

LAS VEGAS/MCCARRAN NV

Latitude = 36.08 N

Longitude = 115.10 W

Period of Record = 1973 to 1996

WMO No. 723860

Elevation = 2179 feet

Average Pressure = 27.67 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	112	67	38	11.2	WSW
0.4% Occurrence	109	67	40	12.1	SW
1.0% Occurrence	106	66	40	12.5	SW
2.0% Occurrence	104	65	40	12.4	SW
Mean Daily Range	23	-	-	-	-
97.5% Occurrence	35	29	17	7.3	W
99.0% Occurrence	32	27	15	7.3	WSW
99.6% Occurrence	29	24	12	7.1	W
Median of Extreme Lows	23	19	8	7.0	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	74	95	96	9.2	E
0.4% Occurrence	71	94	82	9.7	S
1.0% Occurrence	70	94	78	9.8	S
2.0% Occurrence	69	94	74	9.8	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	119	77	0.74	7.4	E
0.4% Occurrence	100	79	0.62	8.2	S
1.0% Occurrence	91	81	0.56	8.1	S
2.0% Occurrence	81	84	0.50	8.4	S
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		1022	2661	11	458

Other Site Data

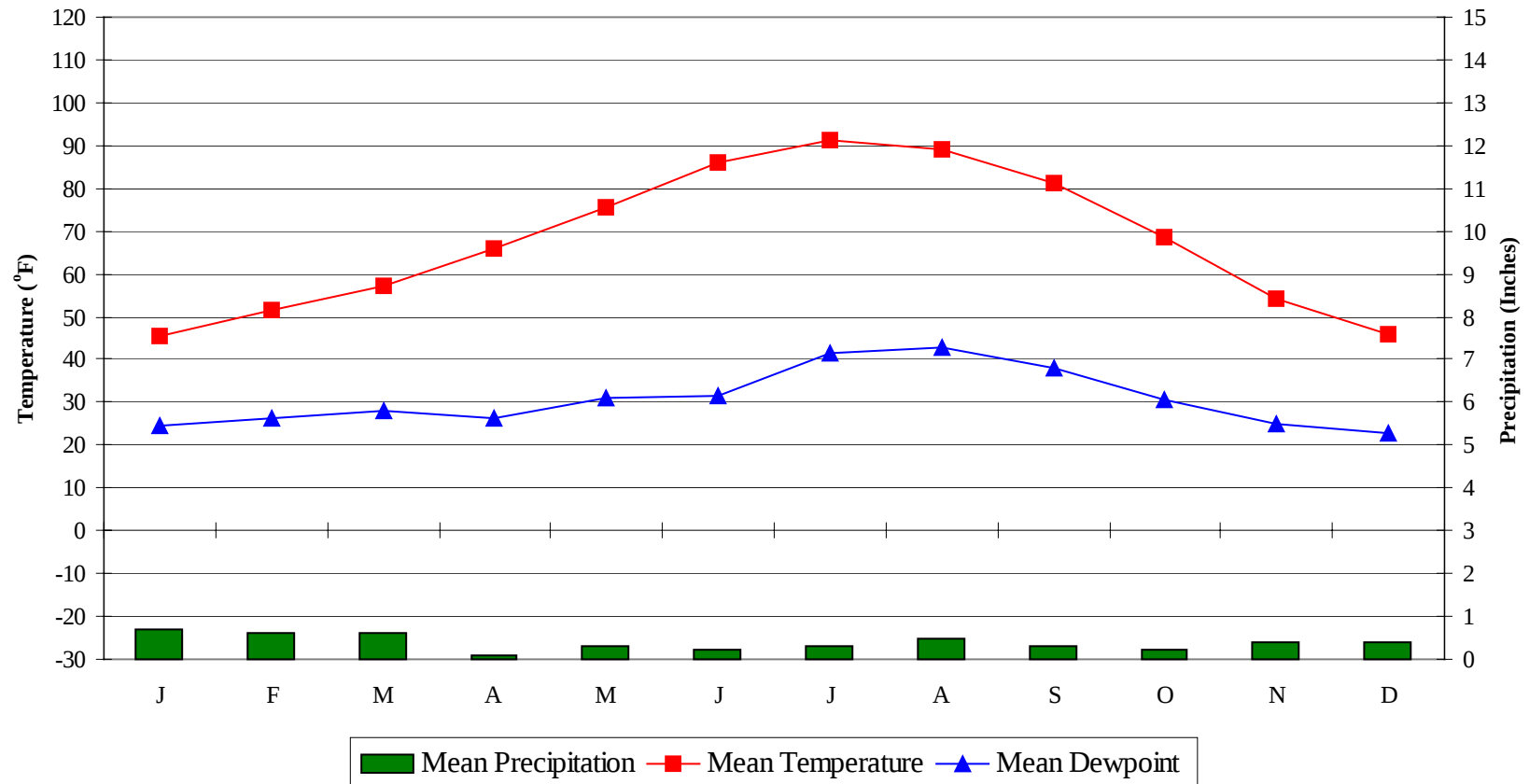
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
11	1.5	90	0.1 + 3.9
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
70.2	7	3	15

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

LAS VEGAS/MCCARRAN NV

WMO No. 723860

Average Annual Climate

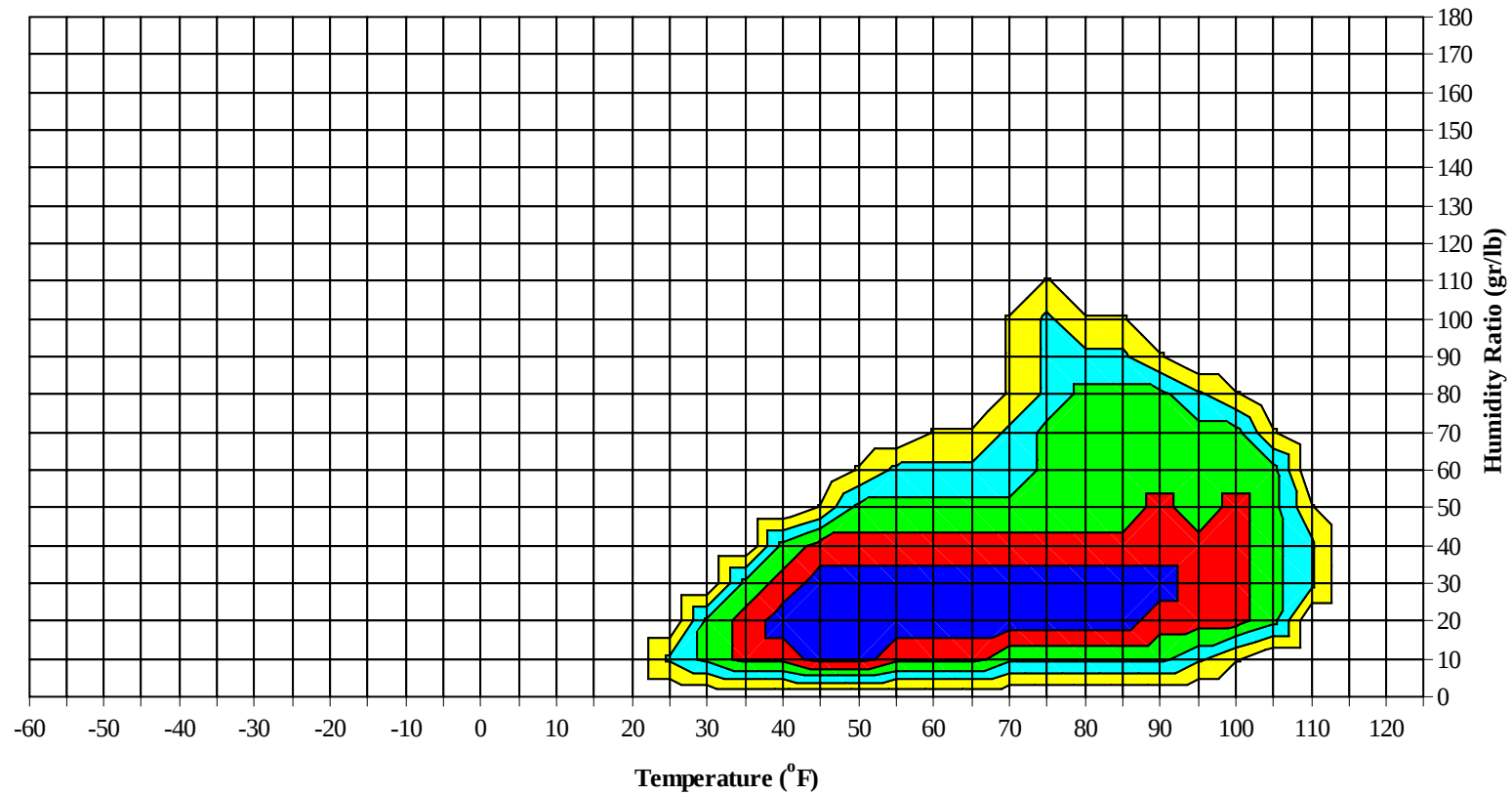


LAS VEGAS/MCCARRAN

NV

WMO No. 723860

Long Term Psychrometric Summary

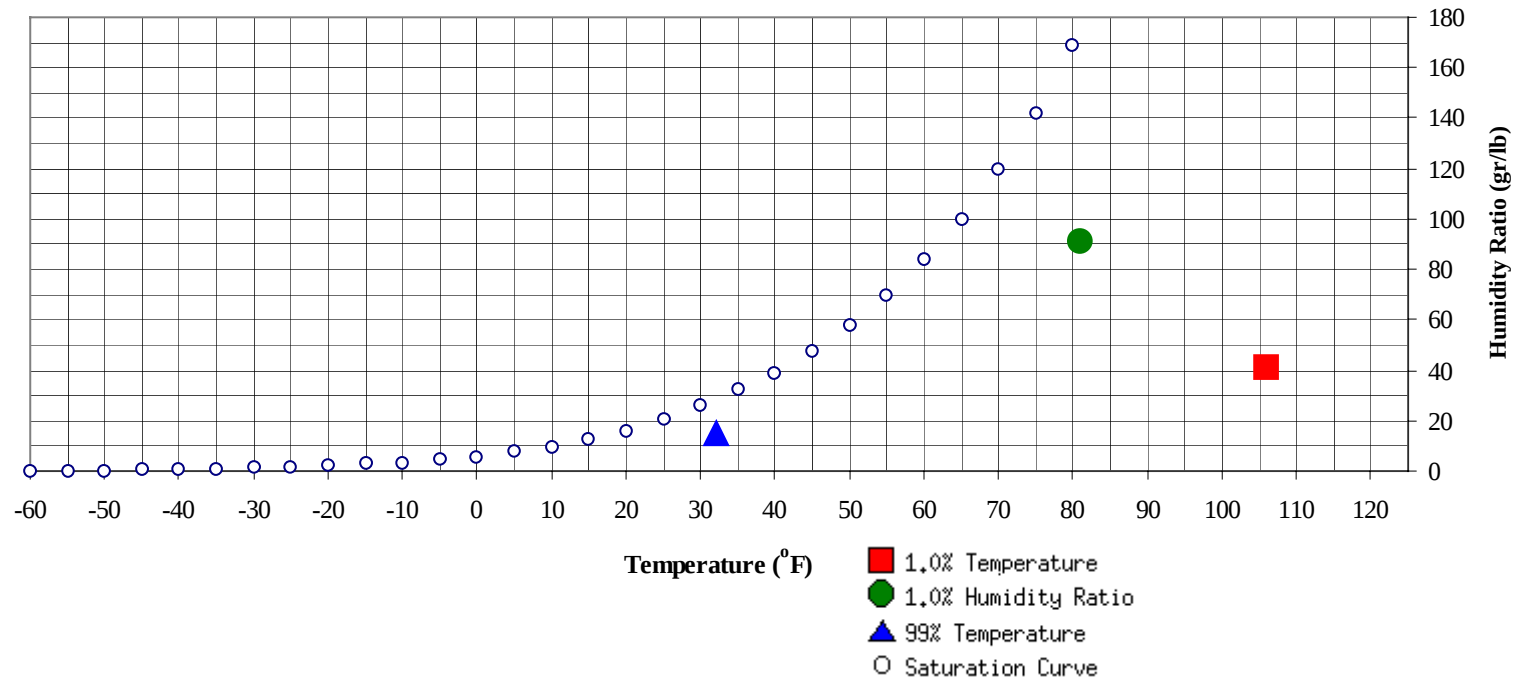


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

LAS VEGAS/MCCARRAN NV

WMO No. 723860

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	32	14.9	10.0		91	80.9	68.1	62.1	33.7

	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
1.0% Dry Bulb	106	41.4	66.3	32.0

LAS VEGAS/MCCARRAN NV

WMO No. 723860

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		
115 / 119															
110 / 114															
105 / 109															
100 / 104															
95 / 99															
90 / 94															
85 / 89							0	0	0	57.8		2	0	2	56.7
80 / 84							1	0	1	55.4		9	2	11	54.4
75 / 79		0		0	49.0		4	1	5	52.5		19	7	26	52.7
70 / 74		1	0	1	49.6		16	4	20	50.6	1	34	17	52	50.7
65 / 69		12	1	13	47.1	1	30	12	43	48.3	6	47	30	83	48.5
60 / 64	1	28	6	35	45.7	3	45	24	72	46.3	19	56	46	121	46.5
55 / 59	1	52	18	71	43.4	11	51	42	104	44.2	36	44	54	134	44.3
50 / 54	9	60	47	116	41.5	37	41	56	134	41.9	65	24	51	140	42.3
45 / 49	34	53	71	158	38.7	58	20	48	126	38.9	66	10	30	106	39.3
40 / 44	71	28	58	157	35.5	60	9	24	93	35.3	41	2	10	53	35.7
35 / 39	74	9	33	116	31.8	36	3	9	48	31.4	13	0	1	14	31.2
30 / 34	42	3	10	55	27.5	14	2	3	19	27.2	2		0	2	27.0
25 / 29	11	1	3	15	23.1	3	0	1	4	22.7					
20 / 24	3	0	1	4	18.7	1		0	1	18.1					
15 / 19	1		0	1	15.4	0			0	14.5					
10 / 14	0		0	0	12.2										
5 / 9															

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.

LAS VEGAS/MCCARRAN NV

WMO No. 723860

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		
115 / 119												0		0	65.0
110 / 114												4	1	5	65.9
105 / 109							0		0	63.4		23	7	30	64.4
100 / 104							6	2	8	61.9					
95 / 99		2	0	2	60.5	0	18	6	24	60.5	0	43	18	61	63.0
90 / 94		10	2	12	58.4	0	43	18	61	59.0	2	55	31	88	61.3
85 / 89		21	8	29	56.3	2	50	30	82	57.2	8	50	43	101	59.5
80 / 84	1	37	17	55	54.1	10	47	44	101	55.2	27	35	48	110	57.7
75 / 79	3	42	29	74	52.2	30	35	48	113	53.6	50	19	45	114	55.7
70 / 74	14	44	40	98	50.1	55	23	43	121	51.8	61	8	27	96	53.7
65 / 69	30	37	45	112	48.0	59	14	27	100	49.7	52	3	13	68	51.6
60 / 64	49	27	43	119	45.8	45	8	16	69	47.5	26	1	5	32	49.5
55 / 59	59	14	32	105	43.6	29	3	10	42	45.3	11	1	1	13	46.8
50 / 54	52	5	17	74	41.1	15	1	3	19	43.1	2	0	0	2	45.7
45 / 49	26	1	6	33	38.2	3	0	1	4	40.6	1		0	1	48.4
40 / 44	7	0	0	7	34.7	0			0	40.4					
35 / 39	1			1	34.4										
30 / 34	0			0	29.8										
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															

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.

LAS VEGAS/MCCARRAN NV

WMO No. 723860

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		
115 / 119		0		0	67.0										
110 / 114		9	2	11	67.3		5	0	5	68.0		0		0	
105 / 109		47	16	63	66.7		29	8	37	67.2		3	0	3	65.9
100 / 104	0	68	35	103	65.2	0	61	24	85	65.7		21	4	25	64.9
95 / 99	4	62	48	114	64.1	2	69	42	113	64.3		43	14	57	63.5
90 / 94	24	36	58	118	63.0	15	46	54	115	63.4	1	55	27	83	61.7
85 / 89	61	15	48	124	61.4	46	22	54	122	62.1	8	52	45	105	60.0
80 / 84	82	6	27	115	59.6	75	10	41	126	60.4	33	36	53	122	58.3
75 / 79	53	3	9	65	58.1	64	4	18	86	58.9	55	18	47	120	56.3
70 / 74	20	1	3	24	57.9	35	2	6	43	57.8	63	8	30	101	54.1
65 / 69	5	0	1	6	56.1	9	0	1	10	54.3	48	4	13	65	51.4
60 / 64	0			0	48.9	1			1	46.8	23	1	5	29	48.7
55 / 59											7	0	1	8	46.0
50 / 54											1		0	1	42.8
45 / 49											0			0	39.4
40 / 44															
35 / 39															
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															

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.

LAS VEGAS/MCCARRAN NV

WMO No. 723860

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		
115 / 119															
110 / 114															
105 / 109															
100 / 104		0		0	61.1										
95 / 99		6	0	6	60.3										
90 / 94		16	3	19	59.1										
85 / 89		30	7	37	57.3		0		0	58.0					
80 / 84	1	47	19	67	55.8		4	0	4	55.9					
75 / 79	6	49	33	88	53.9		15	1	16	53.4		0		0	53.3
70 / 74	20	44	50	113	51.9	1	32	8	41	51.3		3		3	50.8
65 / 69	45	28	52	125	50.1	3	41	18	62	48.7	0	11	1	12	47.7
60 / 64	63	18	42	123	47.6	9	49	34	92	46.4	0	34	5	39	45.3
55 / 59	57	7	26	90	44.5	29	44	47	120	43.6	3	60	17	80	43.2
50 / 54	34	2	13	49	41.0	51	33	53	137	40.6	9	63	46	118	40.9
45 / 49	17	0	4	21	37.2	61	16	46	123	37.7	37	47	72	156	38.3
40 / 44	4		1	5	33.5	47	5	24	76	33.8	70	22	62	154	34.7
35 / 39	1		0	1	31.2	27	0	8	35	30.2	76	7	33	116	30.8
30 / 34						10	0	1	11	26.5	39	2	10	51	27.0
25 / 29						2		0	2	21.6	10	0	2	12	22.8
20 / 24						0			0	17.7	2	0	1	3	17.8
15 / 19											1	0	0	1	13.0
10 / 14											0			0	9.9
5 / 9											0			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.

LAS VEGAS/MCCARRAN NV

WMO No. 723860

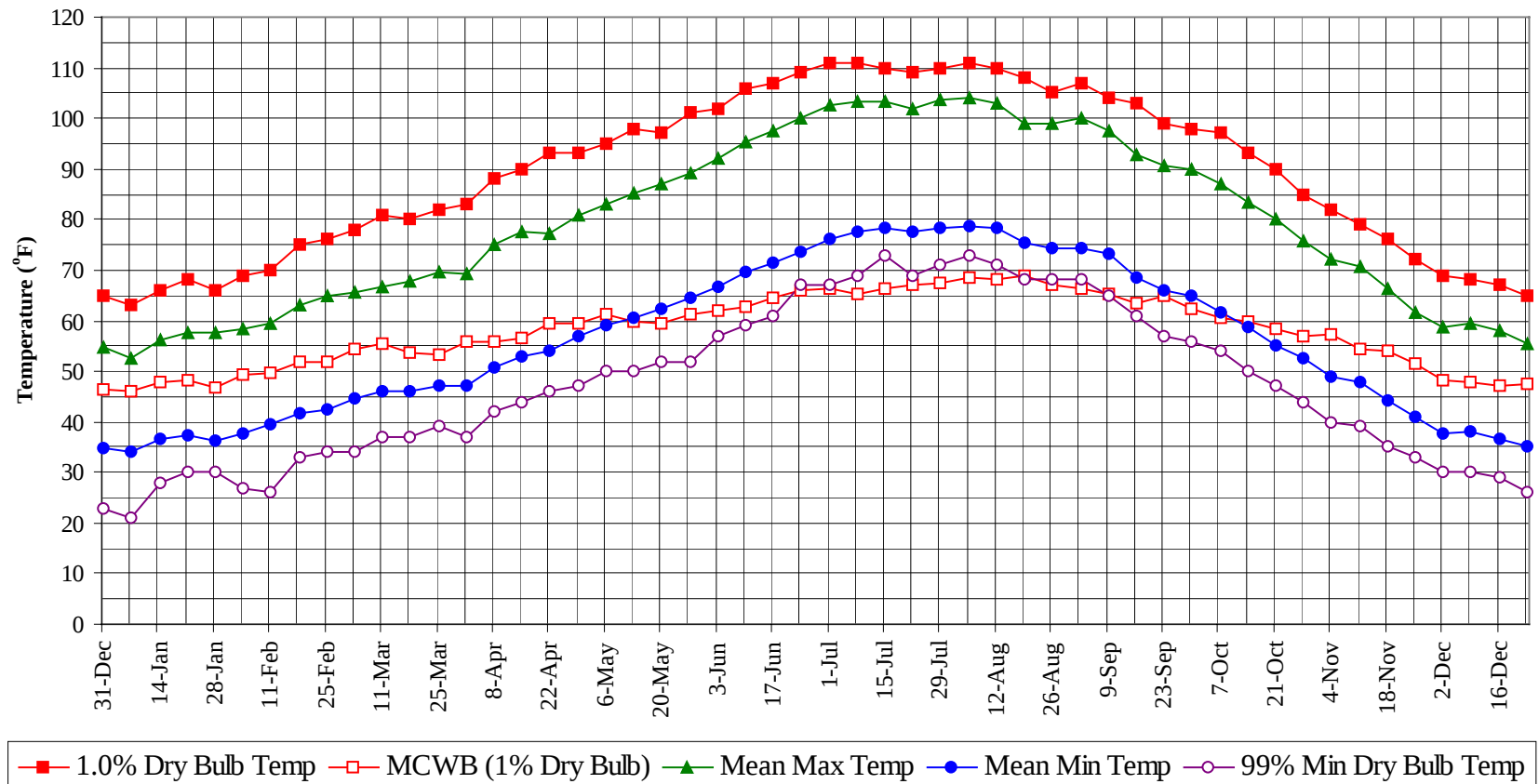
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

Period of Record = 1973 to 1996

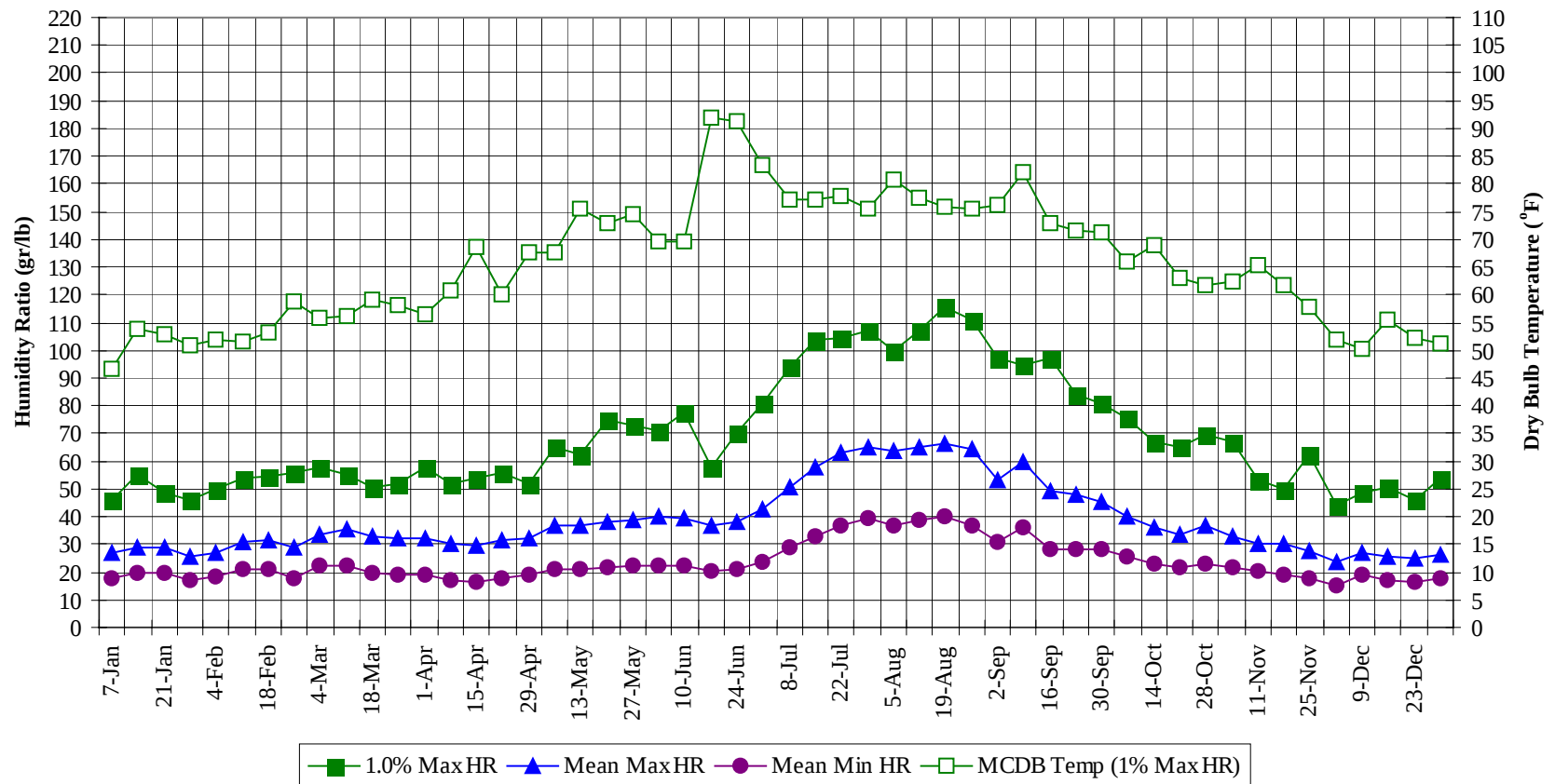
Annual Totals					
Temperature Range (°F)	Hour Group (LST)			Total Obs	M C W B (°F)
	01 To 08	09 To 16	17 To 00		
115 / 119		0		0	66.5
110 / 114		18	3	21	67.2
105 / 109		102	31	133	66.3
100 / 104	0	198	82	280	64.8
95 / 99	7	253	141	401	63.2
90 / 94	48	256	204	508	61.4
85 / 89	143	227	240	610	59.6
80 / 84	251	216	249	716	57.4
75 / 79	271	196	219	686	55.0
70 / 74	259	211	213	683	52.3
65 / 69	231	228	207	666	49.3
60 / 64	224	266	223	713	46.6
55 / 59	235	275	248	758	44.0
50 / 54	276	231	287	794	41.5
45 / 49	303	148	277	728	38.5
40 / 44	301	67	179	547	35.0
35 / 39	229	20	86	335	31.2
30 / 34	108	7	25	140	27.2
25 / 29	25	1	5	31	22.9
20 / 24	7	0	1	8	18.2
15 / 19	2	0	0	2	14.1
10 / 14	0		0	0	10.9
5 / 9	0			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.

Annual Summary of Temperatures



Long Term Humidity and Dry Bulb Temperature Summary

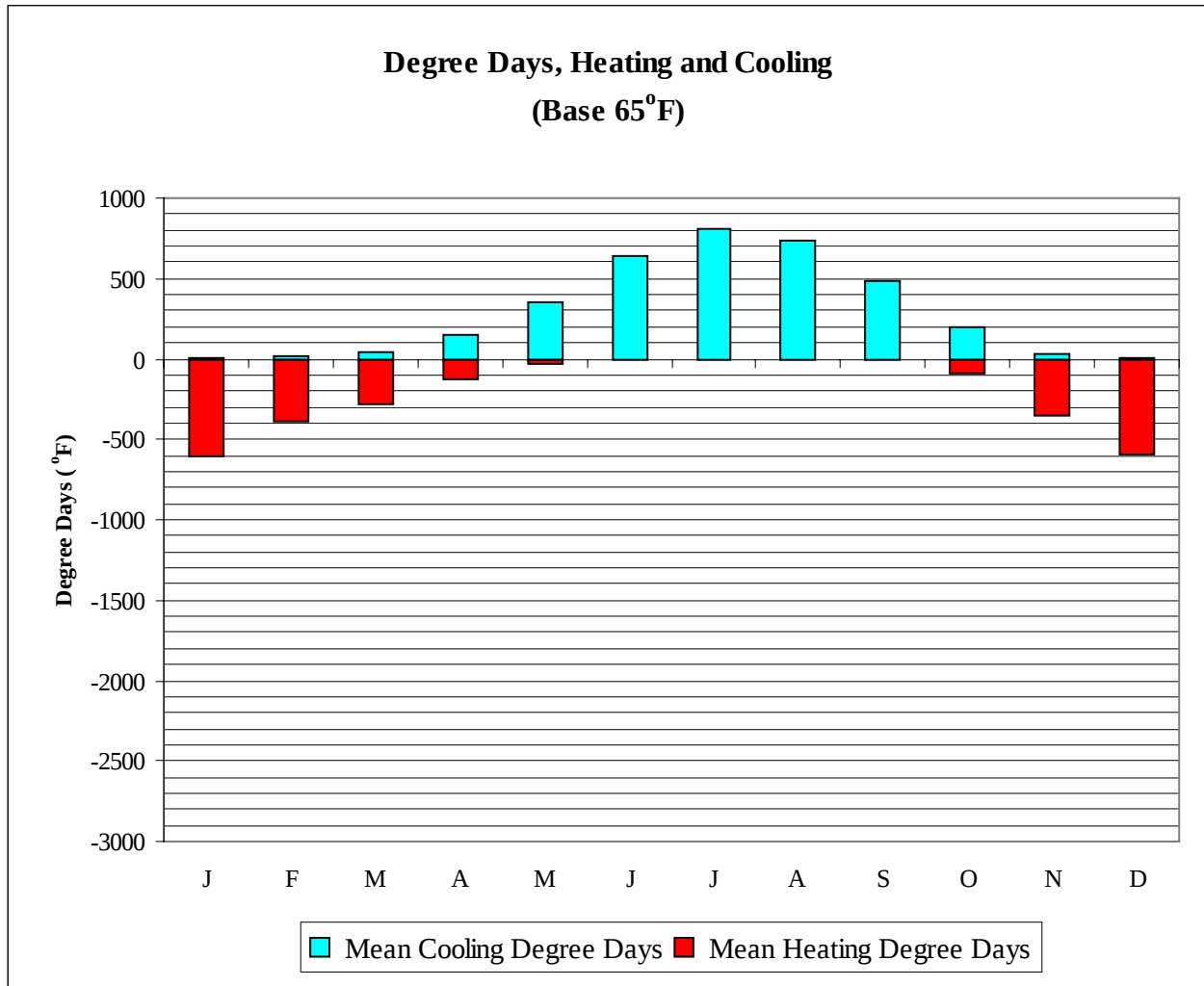


LAS VEGAS/MCCARRAN NV

WMO No. 723860

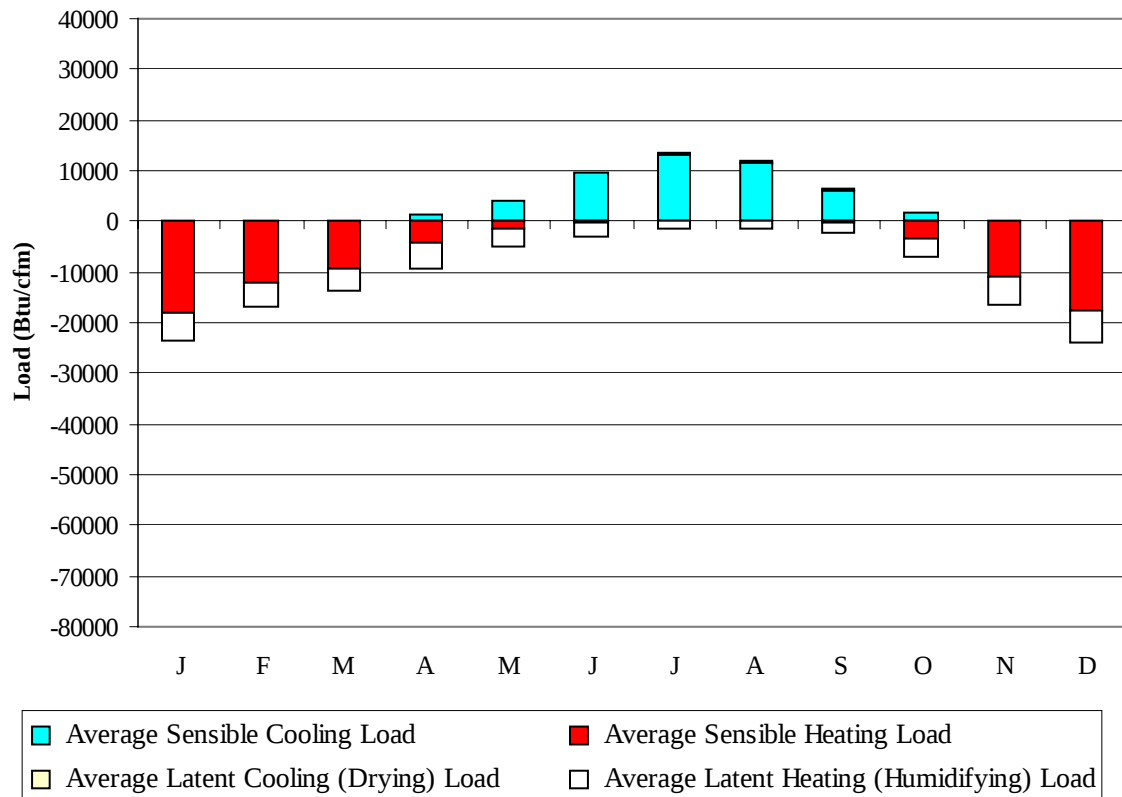
Long Term Dry Bulb Temperature and Humidity Summary

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	63.0	46.2	52.4	34.2	21.0	46.2	46.7	26.8	17.7
14-Jan	66.0	47.8	56.3	36.5	28.0	55.3	53.9	28.7	19.9
21-Jan	68.0	48.1	57.5	37.3	30.0	48.3	52.8	29.1	19.4
28-Jan	66.0	46.7	57.5	36.3	30.0	46.2	51.0	25.9	17.4
4-Feb	69.0	49.3	58.4	37.5	27.0	49.7	51.8	27.0	18.2
11-Feb	70.0	49.5	59.6	39.4	26.0	53.9	51.5	30.8	20.9
18-Feb	75.0	52.0	63.1	41.8	33.0	54.6	53.2	31.7	20.9
25-Feb	76.0	51.8	64.8	42.3	34.0	56.0	58.9	29.2	18.0
4-Mar	78.0	54.5	65.7	44.6	34.0	58.1	55.9	33.5	22.2
11-Mar	81.0	55.4	66.9	45.9	37.0	55.3	56.1	35.2	22.3
18-Mar	80.0	53.5	67.9	46.1	37.0	50.4	59.2	32.6	19.4
25-Mar	82.0	53.5	69.8	47.1	39.0	51.8	58.1	32.0	19.3
1-Apr	83.0	56.0	69.2	47.2	37.0	58.1	56.5	32.1	18.9
8-Apr	88.0	56.0	75.0	50.6	42.0	51.8	60.6	30.5	17.1
15-Apr	90.0	56.5	77.5	53.1	44.0	53.9	68.5	29.5	16.7
22-Apr	93.0	59.6	77.4	53.9	46.0	56.0	60.0	31.4	17.7
29-Apr	93.0	59.4	80.7	56.8	47.0	51.8	67.8	32.0	19.1
6-May	95.0	61.3	83.0	59.2	50.0	65.1	67.6	36.7	20.7
13-May	98.0	59.9	85.2	60.4	50.0	62.3	75.5	36.6	21.1
20-May	97.0	59.5	87.1	62.5	52.0	74.9	73.0	37.8	21.8
27-May	101.0	61.5	89.3	64.4	52.0	72.8	74.7	38.8	22.5
3-Jun	102.0	62.1	92.0	66.7	57.0	70.7	69.7	40.3	22.6
10-Jun	106.0	62.6	95.5	69.7	59.0	77.7	69.7	39.4	22.3
17-Jun	107.0	64.7	97.7	71.6	61.0	58.1	92.0	36.9	20.4
24-Jun	109.0	66.0	100.1	73.6	67.0	70.0	91.2	37.9	20.7
1-Jul	111.0	66.5	102.5	76.1	67.0	80.5	83.4	42.6	23.9
8-Jul	111.0	65.3	103.3	77.5	69.0	93.8	77.1	50.4	29.1
15-Jul	110.0	66.5	103.5	78.4	73.0	103.6	77.1	57.8	32.8
22-Jul	109.0	66.9	101.8	77.6	69.0	104.3	77.7	63.2	36.8
29-Jul	110.0	67.6	103.7	78.2	71.0	107.1	75.4	65.3	39.3
5-Aug	111.0	68.5	104.0	78.7	73.0	100.1	80.7	63.5	36.9
12-Aug	110.0	68.1	102.9	78.4	71.0	107.1	77.7	64.8	38.8
19-Aug	108.0	69.1	99.1	75.3	68.0	115.5	75.9	66.1	40.3
26-Aug	105.0	67.2	98.9	74.2	68.0	111.3	75.7	64.7	37.1
2-Sep	107.0	66.5	100.1	74.5	68.0	97.3	76.3	53.2	31.0
9-Sep	104.0	65.3	97.6	73.3	65.0	94.5	82.1	59.8	36.3
16-Sep	103.0	63.5	92.8	68.6	61.0	97.3	72.7	49.2	28.4
23-Sep	99.0	65.0	90.6	65.8	57.0	84.0	71.5	47.9	28.1
30-Sep	98.0	62.2	89.9	64.9	56.0	80.5	71.4	45.3	28.0
7-Oct	97.0	60.5	87.1	61.5	54.0	75.6	66.1	40.3	25.4
14-Oct	93.0	59.8	83.6	58.6	50.0	67.2	69.1	36.4	22.7
21-Oct	90.0	58.2	80.2	55.1	47.0	65.1	63.1	33.3	21.9
28-Oct	85.0	56.8	75.9	52.5	44.0	69.3	61.8	36.5	23.1
4-Nov	82.0	57.2	72.0	49.0	40.0	67.2	62.5	33.1	21.6
11-Nov	79.0	54.4	70.7	47.7	39.0	53.2	65.4	30.2	20.1
18-Nov	76.0	54.1	66.2	44.4	35.0	49.7	61.9	30.5	19.1
25-Nov	72.0	51.6	61.8	41.1	33.0	62.3	57.6	27.7	17.6
2-Dec	69.0	48.3	58.6	37.6	30.0	44.1	51.8	23.6	15.2
9-Dec	68.0	47.8	59.3	38.2	30.0	48.3	50.3	27.1	18.9
16-Dec	67.0	47.1	57.8	36.5	29.0	50.4	55.4	25.7	16.9
23-Dec	65.0	47.6	55.6	35.2	26.0	46.2	52.1	25.3	16.5
31-Dec	65.0	46.6	54.6	35.0	23.0	53.9	51.3	26.2	17.7



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	1	603
FEB	12	395
MAR	42	285
APR	153	120
MAY	357	34
JUN	640	3
JUL	811	0
AUG	742	0
SEP	490	6
OCT	195	90
NOV	26	348
DEC	1	591
ANN	3471	2475

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	-18007	0	-5648
FEB	0	-12267	0	-4558
MAR	0	-9352	0	-4416
APR	0	-4364	0	-5006
MAY	4	-1426	3882	-3588
JUN	12	-149	9415	-3072
JUL	323	-5	13095	-1435
AUG	548	-11	11411	-1370
SEP	73	-361	6179	-1798
OCT	2	-3436	1625	-3692
NOV	0	-11050	54	-5384
DEC	0	-17715	0	-6263
ANN	962	-78143	46985	-46230

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

No Solar Radiation
Data Available

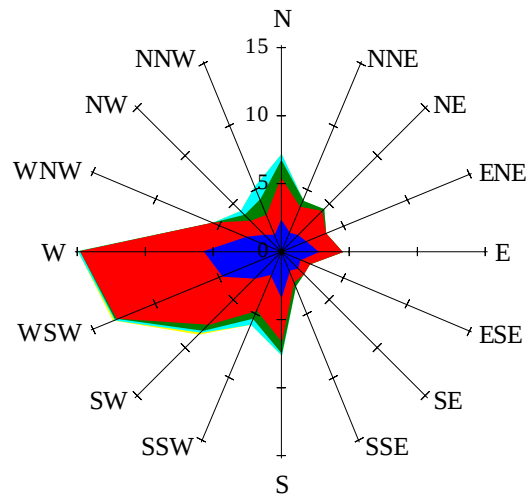


Average Annual Solar Heat and Illumination – Nearest Available Site

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

Wind Summary - December, January, and February

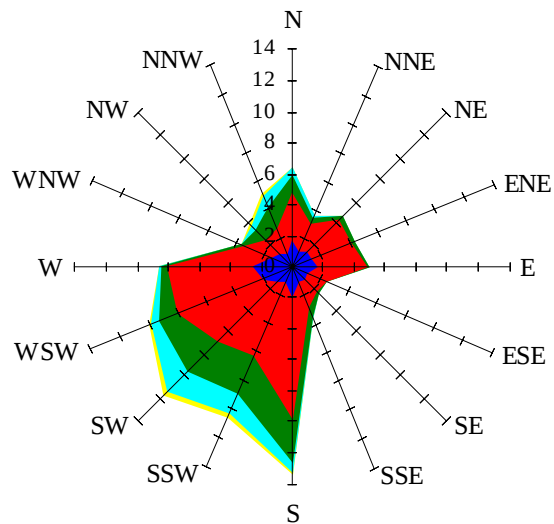
Labels of Percent Frequency on North Axis



Percent Calm = 5.72

Wind Summary - March, April, and May

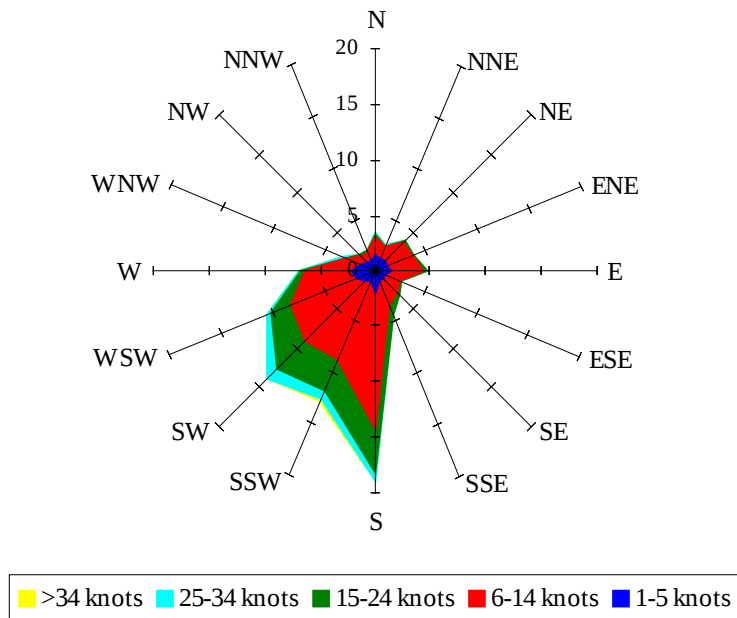
Labels of Percent Frequency on North Axis



Percent Calm = 2.37

Wind Summary - June, July, and August

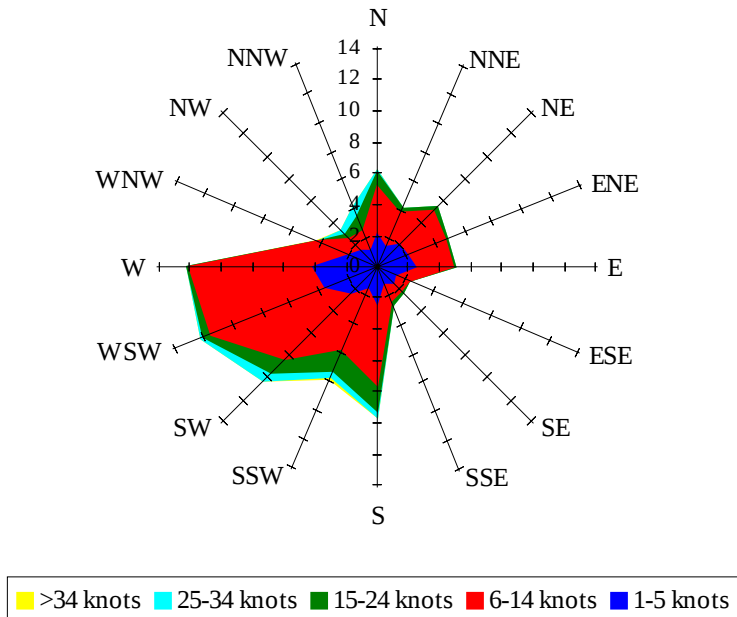
Labels of Percent Frequency on North Axis



Percent Calm = 2.06

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 4.21