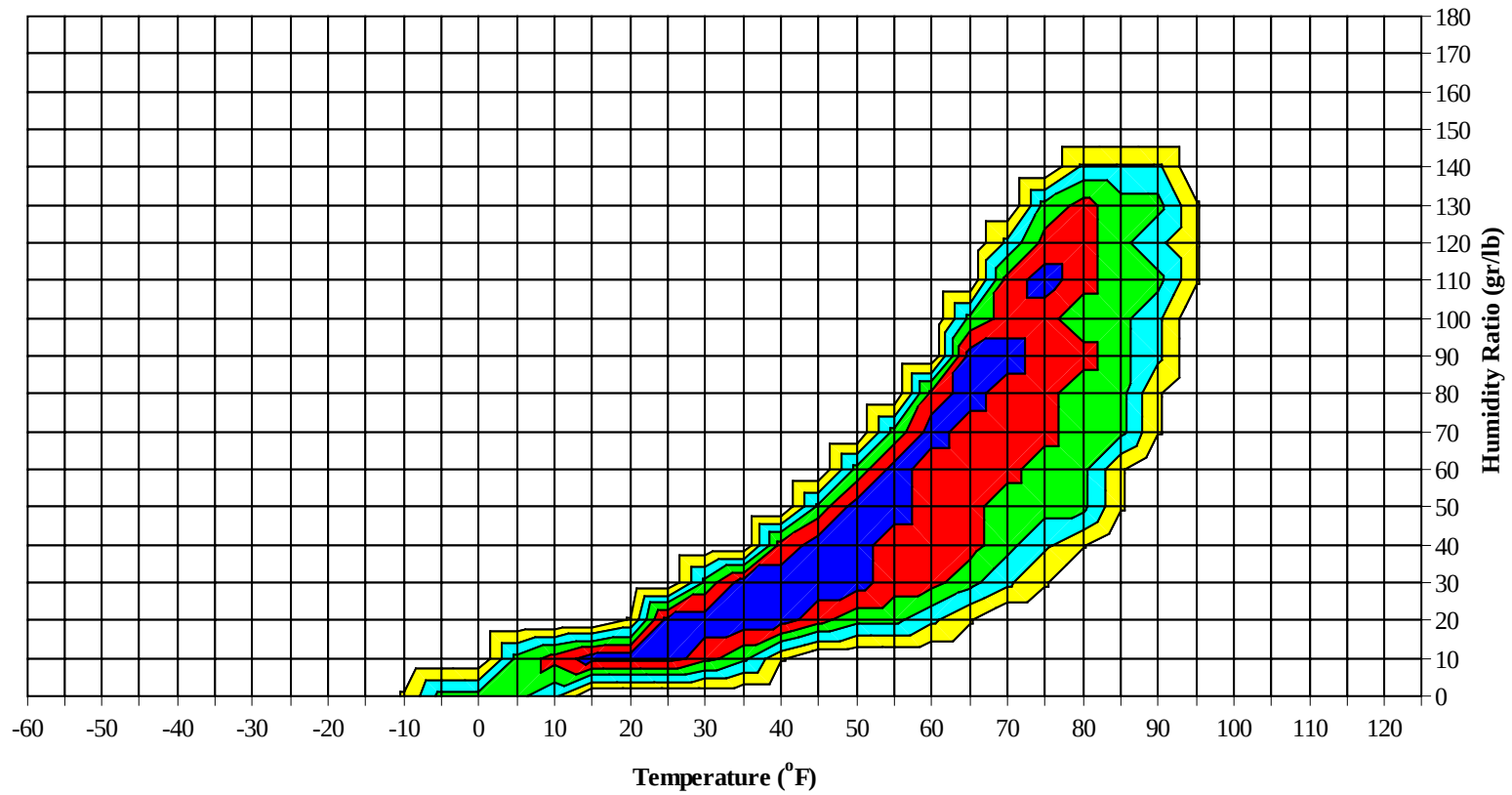
SPRINGFIELD/CAPITAL IL

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Average Annual Climate

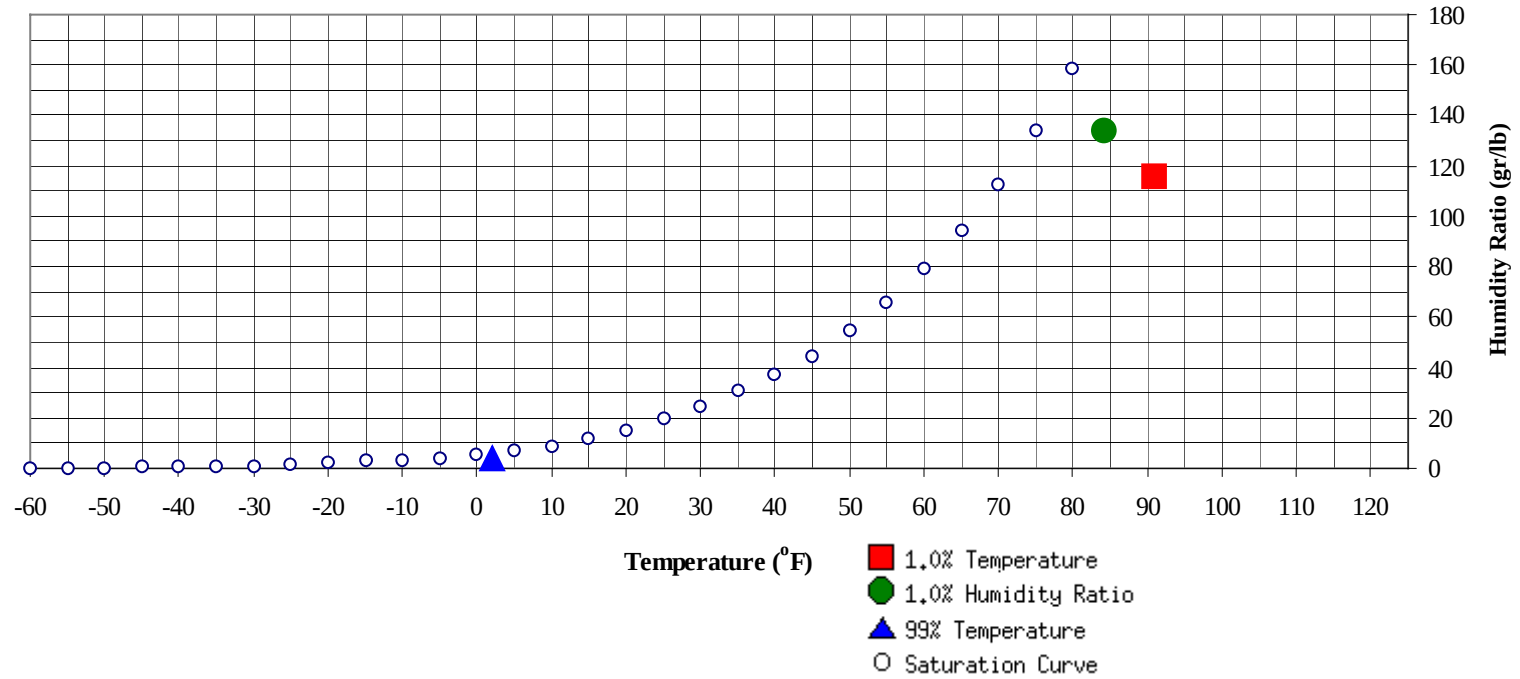


Long Term Psychrometric Summary



- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

Psychrometric Summary of Peak Design Values



	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
99% Dry Bulb	2	4.2	1.1		134.4	84.2	77.4	75	41.3

	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
1.0% Dry Bulb	91	115.5	76.2	40.0

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Dry-Bulb Temperature Hours For An Average Year (Sheet 1 of 5)

Period of Record = 1973 to 1996

Temperature Range (°F)	January					February					March				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
100 / 104															
95 / 99															
90 / 94															
85 / 89												0		0	63.6
80 / 84												1	0	1	62.4
75 / 79												4	1	5	60.9
70 / 74							1		1	57.3		0	9	4	13
65 / 69		0		0	56.3		2	0	2	56.4		1	11	8	21
60 / 64		1	0	1	55.9	0	5	1	6	52.7	8	17	16	41	54.6
55 / 59	1	3	1	6	51.7	2	8	5	14	50.6	9	20	16	45	50.2
50 / 54	2	6	4	11	47.3	3	12	8	22	46.5	15	30	26	71	46.2
45 / 49	3	10	7	20	42.8	7	17	14	38	42.5	23	32	34	89	42.5
40 / 44	8	21	14	43	38.5	14	25	23	62	38.4	40	41	40	120	38.4
35 / 39	27	36	34	98	34.2	34	37	35	106	34.4	42	32	36	110	34.0
30 / 34	45	46	49	141	30.0	45	35	44	123	30.1	46	26	34	105	29.8
25 / 29	41	33	40	114	25.2	33	25	29	86	25.0	29	15	21	65	25.0
20 / 24	30	30	26	85	20.2	27	20	22	70	20.2	18	7	9	34	20.4
15 / 19	25	21	23	70	15.7	15	15	14	44	15.4	10	2	3	15	15.6
10 / 14	22	17	20	59	10.7	14	10	12	36	10.6	4	1	1	6	10.8
5 / 9	17	11	15	42	6.0	13	7	9	28	5.9	1	0	1	1	6.1
0 / 4	13	6	9	28	1.2	9	3	6	18	1.4	1	0	0	1	1.9
-5 / -1	7	2	3	12	-3.1	4	1	2	7	-2.9	1		0	1	-2.4
-10 / -6	4	2	2	9	-7.5	3	1	1	5	-6.8					
-15 / -11	2	1	1	4	-12.1	1	0	0	2	-11.9					
-20 / -16	1	0	1	2	-16.9	1	0	0	1	-17.2					
-25 / -21	0			0	-20.1										

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.

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Dry-Bulb Temperature Hours For An Average Year (Sheet 2 of 5)
Period of Record = 1973 to 1996

Temperature Range (°F)	April					May					June				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
100 / 104												0		0	76.3
95 / 99												3	1	3	75.5
90 / 94							2	0	2	72.5		19	5	24	74.2
85 / 89		2	0	2	65.1		15	4	19	70.3	0	45	17	62	72.2
80 / 84		9	3	12	65.5	0	28	12	40	67.6	5	60	37	102	69.7
75 / 79		15	6	21	63.3	4	40	26	70	64.8	26	53	52	131	67.7
70 / 74	2	22	15	39	60.5	16	48	37	100	62.3	59	33	54	146	65.9
65 / 69	12	29	22	63	57.8	38	44	47	129	59.7	60	16	40	116	62.5
60 / 64	24	34	33	90	54.5	50	33	47	130	56.4	47	8	24	79	58.3
55 / 59	26	36	35	97	50.3	45	21	36	102	52.2	28	2	10	40	54.1
50 / 54	32	35	40	107	46.4	44	10	24	78	48.4	13	0	2	15	49.9
45 / 49	45	27	35	106	42.9	28	4	12	45	44.0	2		0	2	46.3
40 / 44	43	19	28	91	38.6	16	1	4	22	39.4	0			0	42.0
35 / 39	31	8	13	52	34.3	5	0	0	6	34.7					
30 / 34	17	3	7	27	29.9	1			1	31.1					
25 / 29	8	0	2	10	25.2										
20 / 24	2	0	0	2	21.0										
15 / 19	0			0	18.0										
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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WMO No. 724390

Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)
Period of Record = 1973 to 1996

Temperature Range (°F)	July					August					September				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
100 / 104		1	0	1	79.9		1	0	1	77.8		0	0	0	75.3
95 / 99		9	2	11	78.6		5	1	6	78.5		1	0	1	76.2
90 / 94		34	10	44	77.0		23	6	29	77.7		6	1	7	74.7
85 / 89	2	62	27	90	74.6	0	44	17	61	74.9		23	5	28	72.1
80 / 84	14	71	53	138	72.2	7	67	39	113	72.2	1	40	16	56	69.1
75 / 79	50	44	59	153	70.4	36	59	54	150	70.2	9	45	30	84	67.4
70 / 74	81	20	58	159	68.2	72	33	65	170	67.9	34	45	43	123	65.2
65 / 69	54	6	27	87	64.1	56	11	37	103	64.0	39	35	43	117	61.4
60 / 64	34	1	10	45	59.8	46	3	23	71	60.0	43	23	42	108	57.5
55 / 59	12	0	1	14	55.5	24	0	6	31	55.7	43	13	29	85	53.4
50 / 54	2		0	2	51.3	7		0	7	51.3	37	5	21	63	49.4
45 / 49	0			0	48.3	1		0	1	45.3	20	1	8	29	45.0
40 / 44											10		3	12	40.6
35 / 39											4		1	5	36.4
30 / 34											1		0	1	32.8
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)
Period of Record = 1973 to 1996

Temperature Range (°F)	October					November					December				
	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00			01 To 08	09 To 16	17 To 00		
100 / 104															
95 / 99															
90 / 94															
85 / 89		3	0	3	67.4										
80 / 84		9	1	11	65.5		0		0	63.5					
75 / 79		17	4	22	63.2		1		1	61.6					
70 / 74	3	31	14	48	61.3		6	1	7	61.4		0		0	64.3
65 / 69	14	40	29	83	59.2	1	13	6	19	59.4	0	1	0	2	62.5
60 / 64	25	42	36	103	55.2	10	19	17	47	57.2	1	4	2	7	57.6
55 / 59	35	39	42	115	50.9	18	22	18	58	52.0	3	7	3	14	52.8
50 / 54	43	32	43	118	46.9	18	31	26	75	46.8	5	11	8	24	48.2
45 / 49	42	21	36	98	43.1	23	32	28	83	42.8	8	17	8	33	42.9
40 / 44	40	8	25	73	39.3	34	38	39	111	38.7	15	30	25	70	38.8
35 / 39	26	3	14	44	34.9	41	38	41	121	34.1	37	47	47	131	34.6
30 / 34	17	0	4	21	30.8	46	23	37	106	29.8	57	52	59	168	30.2
25 / 29	4		1	5	26.2	26	11	17	54	25.3	41	27	33	101	25.2
20 / 24	1			1	22.8	13	4	7	24	20.6	26	17	21	64	20.4
15 / 19						7	1	2	10	16.0	19	12	15	45	15.7
10 / 14						2	0	1	3	11.1	12	9	11	32	10.9
5 / 9						1	0	0	2	7.0	10	6	6	22	6.2
0 / 4						0			0	2.3	6	3	4	13	1.4
-5 / -1											3	2	2	7	-3.2
-10 / -6											3	1	1	5	-7.1
-15 / -11											2	1	1	4	-12.1
-20 / -16											1	0	0	1	-16.0
-25 / -21											0			0	-20.3

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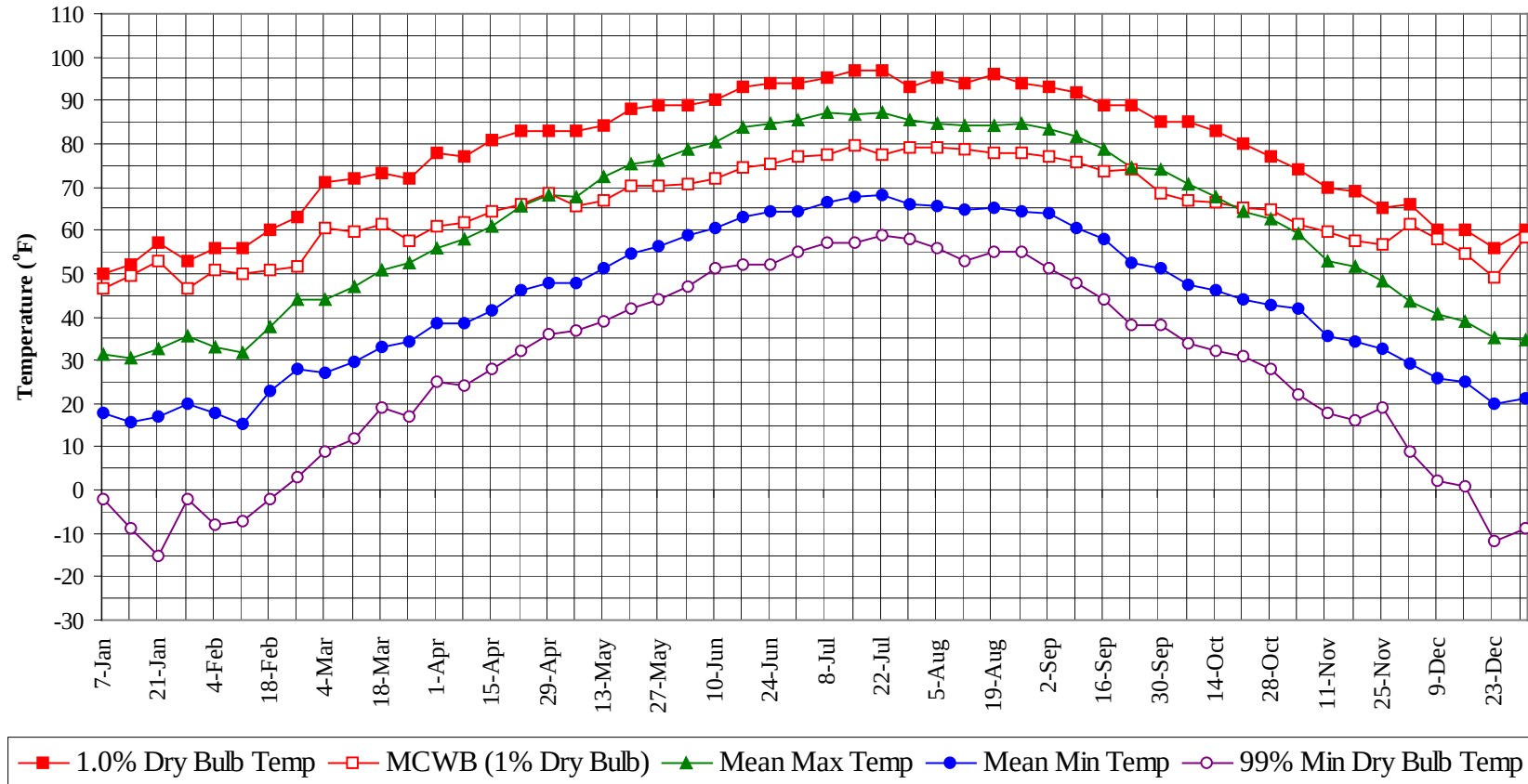
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Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)
Period of Record = 1973 to 1996

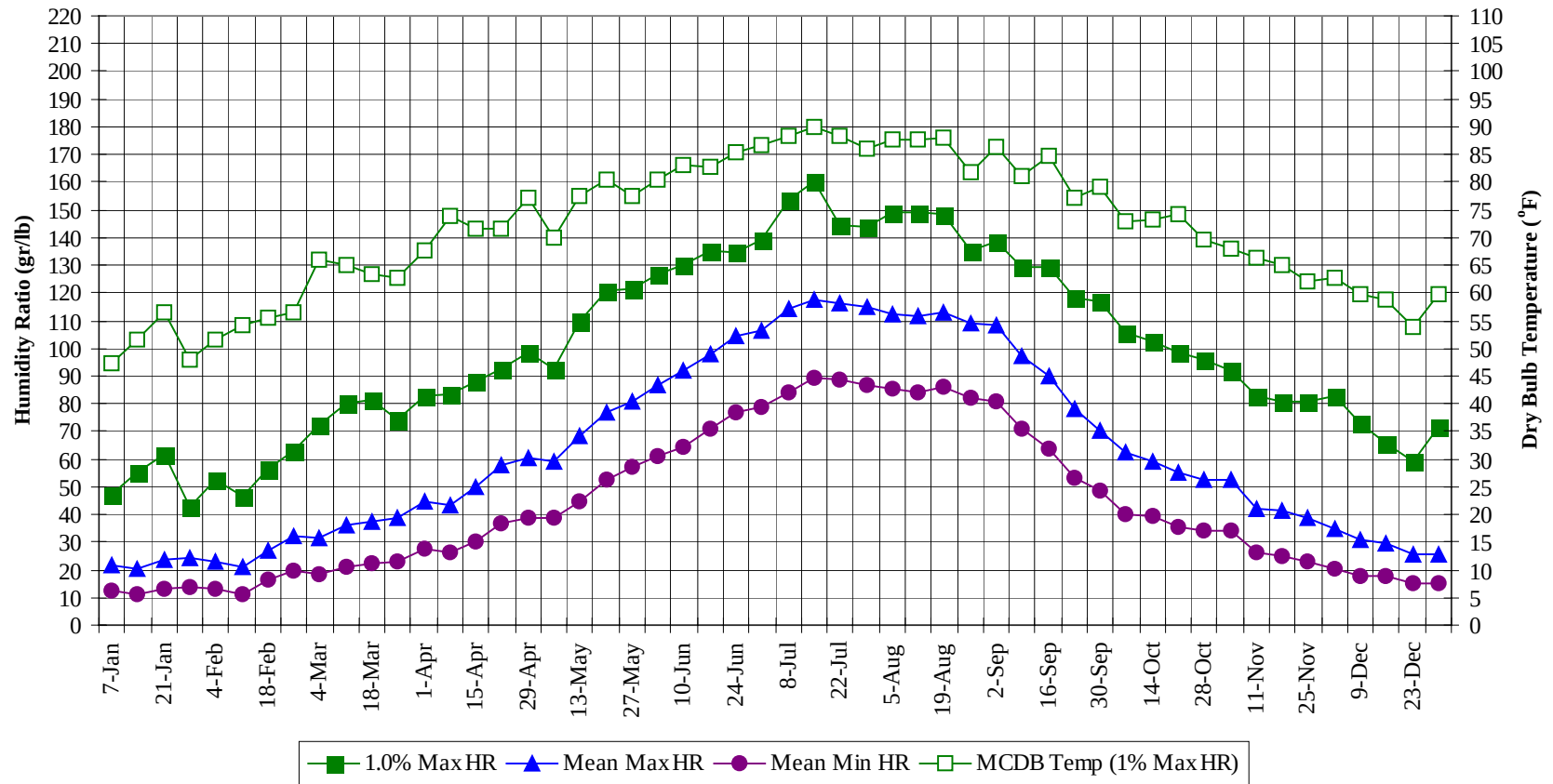
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
100 / 104		2	0	2	78.6
95 / 99		18	4	22	78.0
90 / 94		83	23	106	76.3
85 / 89	2	194	69	265	73.4
80 / 84	27	284	160	472	70.6
75 / 79	125	277	231	634	68.2
70 / 74	266	246	289	801	65.5
65 / 69	273	206	258	736	61.2
60 / 64	287	188	250	726	56.8
55 / 59	247	171	200	618	52.0
50 / 54	219	172	201	592	47.4
45 / 49	202	160	182	544	43.0
40 / 44	219	185	202	606	38.7
35 / 39	251	202	224	677	34.3
30 / 34	275	186	237	698	30.0
25 / 29	183	112	143	438	25.1
20 / 24	117	79	86	282	20.3
15 / 19	76	52	57	185	15.6
10 / 14	54	38	46	138	10.7
5 / 9	42	24	31	96	6.1
0 / 4	29	12	19	61	1.3
-5 / -1	15	5	6	27	-3.0
-10 / -6	11	4	5	19	-7.2
-15 / -11	5	2	3	10	-12.0
-20 / -16	3	0	1	4	-16.8
-25 / -21	0			0	-20.2

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary



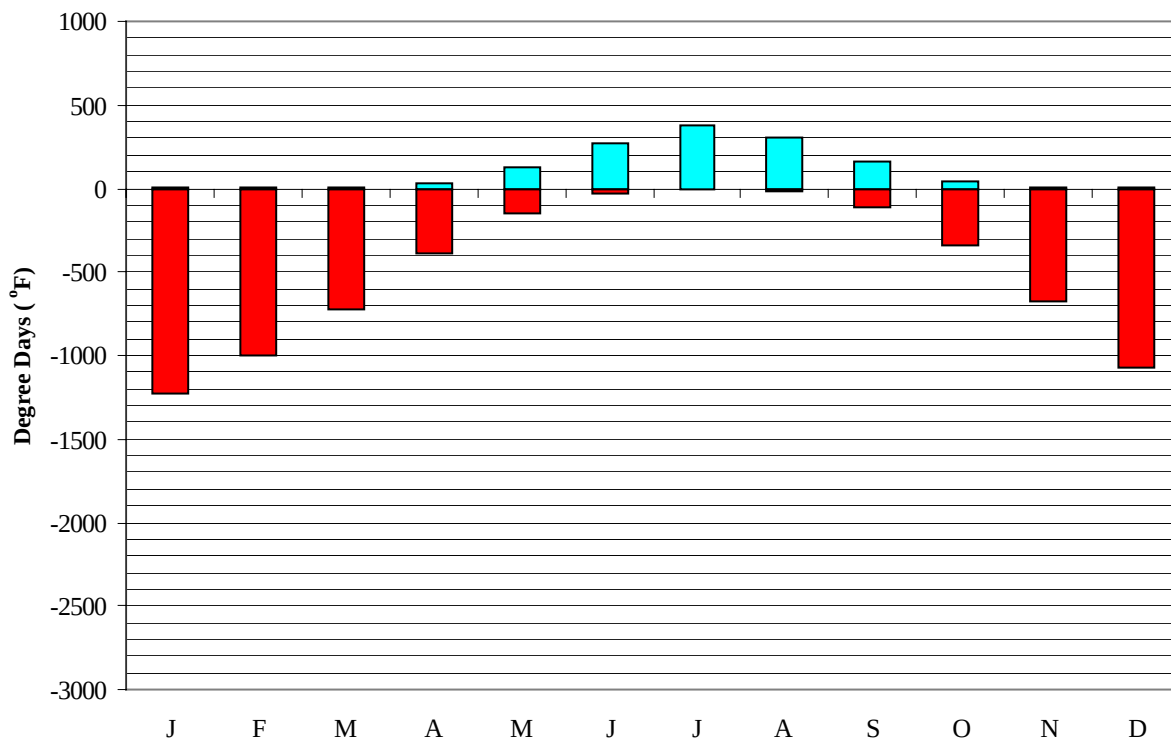
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Long Term Dry Bulb Temperature and Humidity Summary

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	50.0	46.6	31.3	17.9	-2.0	47.6	47.4	21.4	12.6
14-Jan	52.0	49.4	30.3	15.7	-9.0	55.3	51.6	20.6	11.3
21-Jan	57.0	52.9	32.6	17.2	-15.0	61.6	56.5	23.5	13.4
28-Jan	53.0	46.8	35.6	20.0	-2.0	42.7	48.1	24.1	13.5
4-Feb	56.0	50.8	33.2	18.0	-8.0	52.5	51.6	22.9	13.4
11-Feb	56.0	49.9	32.0	15.4	-7.0	46.9	54.3	21.1	11.5
18-Feb	60.0	50.6	37.7	22.8	-2.0	56.7	55.4	27.1	16.1
25-Feb	63.0	51.5	44.2	28.0	3.0	63.0	56.6	32.2	19.5
4-Mar	71.0	60.5	44.0	27.1	9.0	72.1	65.9	31.6	18.2
11-Mar	72.0	59.7	47.0	29.6	12.0	79.8	65.1	35.9	21.1
18-Mar	73.0	61.3	50.7	33.1	19.0	81.2	63.2	37.2	22.5
25-Mar	72.0	57.7	52.3	34.5	17.0	74.2	62.9	38.5	22.8
1-Apr	78.0	60.9	56.0	38.6	25.0	82.6	67.6	44.6	27.6
8-Apr	77.0	61.9	58.1	38.4	24.0	83.3	73.8	43.5	26.4
15-Apr	81.0	64.5	61.1	41.4	28.0	88.2	71.6	50.2	30.2
22-Apr	83.0	66.0	65.4	46.2	32.0	92.4	71.5	57.8	37.1
29-Apr	83.0	68.5	68.2	47.8	36.0	98.7	77.3	60.3	38.8
6-May	83.0	65.4	67.7	48.0	37.0	92.4	70.0	59.2	38.9
13-May	84.0	67.0	72.4	51.3	39.0	109.9	77.7	68.2	44.8
20-May	88.0	70.4	75.3	54.6	42.0	121.1	80.5	76.7	52.5
27-May	89.0	70.1	76.3	56.4	44.0	121.8	77.6	80.8	57.4
3-Jun	89.0	70.6	78.6	59.0	47.0	126.7	80.3	86.9	61.1
10-Jun	90.0	72.1	80.6	60.7	51.0	130.2	83.0	91.9	64.6
17-Jun	93.0	74.6	83.7	63.3	52.0	135.1	82.9	97.8	71.0
24-Jun	94.0	75.1	84.5	64.4	52.0	134.4	85.5	104.3	76.9
1-Jul	94.0	77.1	85.3	64.5	55.0	139.3	86.7	106.1	78.8
8-Jul	95.0	77.5	87.0	66.3	57.0	154.0	88.4	114.3	84.0
15-Jul	97.0	79.4	86.9	67.9	57.0	160.3	89.9	117.9	89.5
22-Jul	97.0	77.4	87.0	68.0	59.0	144.2	88.2	116.3	88.8
29-Jul	93.0	79.0	85.3	66.0	58.0	143.5	86.1	115.0	86.6
5-Aug	95.0	79.2	84.4	65.4	56.0	149.1	87.7	112.3	85.3
12-Aug	94.0	78.9	84.1	64.6	53.0	149.1	87.7	111.8	83.8
19-Aug	96.0	78.0	84.2	65.3	55.0	148.4	88.0	112.7	86.1
26-Aug	94.0	78.0	84.6	64.4	55.0	135.1	81.9	109.2	82.4
2-Sep	93.0	77.0	83.4	63.8	51.0	138.6	86.4	108.1	80.6
9-Sep	92.0	75.5	81.6	60.3	48.0	129.5	81.2	97.0	70.7
16-Sep	89.0	73.5	78.9	58.0	44.0	129.5	84.7	89.7	64.0
23-Sep	89.0	73.9	74.4	52.6	38.0	118.3	77.2	77.9	53.2
30-Sep	85.0	68.7	73.9	51.1	38.0	116.9	79.3	70.2	48.4
7-Oct	85.0	66.7	70.5	47.4	34.0	105.7	72.9	62.2	40.4
14-Oct	83.0	66.4	67.9	46.0	32.0	102.2	73.1	59.0	39.2
21-Oct	80.0	65.0	64.2	44.2	31.0	98.7	74.2	55.2	35.7
28-Oct	77.0	64.8	62.8	42.6	28.0	95.9	69.7	52.8	34.4
4-Nov	74.0	61.2	59.3	41.7	22.0	91.7	68.1	52.4	34.0
11-Nov	70.0	59.9	52.8	35.7	18.0	82.6	66.3	42.1	26.3
18-Nov	69.0	57.5	51.5	34.5	16.0	80.5	64.9	41.2	24.8
25-Nov	65.0	56.8	48.4	32.7	19.0	80.5	62.1	39.1	23.1
2-Dec	66.0	61.6	43.6	29.4	9.0	82.6	62.8	35.1	20.5
9-Dec	60.0	58.1	40.7	25.7	2.0	72.8	59.7	31.1	17.9
16-Dec	60.0	54.7	39.2	24.9	1.0	65.8	58.7	29.5	17.4
23-Dec	56.0	49.0	35.0	20.0	-12.0	58.8	53.9	25.5	14.9
31-Dec	60.0	58.5	34.7	21.0	-9.0	71.4	59.7	25.9	15.4

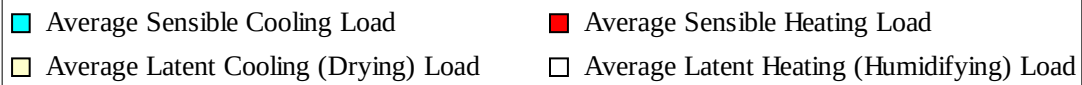
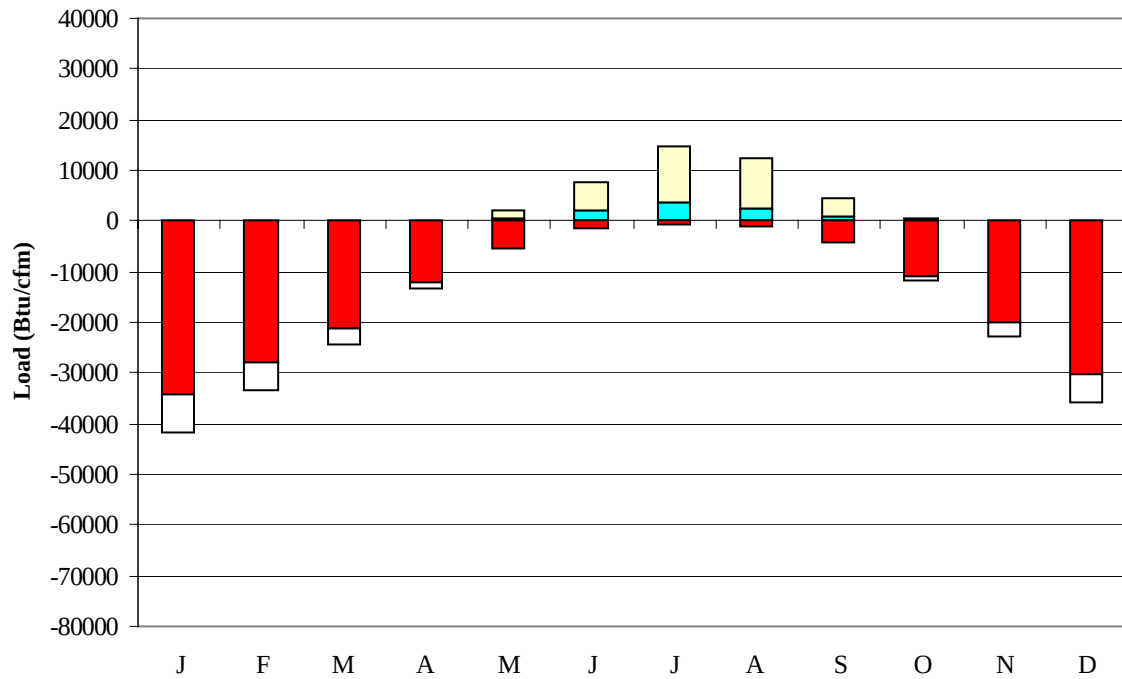
Degree Days, Heating and Cooling
(Base 65°F)



■ Mean Cooling Degree Days ■ Mean Heating Degree Days

	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1231
FEB	0	996
MAR	8	726
APR	35	384
MAY	120	151
JUN	274	31
JUL	374	10
AUG	311	21
SEP	160	114
OCT	39	347
NOV	4	682
DEC	0	1070
ANN	1327	5763

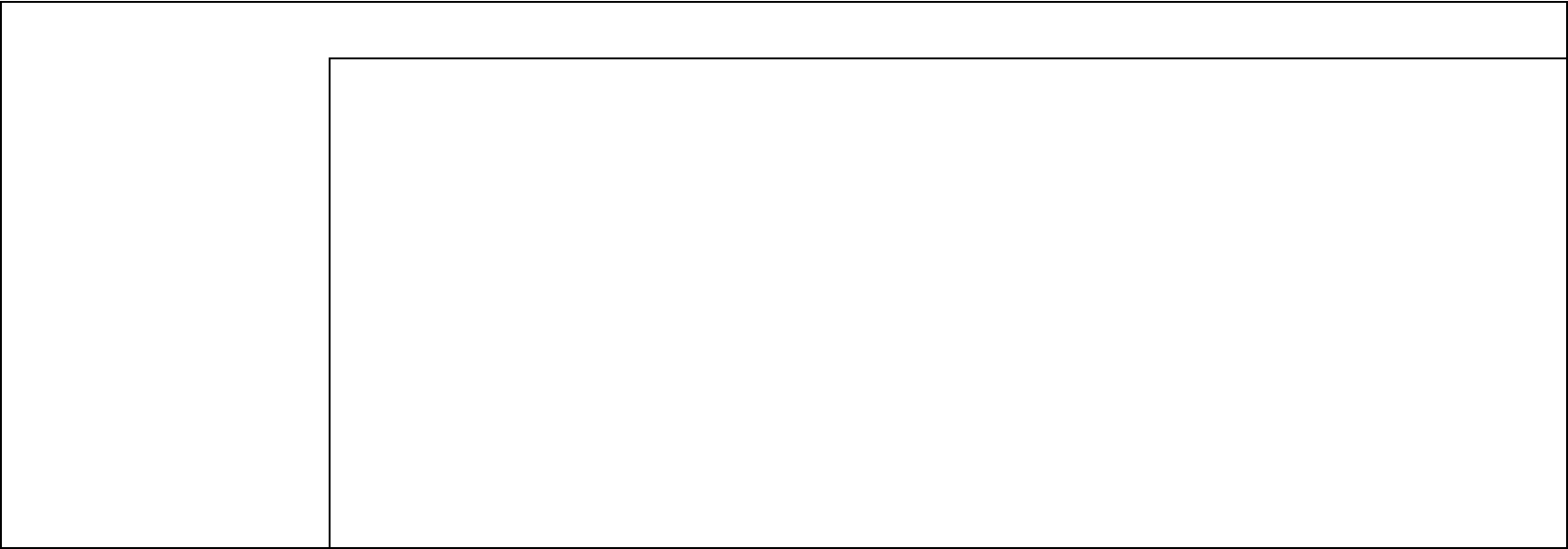
Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	Average Sensible Cooling Load (Btu/cfm)	Average Sensible Heating Load (Btu/cfm)	Average Latent Cooling Load (Btu/cfm)	Average Latent Heating Load (Btu/cfm)
JAN	0	-34323	0	-7258
FEB	0	-28000	1	-5544
MAR	18	-21130	19	-3353
APR	144	-11959	172	-1174
MAY	701	-5317	1560	-198
JUN	2260	-1393	5446	-2
JUL	3537	-553	11111	0
AUG	2587	-1012	9613	0
SEP	1069	-4088	3409	-54
OCT	143	-10992	393	-747
NOV	2	-19945	34	-2792
DEC	0	-30151	4	-5565
ANN	10461	-168863	31762	-26687

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

No Solar Radiation
Data Available

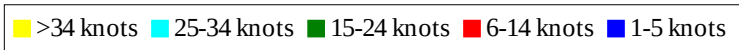
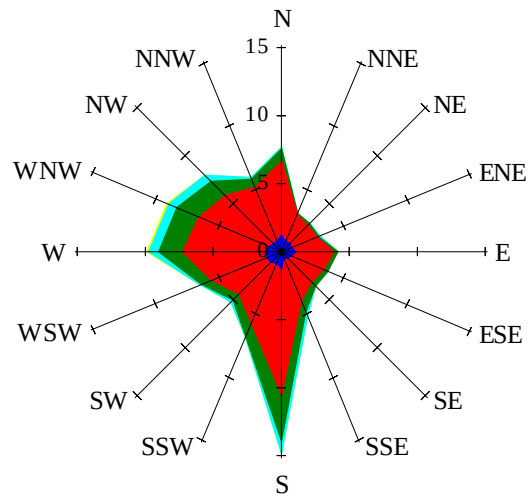


Average Annual Solar Heat and Illumination – Nearest Available Site

(Source: National Renewable Energy Laboratory, Golden CO, 1995)

Wind Summary - December, January, and February

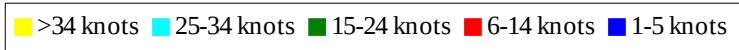
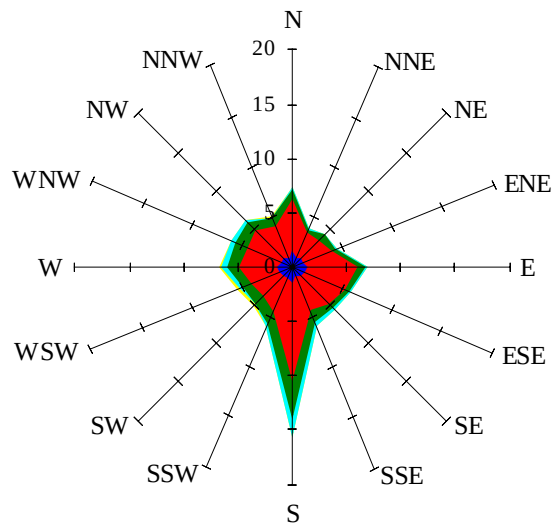
Labels of Percent Frequency on North Axis



Percent Calm = 1.88

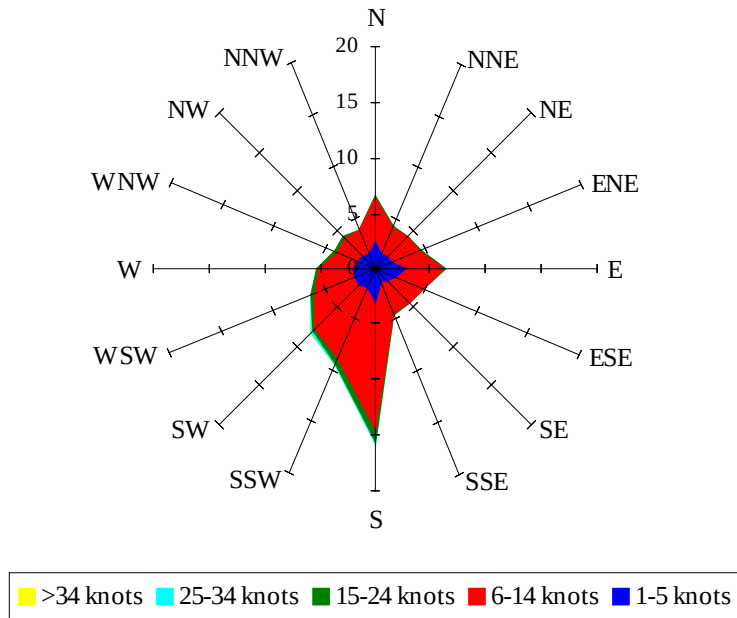
Wind Summary - March, April, and May

Labels of Percent Frequency on North Axis



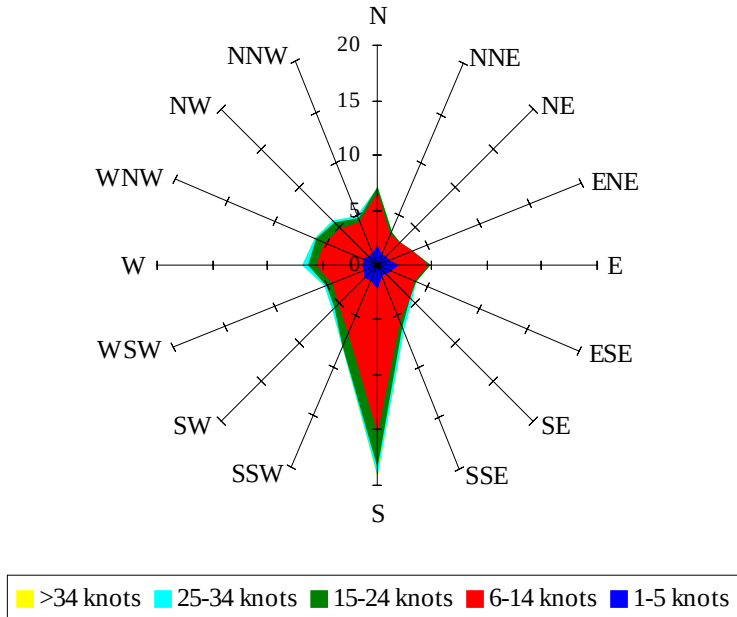
Percent Calm = 2.33

Wind Summary - June, July, and August **Labels of Percent Frequency on North Axis**



Percent Calm = 4.58

Wind Summary - September, October, and November **Labels of Percent Frequency on North Axis**



Percent Calm = 3.91