

NORTH BAY CN

Latitude = 46.35 N

Longitude = 79.43 W

Period of Record = 1977 to 1996

WMO No. 717310

Elevation = 1217 feet

Average Pressure = 28.64 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	86	71	94	9.9	WSW
0.4% Occurrence	81	67	83	9.5	WSW
1.0% Occurrence	79	66	82	9.4	WSW
2.0% Occurrence	75	65	78	8.7	WSW
Mean Daily Range	16	-	-	-	-
97.5% Occurrence	-8	-9	2	6.5	N
99.0% Occurrence	-13	-14	2	5.7	N
99.6% Occurrence	-18	-18	1	5.5	N
Median of Extreme Lows	-27	-27	1	4.7	NNW
	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	74	82	116	9.8	WSW
0.4% Occurrence	71	78	106	9.3	WSW
1.0% Occurrence	69	75	100	8.4	WSW
2.0% Occurrence	67	72	93	7.6	SW
	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	122	80	0.78	9.3	SW
0.4% Occurrence	108	74	0.69	8.5	WSW
1.0% Occurrence	102	73	0.65	7.5	SW
2.0% Occurrence	95	70	0.61	7.1	WSW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		0	58	11	212

Other Site Data

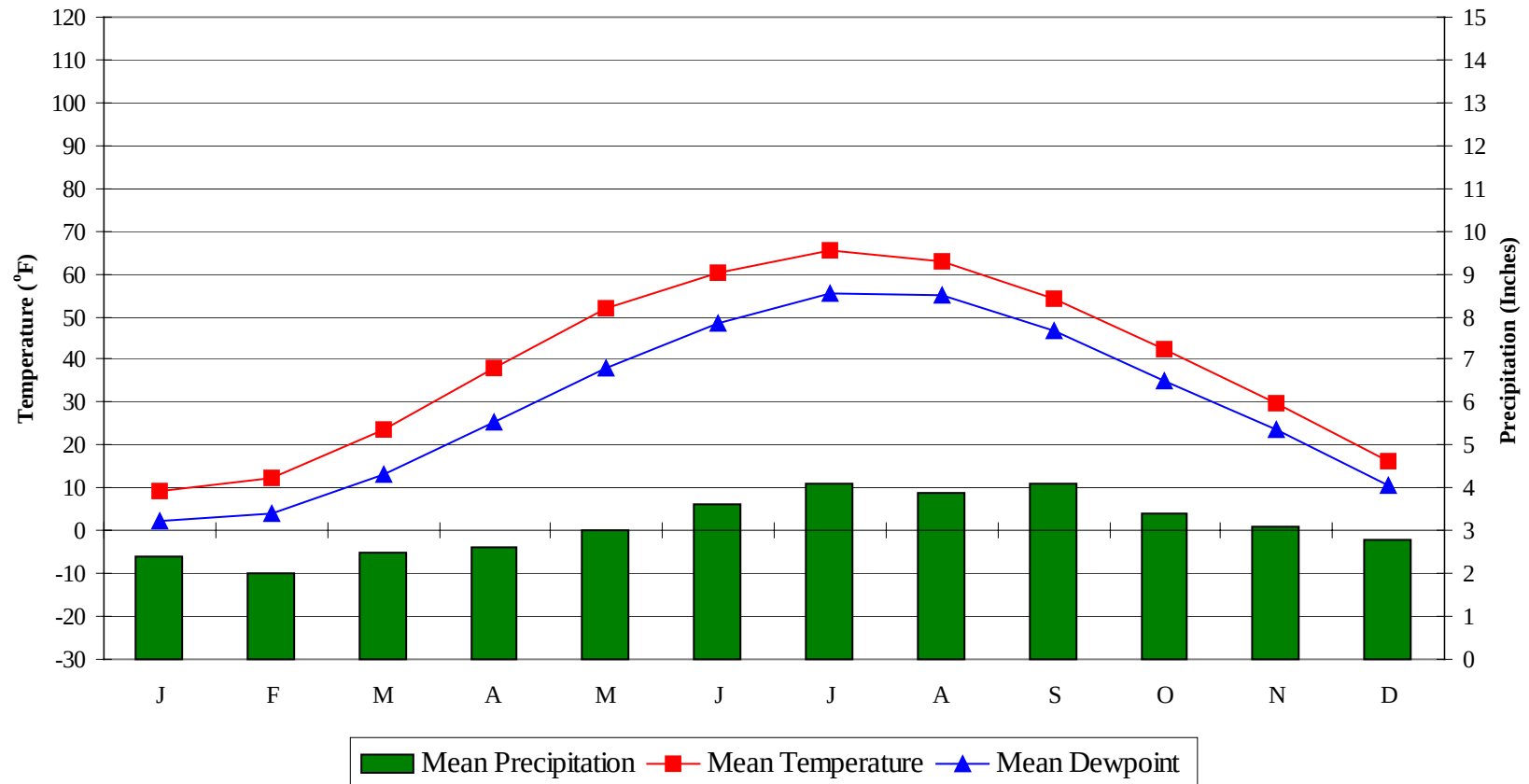
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
4	N/A	N/A	0.3 + 0.1
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
41.6	N/A	N/A	50

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

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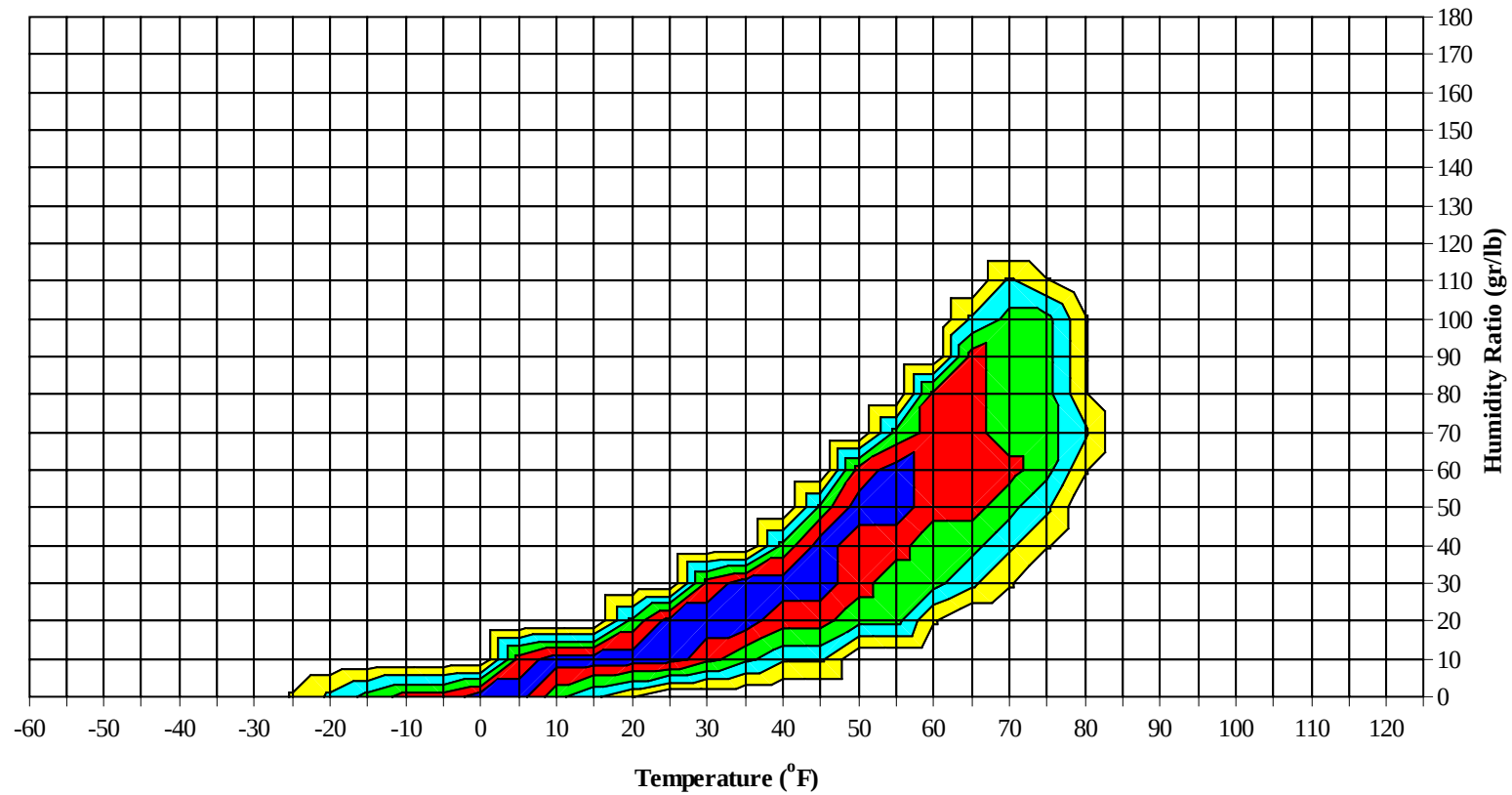
Average Annual Climate



NORTH BAY CN

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Long Term Psychrometric Summary

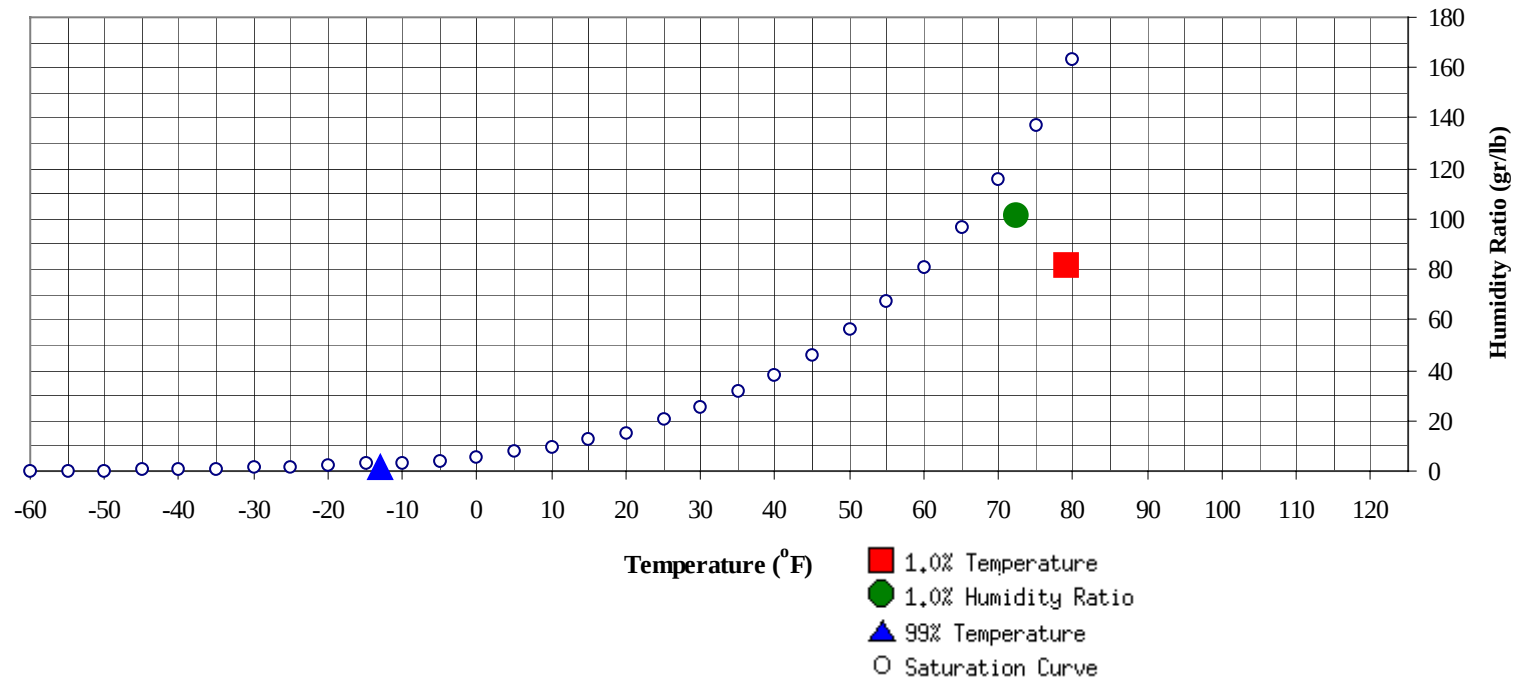


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

NORTH BAY CN

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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	-13	1.6	-2.9		101.5	72.5	68.2	66.2	33.3

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	79	81.3	66.3	31.7

NORTH BAY CN

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

Period of Record = 1977 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		
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74															
65 / 69												0		0	58.0
60 / 64												1	0	1	49.7
55 / 59											0	2	2	4	47.6
50 / 54	0		0	0	49.3		0		0	42.4	1	5	3	9	44.7
45 / 49	1	1	0	2	44.3	0	2	1	3	42.2	4	11	9	24	40.5
40 / 44	1	1	1	3	40.9	2	2	2	6	39.3	6	14	11	31	36.7
35 / 39	4	4	4	12	35.6	6	11	10	27	34.5	15	34	30	79	33.1
30 / 34	14	22	22	58	30.3	14	19	18	51	30.0	36	46	50	133	29.0
25 / 29	24	25	24	73	25.4	18	18	20	56	24.8	40	37	40	118	23.9
20 / 24	16	17	17	50	20.9	11	19	18	48	20.0	23	20	21	64	19.4
15 / 19	20	27	26	73	16.3	21	36	32	89	15.7	30	26	28	84	15.5
10 / 14	31	34	33	98	10.9	32	35	36	103	10.5	28	19	21	68	10.4
5 / 9	28	32	34	94	5.7	30	28	31	89	5.6	25	17	17	59	5.2
0 / 4	30	29	30	89	0.5	29	21	24	74	0.4	16	9	10	35	0.4
-5 / -1	18	15	18	51	-3.9	17	12	12	41	-3.9	10	4	3	17	-4.0
-10 / -6	25	18	17	60	-8.1	21	13	12	46	-8.3	8	2	2	12	-8.2
-15 / -11	14	10	11	35	-12.7	11	4	3	18	-12.7	3	0	0	3	-12.6
-20 / -16	14	7	6	27	-16.7	9	2	3	14	-16.6	1	0	0	1	-16.8
-25 / -21	6	3	4	13	-22.1	3	1	0	4	-21.9	0			0	-20.0
-30 / -26	2	1	2	5	-27.1	0	0		0	-26.6					
-35 / -31	1	0	0	1	-31.5										
-40 / -36	0	0	0	0	-35.0										

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 = 1977 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		
90 / 94												0	0	0	73.8
85 / 89							0		0	68.0		1	0	1	71.5
80 / 84		1	0	1	62.0		3	1	4	64.9		9	4	13	66.7
75 / 79		2	1	3	60.9		9	5	14	62.0	0	22	11	33	63.8
70 / 74		2	2	4	58.3	0	21	13	34	58.5	6	43	30	78	61.1
65 / 69	0	4	2	6	54.8	2	21	16	39	56.5	15	37	35	87	58.8
60 / 64	2	7	6	15	51.6	17	39	32	88	53.4	44	57	55	155	56.2
55 / 59	4	17	12	33	47.7	32	48	44	124	49.5	63	43	55	160	52.3
50 / 54	9	26	20	55	43.4	47	43	48	138	46.0	58	18	31	107	48.2
45 / 49	19	33	33	86	39.9	50	32	44	126	41.4	33	6	14	53	43.4
40 / 44	23	27	26	77	37.1	35	17	22	74	37.9	12	3	3	18	39.4
35 / 39	43	48	46	138	33.4	37	11	16	64	34.3	8	1	3	12	35.5
30 / 34	55	40	51	147	29.2	21	4	6	31	29.6	2	0	0	2	31.1
25 / 29	45	20	27	93	24.1	5	0	1	6	24.6	0			0	27.0
20 / 24	16	6	6	28	19.6	1		0	1	20.5					
15 / 19	15	3	4	22	15.7										
10 / 14	5	1	1	7	10.5										
5 / 9	2	1	1	4	5.8										
0 / 4	1	0	0	1	0.4										
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															
-40 / -36															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 3 of 5)

Period of Record = 1977 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		
90 / 94		1	0	1	71.6		0	0	0	76.0					
85 / 89		2	1	3	71.1		1	0	1	73.4					
80 / 84		16	7	23	68.3		7	3	10	69.0		1	0	1	67.6
75 / 79	1	47	26	74	65.5	0	33	14	47	66.5		6	2	8	66.6
70 / 74	18	74	58	150	63.2	8	61	45	114	64.1	1	16	8	25	63.9
65 / 69	40	46	53	139	61.1	32	51	45	128	62.0	7	23	16	46	61.9
60 / 64	81	43	61	185	58.1	70	56	67	193	58.6	24	51	38	113	58.0
55 / 59	64	15	30	109	53.8	66	28	48	142	54.1	41	56	58	155	53.4
50 / 54	35	3	10	48	49.6	49	9	20	78	49.6	56	47	52	155	48.9
45 / 49	9	0	2	11	44.8	19	2	5	26	44.7	54	26	36	116	44.0
40 / 44	1			1	41.0	3	0	1	4	40.3	24	9	15	48	39.6
35 / 39	0			0	38.0	1	0	0	1	36.5	23	5	11	39	35.7
30 / 34											9	1	3	13	31.1
25 / 29											1		0	1	26.6
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															
-30 / -26															
-35 / -31															
-40 / -36															

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Dry-Bulb Temperature Hours For An Average Year (Sheet 4 of 5)

Period of Record = 1977 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		
90 / 94															
85 / 89															
80 / 84															
75 / 79															
70 / 74		1	0	1	58.9										
65 / 69	0	3	1	4	57.4										
60 / 64	2	11	7	20	56.0		1	0	1	54.5					
55 / 59	9	27	16	52	51.9	1	3	2	6	51.8	0	0		0	54.9
50 / 54	23	43	33	99	47.7	4	12	7	23	48.5	0	0	1	1	50.9
45 / 49	42	51	50	144	43.4	14	16	14	44	43.0	1	1	1	3	44.7
40 / 44	36	35	40	111	39.3	13	16	13	42	39.6	1	3	2	6	40.3
35 / 39	48	43	45	137	34.8	29	38	38	105	35.0	8	13	10	31	35.4
30 / 34	55	26	41	122	30.1	54	51	55	160	30.3	32	34	33	99	30.6
25 / 29	27	6	13	46	25.3	42	47	46	135	24.9	38	42	39	118	25.5
20 / 24	5	0	1	6	21.0	25	23	20	68	20.3	27	25	27	79	20.9
15 / 19	1		0	1	18.2	29	18	24	71	16.3	30	35	33	98	16.4
10 / 14						16	8	13	37	11.4	24	27	28	79	11.1
5 / 9						8	5	6	19	6.3	25	21	27	73	5.9
0 / 4						4	1	2	7	1.2	20	21	20	61	0.5
-5 / -1						1	0	0	1	-3.7	13	9	12	34	-3.8
-10 / -6						1	0	0	1	-7.8	15	8	10	33	-8.1
-15 / -11						0			0	-10.0	8	4	4	16	-12.7
-20 / -16											4	2	2	8	-16.4
-25 / -21											2	1	1	4	-22.0
-30 / -26											1	0	1	2	-27.3
-35 / -31											0			0	-30.0
-40 / -36															

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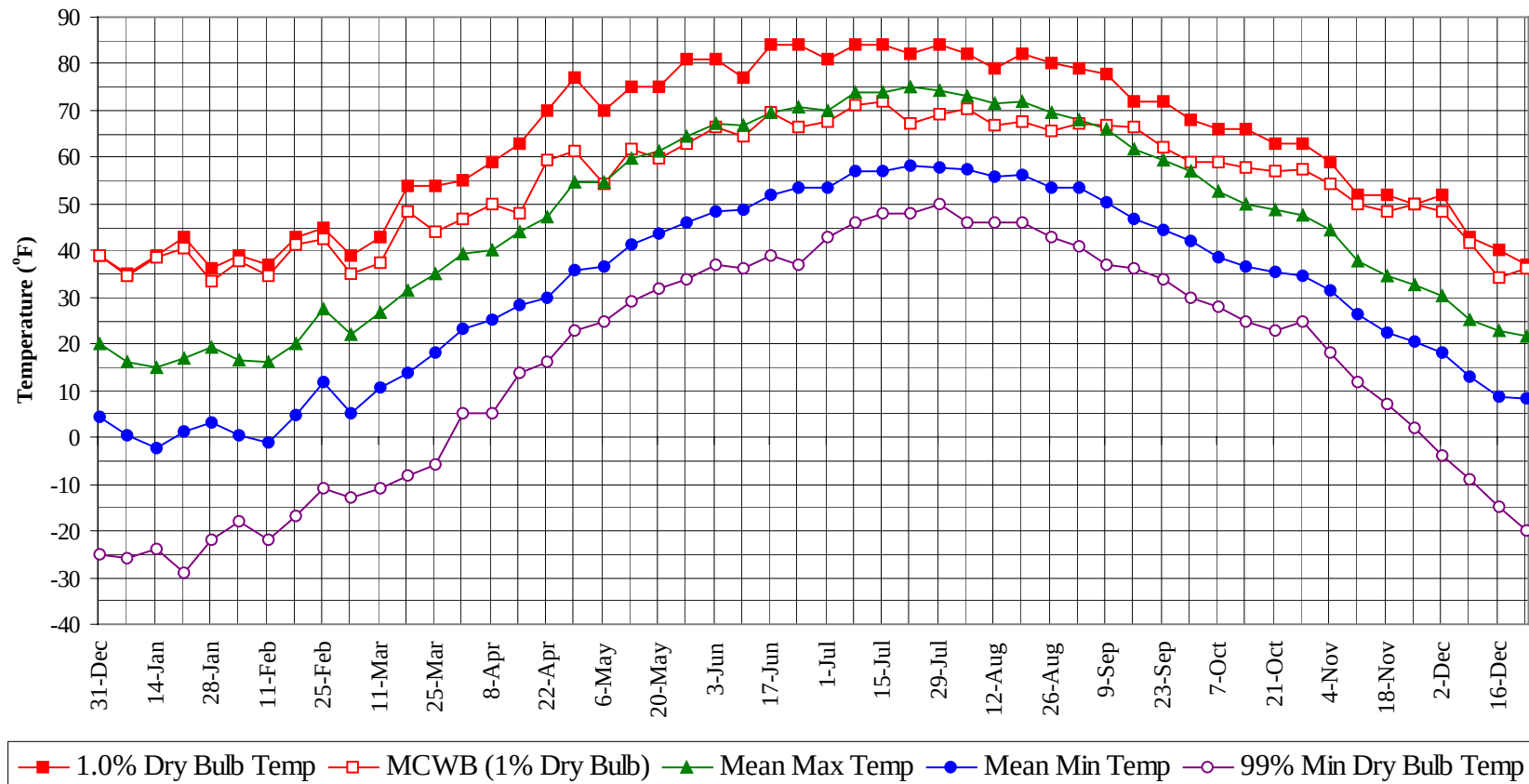
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1977 to 1996

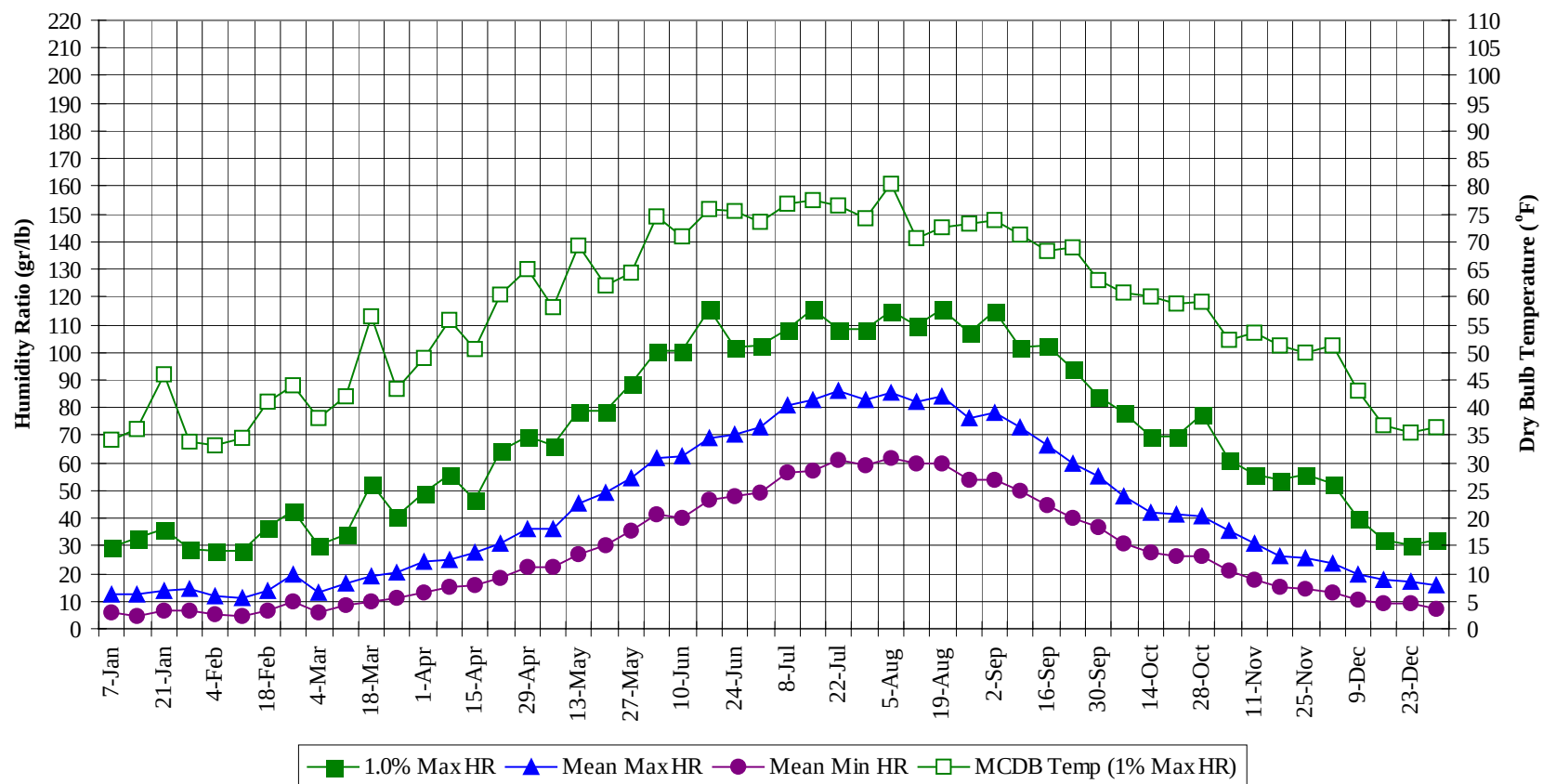
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
90 / 94		1	0	1	72.4
85 / 89		5	1	6	71.7
80 / 84		37	14	51	67.7
75 / 79	2	121	59	182	65.2
70 / 74	32	218	157	407	62.7
65 / 69	98	186	169	453	60.5
60 / 64	243	266	267	776	57.1
55 / 59	282	239	266	787	52.4
50 / 54	282	208	227	717	47.7
45 / 49	246	181	210	637	42.6
40 / 44	156	128	137	421	38.6
35 / 39	221	210	213	644	34.4
30 / 34	293	244	279	816	29.9
25 / 29	240	196	209	645	24.8
20 / 24	125	113	111	348	20.3
15 / 19	145	146	147	438	16.0
10 / 14	134	124	132	390	10.8
5 / 9	116	103	115	333	5.7
0 / 4	99	80	86	265	0.5
-5 / -1	58	39	45	142	-3.9
-10 / -6	70	40	41	151	-8.2
-15 / -11	35	18	19	72	-12.7
-20 / -16	28	11	11	50	-16.6
-25 / -21	11	5	4	20	-22.1
-30 / -26	4	1	2	7	-27.1
-35 / -31	1	0	0	1	-31.5
-40 / -36	0	0	0	0	-35.0

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Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary

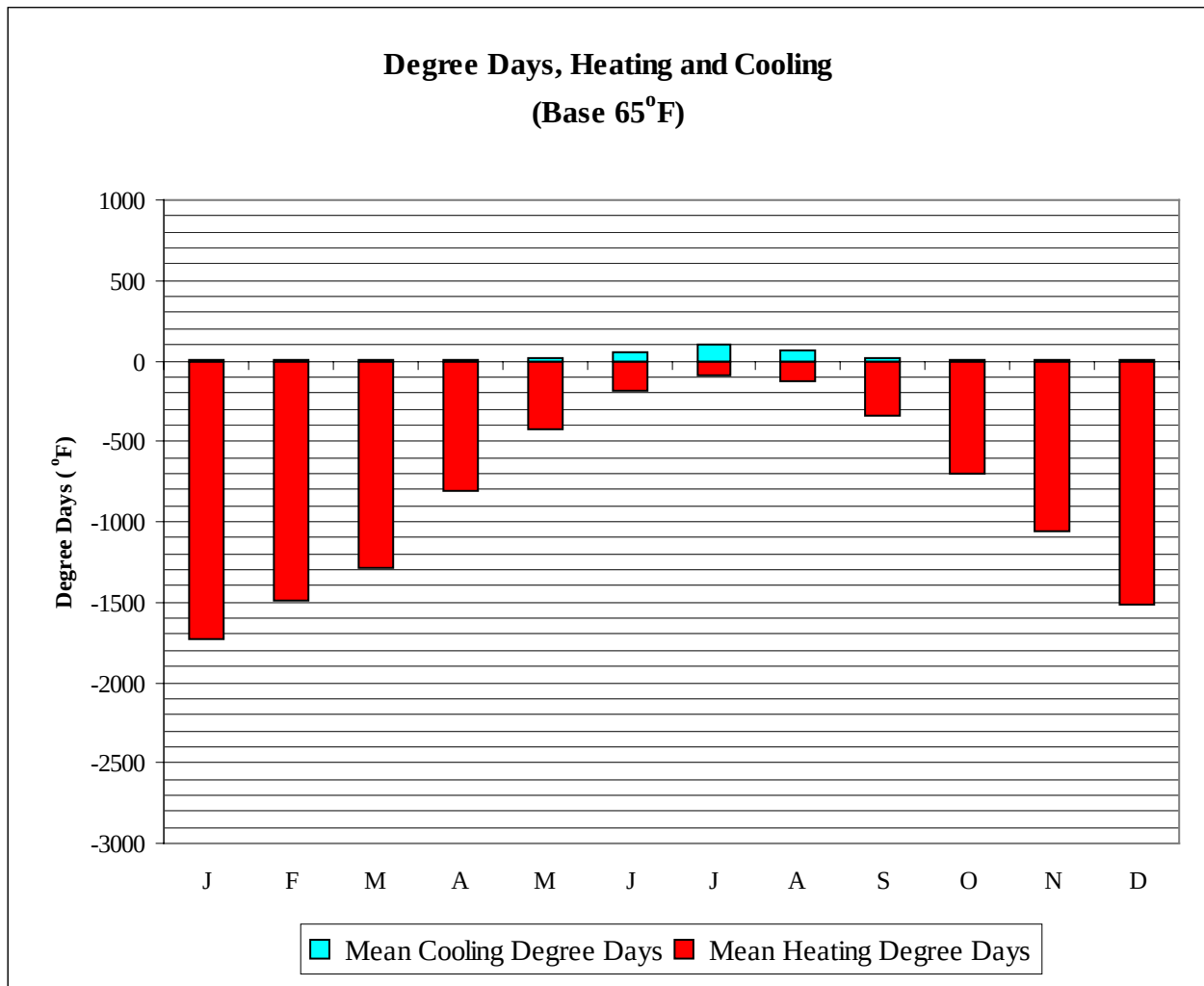


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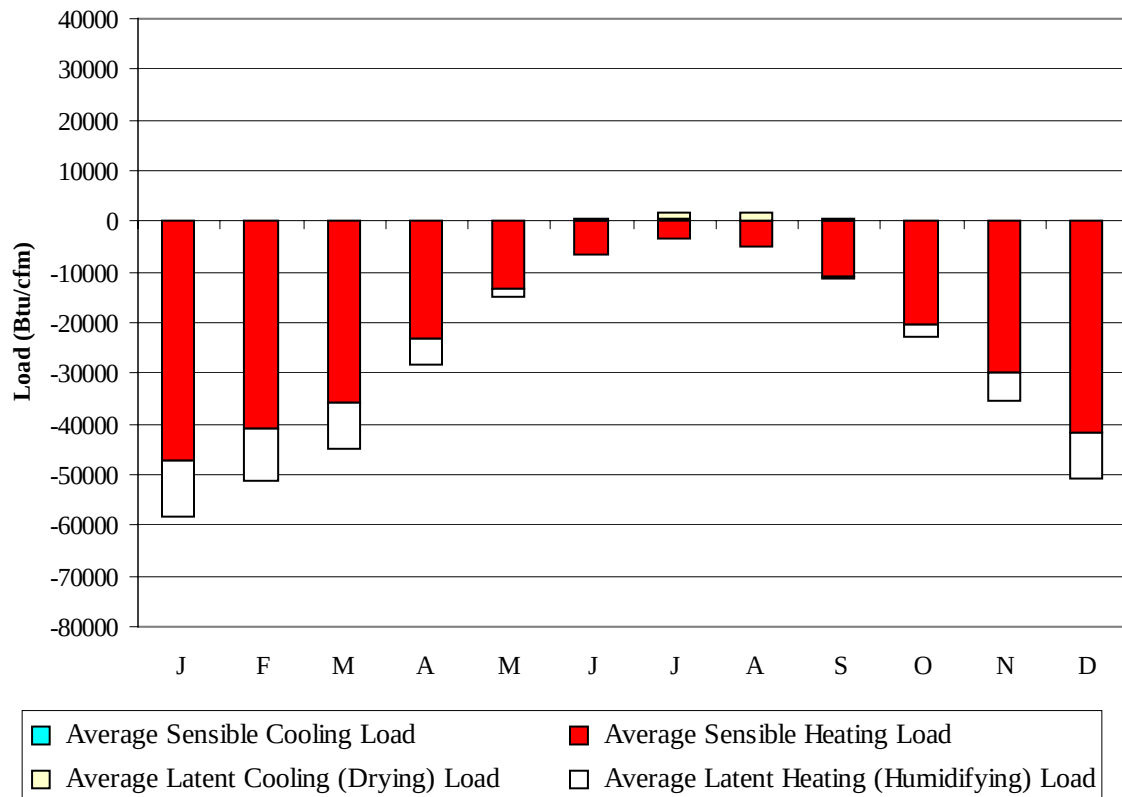
Long Term Dry Bulb Temperature and Humidity Summary

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	35.0	34.5	16.0	0.4	-26.0	29.4	34.3	12.6	5.7
14-Jan	39.0	38.7	15.1	-2.2	-24.0	32.9	36.1	12.4	4.8
21-Jan	43.0	40.5	16.8	1.4	-29.0	36.4	46.0	13.9	6.5
28-Jan	36.0	33.4	19.4	3.3	-22.0	28.7	33.9	14.2	6.6
4-Feb	39.0	37.7	16.6	0.3	-18.0	28.0	33.2	11.8	5.5
11-Feb	37.0	34.6	16.2	-1.0	-22.0	28.0	34.3	11.3	4.8
18-Feb	43.0	41.3	20.1	4.6	-17.0	37.1	41.0	13.5	6.9
25-Feb	45.0	42.6	27.5	11.9	-11.0	42.7	44.0	19.4	9.9
4-Mar	39.0	35.1	22.0	5.3	-13.0	30.1	38.1	12.9	6.2
11-Mar	43.0	37.2	26.9	10.7	-11.0	34.3	42.1	16.5	8.4
18-Mar	54.0	48.4	31.4	13.8	-8.0	52.5	56.4	19.3	9.6
25-Mar	54.0	44.0	34.9	18.0	-6.0	40.6	43.4	20.7	11.0
1-Apr	55.0	46.9	39.2	23.3	5.0	49.0	48.9	24.3	13.4
8-Apr	59.0	49.8	40.3	25.1	5.0	56.0	55.7	25.1	15.0
15-Apr	63.0	48.0	43.9	28.4	14.0	46.9	50.4	27.7	15.9
22-Apr	70.0	59.5	47.1	29.9	16.0	64.4	60.4	31.2	18.2
29-Apr	77.0	61.2	54.5	36.0	23.0	69.3	65.1	36.0	22.5
6-May	70.0	54.4	54.7	36.5	25.0	66.5	58.0	36.1	22.1
13-May	75.0	61.8	59.6	41.1	29.0	79.1	69.4	45.0	26.9
20-May	75.0	59.6	61.3	43.8	32.0	79.1	61.9	48.9	30.3
27-May	81.0	62.9	64.4	45.9	34.0	88.9	64.5	54.3	35.2
3-Jun	81.0	66.3	67.1	48.3	37.0	100.8	74.6	61.5	41.1
10-Jun	77.0	64.3	66.8	48.6	36.0	100.8	70.9	62.3	40.1
17-Jun	84.0	69.7	69.5	51.8	39.0	115.5	75.7	69.1	46.5
24-Jun	84.0	66.6	70.7	53.3	37.0	101.5	75.7	70.4	48.2
1-Jul	81.0	67.6	70.1	53.5	43.0	102.2	73.7	73.1	49.4
8-Jul	84.0	71.1	73.8	56.8	46.0	108.5	77.0	81.0	56.3
15-Jul	84.0	72.0	73.7	56.9	48.0	115.5	77.4	82.4	57.4
22-Jul	82.0	67.2	75.2	58.0	48.0	108.5	76.5	86.1	61.4
29-Jul	84.0	69.2	74.4	57.6	50.0	108.5	74.3	82.8	59.4
5-Aug	82.0	70.4	73.3	57.3	46.0	114.8	80.4	85.6	61.9
12-Aug	79.0	66.8	71.5	56.0	46.0	109.9	70.5	81.9	59.8
19-Aug	82.0	67.7	72.0	56.2	46.0	115.5	72.5	84.1	59.9
26-Aug	80.0	65.5	69.7	53.6	43.0	107.1	73.3	76.3	53.6
2-Sep	79.0	67.3	68.2	53.3	41.0	114.8	73.8	77.8	53.9
9-Sep	78.0	67.0	65.9	50.4	37.0	101.5	71.3	73.2	49.6
16-Sep	72.0	66.4	61.6	47.0	36.0	102.2	68.5	66.3	44.4
23-Sep	72.0	62.2	59.6	44.6	34.0	93.8	69.0	59.9	39.8
30-Sep	68.0	59.0	57.2	41.9	30.0	84.0	62.9	55.4	36.5
7-Oct	66.0	58.8	52.8	38.5	28.0	78.4	60.6	48.1	30.6
14-Oct	66.0	57.9	49.8	36.4	25.0	69.3	60.2	42.2	27.8
21-Oct	63.0	57.2	48.7	35.4	23.0	69.3	58.9	41.3	26.2
28-Oct	63.0	57.5	47.7	34.7	25.0	77.7	59.2	40.7	26.5
4-Nov	59.0	54.3	44.5	31.5	18.0	60.9	52.2	35.5	21.3
11-Nov	52.0	49.9	37.9	26.2	12.0	56.0	53.5	30.8	17.7
18-Nov	52.0	48.3	34.8	22.5	7.0	53.9	51.2	26.4	15.3
25-Nov	50.0	50.0	32.5	20.5	2.0	56.0	50.0	25.4	14.2
2-Dec	52.0	48.3	30.5	18.1	-4.0	52.5	51.3	23.8	13.2
9-Dec	43.0	41.5	25.4	13.0	-9.0	39.9	43.0	19.7	10.8
16-Dec	40.0	34.3	22.9	8.6	-15.0	32.2	36.6	17.7	9.2
23-Dec	37.0	36.4	21.5	8.2	-20.0	30.1	35.5	16.8	9.0
31-Dec	39.0	38.8	20.3	4.5	-25.0	32.2	36.6	15.5	7.2



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1729
FEB	0	1493
MAR	0	1286
APR	4	811
MAY	21	422
JUN	51	189
JUL	107	88
AUG	71	130
SEP	14	345
OCT	1	700
NOV	0	1059
DEC	0	1510
ANN	268	9762

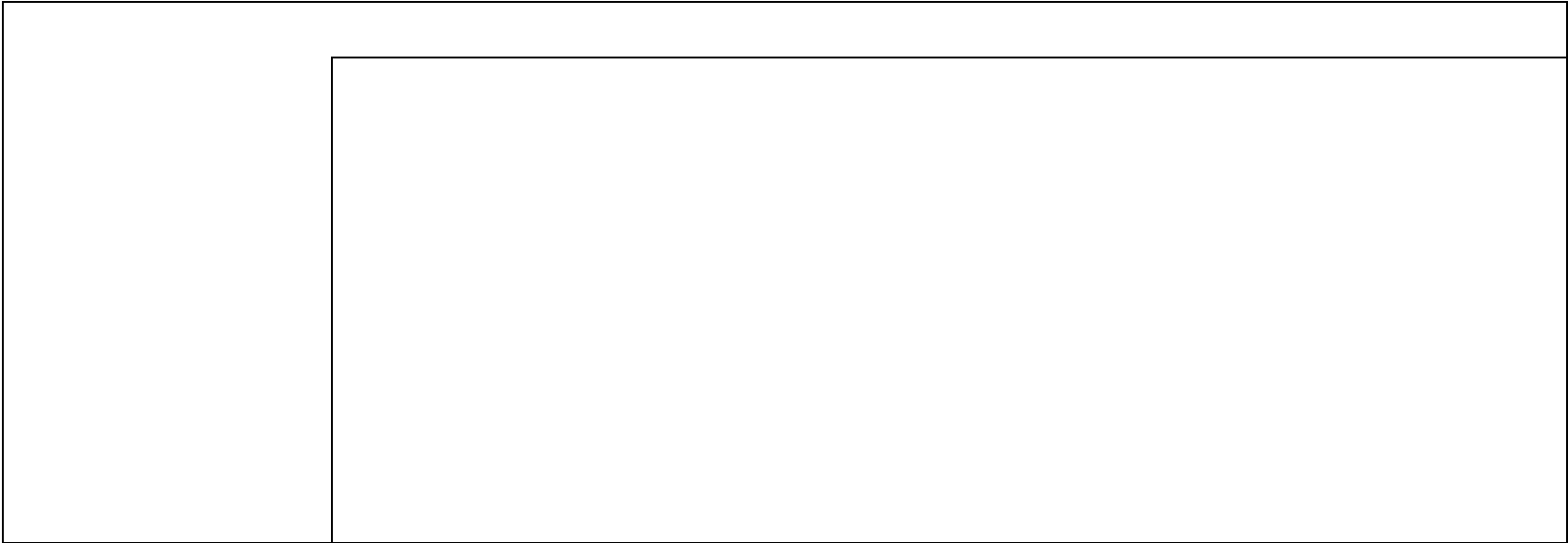
Average Ventilation and Infiltration Loads
(Outside Air vs. 75°F, 60% RH summer; 68°F, 30% RH winter)



	Average Sensible Cooling Load	Average Sensible Heating Load	Average Latent Cooling Load	Average Latent Heating Load
	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)	(Btu/cfm)
JAN	0	-47229	0	-11207
FEB	0	-40891	0	-10119
MAR	0	-35735	0	-8993
APR	10	-23313	0	-5136
MAY	54	-13093	79	-1802
JUN	164	-6571	424	-172
JUL	341	-3583	1423	-3
AUG	161	-4957	1405	-11
SEP	18	-11071	319	-294
OCT	0	-20544	2	-2213
NOV	0	-29789	0	-5643
DEC	0	-41562	0	-9319
ANN	748	-278338	3652	-54912

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

No Solar Radiation
Data Available

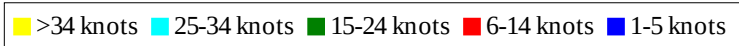
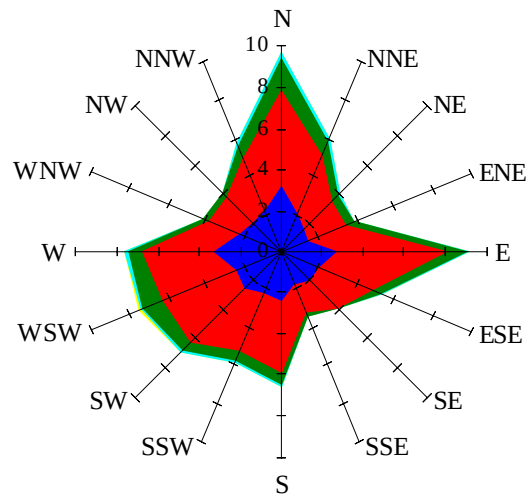


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

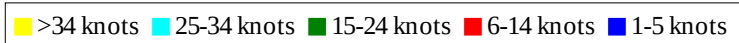
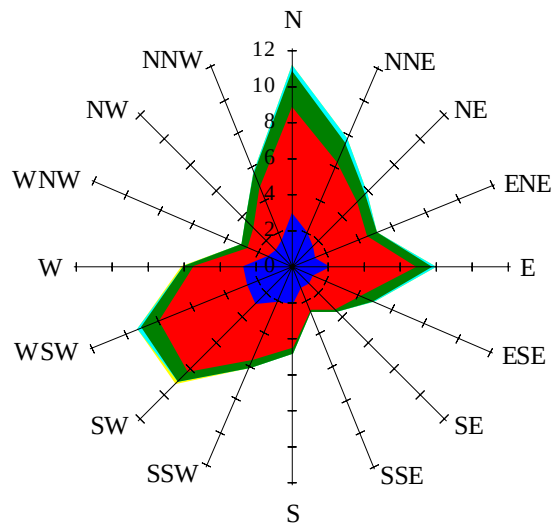
Labels of Percent Frequency on North Axis



Percent Calm = 7.28

Wind Summary - March, April, and May

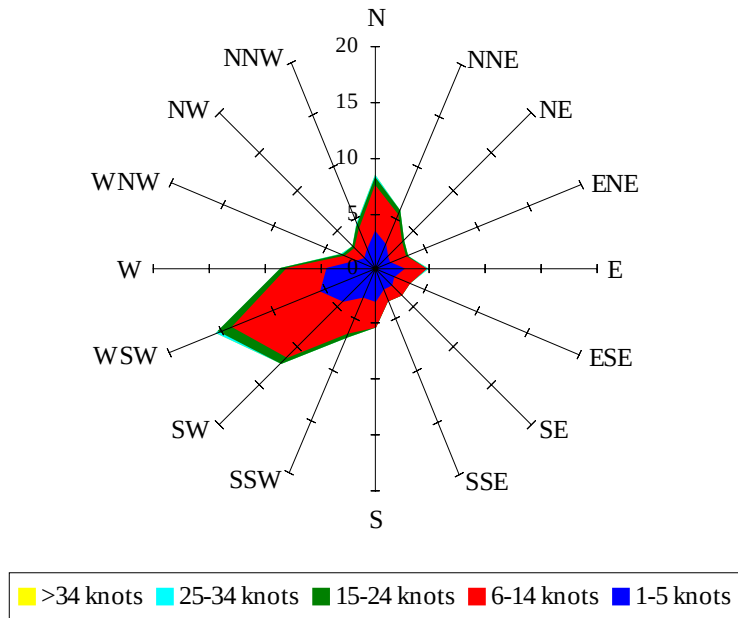
Labels of Percent Frequency on North Axis



Percent Calm = 4.98

Wind Summary - June, July, and August

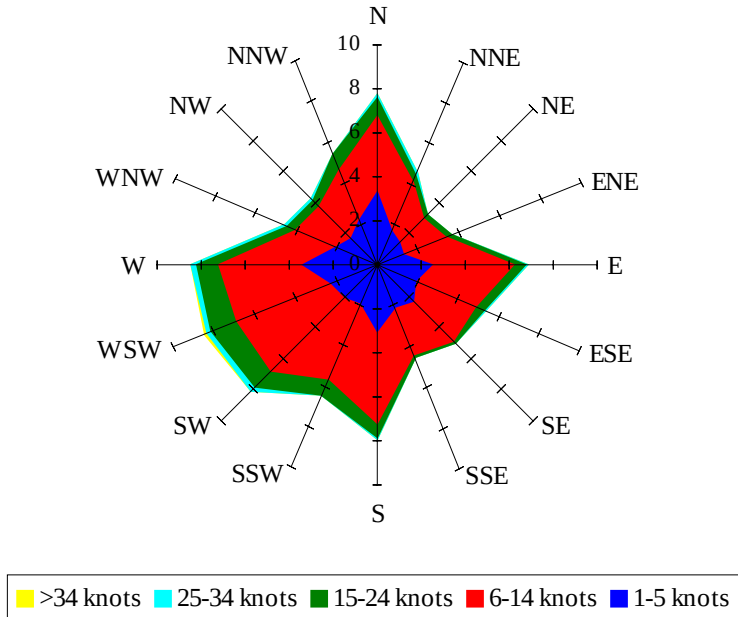
Labels of Percent Frequency on North Axis



Percent Calm = 7.15

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 5.62