

CLEVELAND/HOPKINS OH

Latitude = 41.42 N

Longitude = 81.87 W

Period of Record = 1973 to 1996

WMO No. 725240

Elevation = 804 feet

Average Pressure = 29.16 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	93	75	106	11.8	WSW
0.4% Occurrence	89	74	106	11.4	SW
1.0% Occurrence	86	72	99	11.2	SW
2.0% Occurrence	84	71	96	10.8	SW
Mean Daily Range	16	-	-	-	-
97.5% Occurrence	12	11	7	11.4	WSW
99.0% Occurrence	6	5	6	11.2	SW
99.6% Occurrence	0	-1	4	11.2	SW
Median of Extreme Lows	-4	-5	3	12.4	SW
	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	79	89	133	10.9	SW
0.4% Occurrence	76	85	122	10.9	SW
1.0% Occurrence	75	84	118	10.7	SW
2.0% Occurrence	73	81	111	10.1	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	140	85	0.90	10.2	SW
0.4% Occurrence	127	82	0.82	10.2	SW
1.0% Occurrence	121	80	0.79	9.5	SW
2.0% Occurrence	114	78	0.74	9.8	SW
Air Conditioning/ Humid Area Criteria	# of Hours	T ≥ 93°F	T ≥ 80°F	T _{wb} ≥ 73°F	T _{wb} ≥ 67°F
		8	444	222	1035

Other Site Data

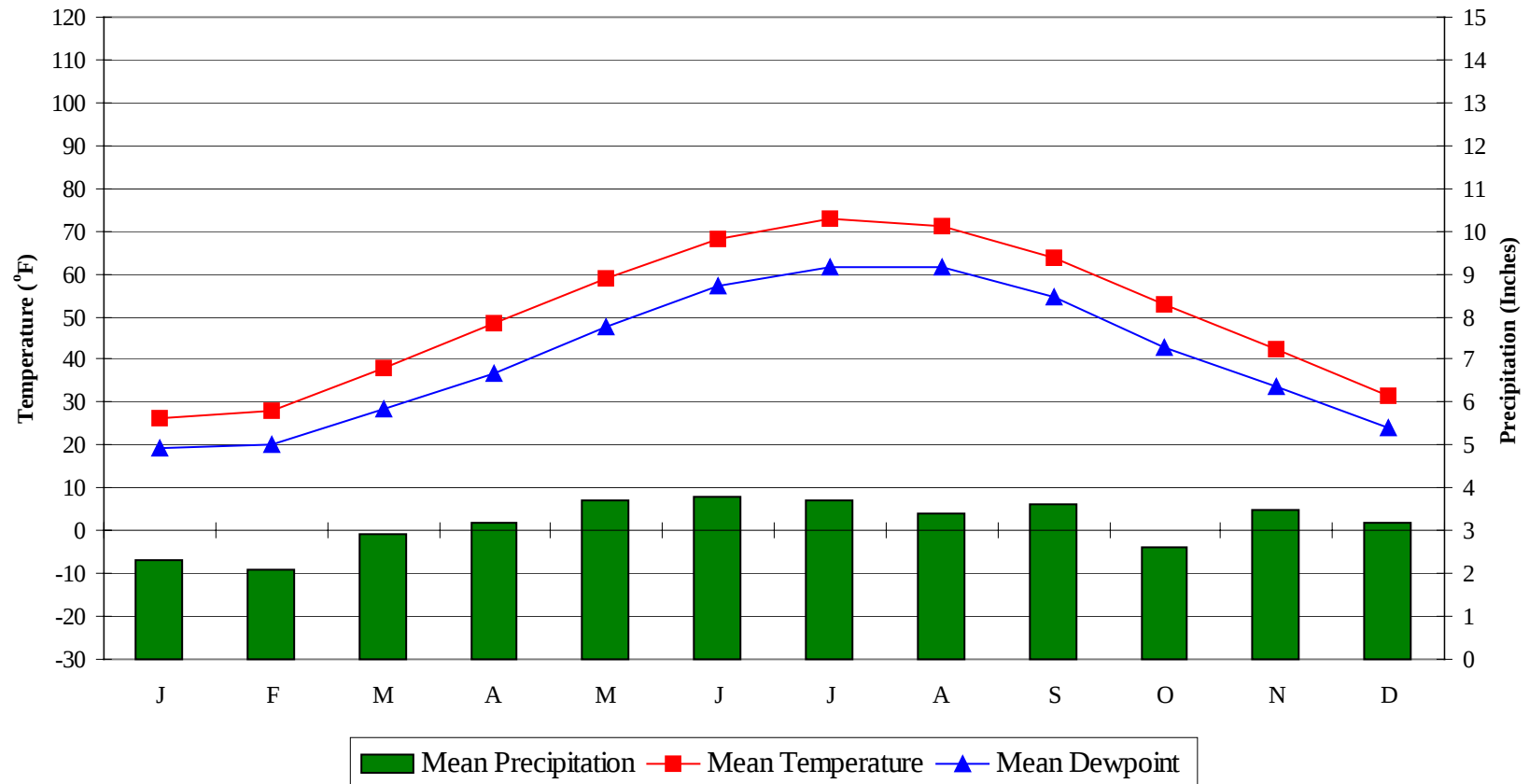
Weather Region	Rain Rate 100 Year Recurrence (in./hr)	Basic Wind Speed 3 sec gust @ 33 ft 50 Year Recurrence (mph)	Ventilation Cooling Load Index (Ton-hr/cfm/yr) Base 75°F-RH 60% Latent + Sensible
6	2.8	90	1.4 + 0.4
Ground Water Temperature (°F) 50 Foot Depth *	Frost Depth 50 Year Recurrence (in.)	Ground Snow Load 50 Year Recurrence (lb/ft ²)	Average Annual Freeze-Thaw Cycles (#)
52.8	52	19	53

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

CLEVELAND/HOPKINS OH

WMO No. 725240

Average Annual Climate

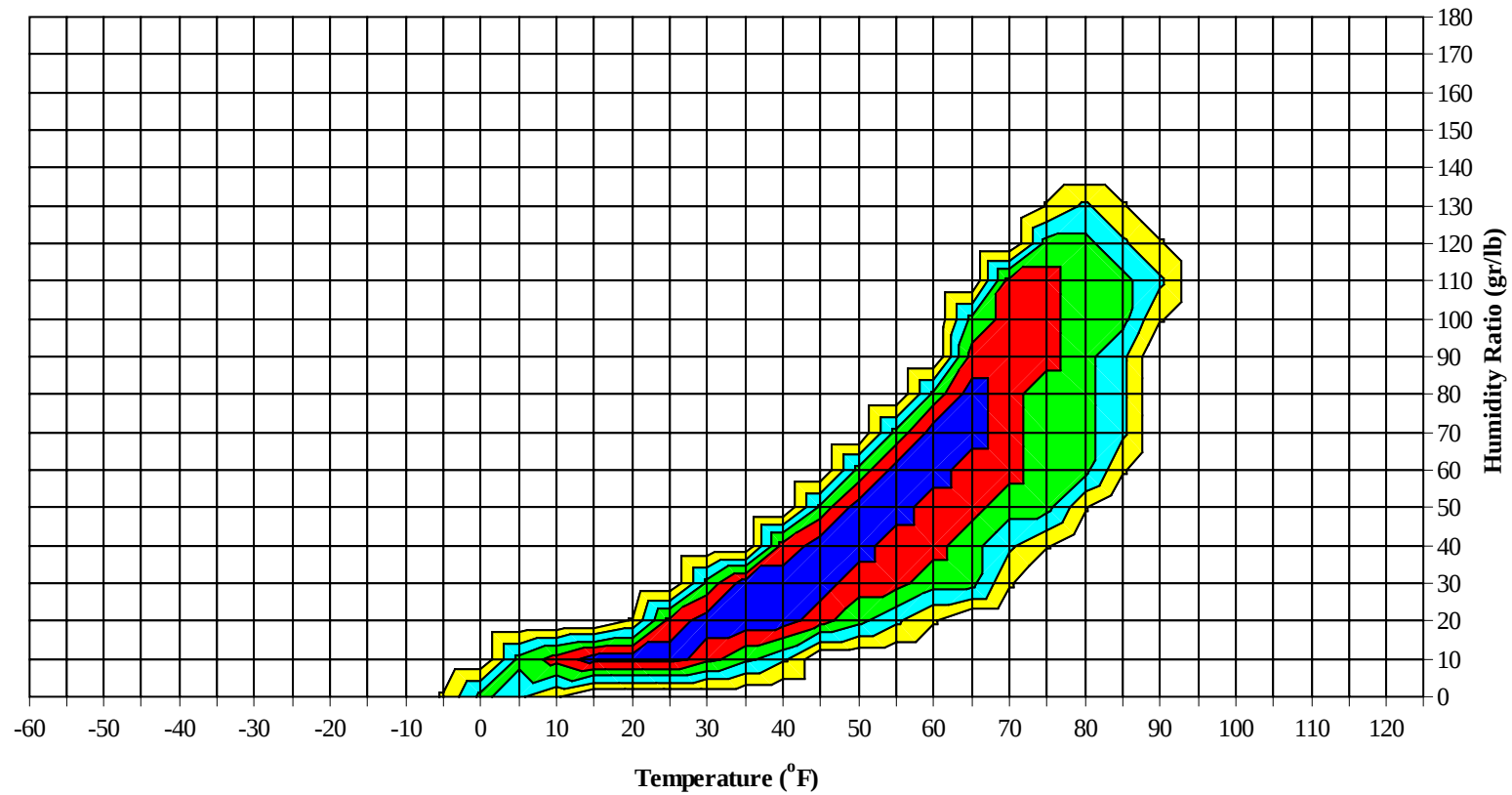


CLEVELAND/HOPKINS

OH

WMO No. 725240

Long Term Psychrometric Summary

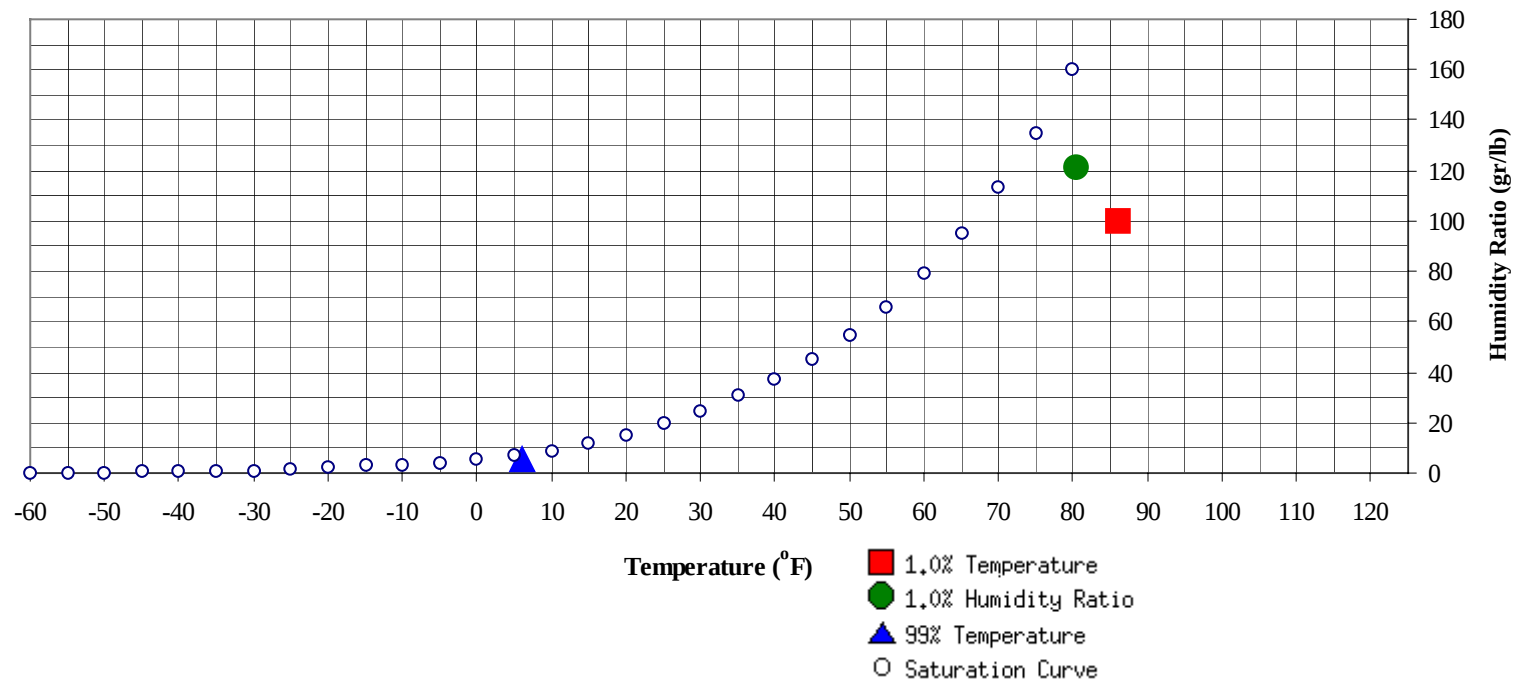


- 50% of all observations
- 80% of all observations
- 95% of all observations
- 97.5% of all observations
- 99% of all observations

CLEVELAND/HOPKINS OH

WMO No. 725240

Psychrometric Summary of Peak Design Values



99% Dry Bulb	(°F)	MCHR (gr/lb)	Enthalpy (btu/lb)	1.0% Humidity Ratio	(gr/lb)	MCDB (°F)	MCWB (°F)	MC Dewpt (°F)	Enthalpy (btu/lb)
	6	5.6	2.3		121.1	80.5	74.4	72	38.3

1.0% Dry Bulb	(°F)	MCHR (gr/lb)	MCWB (°F)	Enthalpy (btu/lb)
	86	99.9	72.2	36.3

CLEVELAND/HOPKINS OH

WMO No. 725240

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															
80 / 84												0	0	0	61.6
75 / 79												2	1	3	60.8
70 / 74											0	6	3	9	58.4
65 / 69		0	0	0	58.2		0	0	0	55.3	1	8	6	15	55.6
60 / 64		1	1	2	56.0		2	1	3	51.7	4	12	9	25	53.2
55 / 59	2	3	2	7	51.9	2	5	4	11	50.2	11	14	13	38	50.5
50 / 54	3	5	4	12	47.4	4	8	6	18	46.6	11	20	16	47	46.1
45 / 49	7	9	8	24	42.4	8	13	10	31	42.3	18	29	21	68	41.7
40 / 44	11	16	14	41	38.3	13	20	17	50	37.7	25	34	33	92	37.9
35 / 39	24	36	31	91	33.7	27	32	35	94	33.8	39	41	43	123	33.7
30 / 34	45	44	48	137	29.6	35	35	33	103	29.6	52	41	47	140	29.3
25 / 29	38	38	41	117	25.0	34	37	36	107	24.6	40	22	33	95	24.7
20 / 24	35	34	32	101	20.1	33	29	33	95	20.0	25	12	16	53	20.3
15 / 19	33	28	30	91	15.6	25	20	22	67	15.5	11	5	5	21	15.4
10 / 14	21	16	19	56	11.1	17	13	14	44	10.9	6	2	3	11	10.8
5 / 9	12	8	9	29	6.1	13	6	8	27	6.1	4	0	1	5	6.3
0 / 4	10	5	5	20	1.5	10	2	4	16	1.3	1	0	0	1	2.6
-5 / -1	4	2	3	9	-3.2	4	0	1	5	-2.7	0			0	-3.5
-10 / -6	2	1	1	4	-7.3	1		0	1	-6.3					
-15 / -11	1	1	1	3	-12.3										
-20 / -16	1	0	0	1	-16.6										
-25 / -21	0			0	-20.0										

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.

CLEVELAND/HOPKINS OH

WMO No. 725240

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	0	74.0
95 / 99												0	0	0	71.9
90 / 94							0		0	70.6	0	4	1	5	71.7
85 / 89		0	0	0	65.5		6	2	8	70.0	0	18	6	24	71.6
80 / 84		5	1	6	64.2	0	18	7	25	66.9	1	38	17	56	69.2
75 / 79	0	8	3	11	62.3	2	25	12	39	64.8	8	54	34	96	66.7
70 / 74	1	14	9	24	59.2	8	32	22	62	62.0	35	54	53	142	64.5
65 / 69	7	18	15	40	56.8	24	39	34	97	59.0	61	36	53	150	61.7
60 / 64	14	25	20	59	53.8	37	40	42	119	55.5	54	23	40	117	57.5
55 / 59	21	27	23	71	50.1	41	36	43	121	51.5	40	8	23	71	53.4
50 / 54	22	36	34	92	45.8	47	29	40	117	47.8	28	4	9	41	49.1
45 / 49	31	37	40	108	42.0	41	15	30	87	43.7	10	0	3	13	45.1
40 / 44	47	33	41	121	38.4	32	5	12	49	39.8	3		0	3	41.2
35 / 39	44	23	32	99	34.0	13	1	3	17	35.3	1		0	1	37.8
30 / 34	36	10	17	63	29.7	3		0	3	31.5					
25 / 29	13	2	4	19	25.2	0			0	27.5					
20 / 24	3	0	1	4	20.6										
15 / 19	1		0	1	16.3										
10 / 14	0			0	12.8										
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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.

CLEVELAND/HOPKINS OH

WMO No. 725240

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															
95 / 99		2	0	2	75.4		0	0	0	78.3					
90 / 94	0	11	4	15	75.4		7	1	8	76.2		2	0	2	74.5
85 / 89	1	33	14	48	72.9	0	21	6	27	73.5	0	8	2	10	72.5
80 / 84	5	64	32	101	70.2	2	54	23	79	71.0	0	21	6	27	70.3
75 / 79	21	69	55	145	68.0	15	71	46	132	68.6	3	35	18	56	67.4
70 / 74	68	47	70	185	65.9	54	58	74	186	66.4	23	48	36	107	65.2
65 / 69	68	18	47	133	62.7	76	28	58	163	62.9	42	50	50	142	61.6
60 / 64	53	4	21	78	58.9	60	7	29	96	59.0	46	41	52	139	57.2
55 / 59	24	0	4	28	54.6	26	1	8	35	54.6	47	24	39	110	53.0
50 / 54	8		1	9	50.6	13	0	2	15	50.4	40	8	24	72	48.9
45 / 49	1			1	45.9	3	0	0	3	46.0	25	2	10	37	44.8
40 / 44						0			0	40.0	11	0	3	14	40.6
35 / 39											3		0	3	36.5
30 / 34															
25 / 29															
20 / 24															
15 / 19															
10 / 14															
5 / 9															
0 / 4															
-5 / -1															
-10 / -6															
-15 / -11															
-20 / -16															
-25 / -21															

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.

CLEVELAND/HOPKINS OH

WMO No. 725240

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															
80 / 84	0	2		2	65.1										
75 / 79	0	8	1	9	63.6		0		0	62.8		0		0	64.0
70 / 74	1	19	7	27	61.6	0	4	1	5	61.4		0	0	0	61.5
65 / 69	7	29	16	52	58.8	2	8	4	14	59.0	0	1	1	2	58.7
60 / 64	25	40	35	100	55.9	11	17	14	42	55.9	2	3	2	7	55.0
55 / 59	30	44	40	114	51.4	14	20	16	50	51.7	5	5	6	16	52.4
50 / 54	45	48	50	143	47.4	21	30	26	77	47.2	7	9	7	23	47.7
45 / 49	53	34	50	137	43.2	26	34	32	92	42.7	8	14	11	33	42.8
40 / 44	46	17	32	95	39.0	37	41	40	118	38.2	16	29	21	66	38.5
35 / 39	28	5	15	48	34.5	50	46	49	145	33.5	41	52	47	140	33.9
30 / 34	9	1	3	13	30.7	44	29	40	113	29.4	61	53	60	174	29.7
25 / 29	2		1	3	25.8	27	9	15	51	25.1	42	33	38	113	24.9
20 / 24	0			0	21.4	7	2	3	12	20.8	27	21	25	73	20.3
15 / 19						2	1	0	3	16.5	17	13	12	42	15.5
10 / 14						0	0	0	0	11.4	10	8	9	27	10.7
5 / 9						0	0	0	0	6.0	7	4	6	17	6.4
0 / 4						0			0	3.0	3	1	2	6	1.6
-5 / -1											2	0	1	3	-2.7
-10 / -6											1	1	1	3	-7.0
-15 / -11											0	0	0	0	-10.9
-20 / -16															
-25 / -21															

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.

CLEVELAND/HOPKINS OH

WMO No. 725240

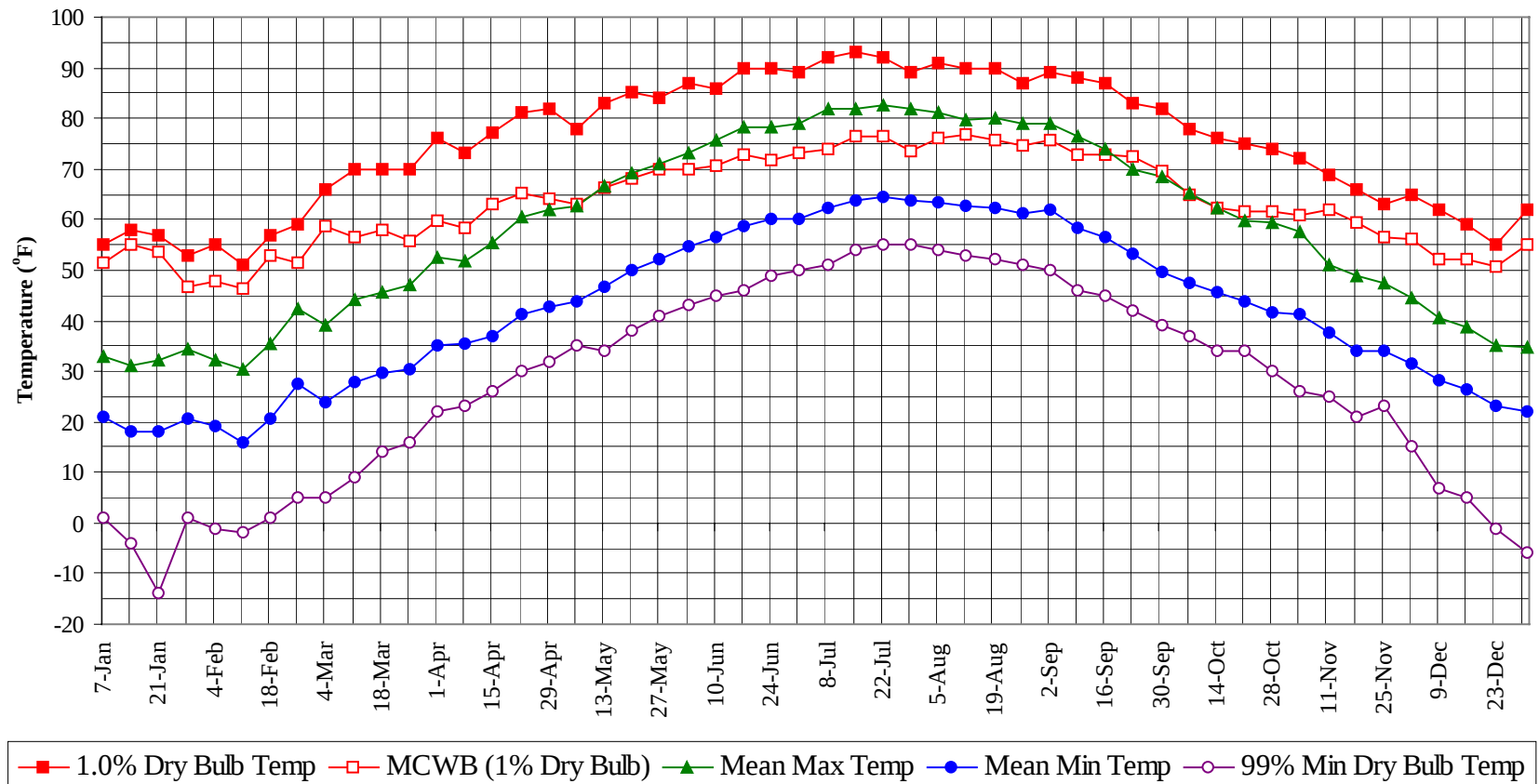
Dry-Bulb Temperature Hours For An Average Year (Sheet 5 of 5)

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		0	0	0	74.0
95 / 99		3	1	4	75.2
90 / 94	0	23	6	29	74.9
85 / 89	1	88	29	118	72.5
80 / 84	7	203	86	296	69.8
75 / 79	50	273	170	493	67.3
70 / 74	190	282	276	749	64.8
65 / 69	288	236	283	807	61.2
60 / 64	305	216	266	787	56.7
55 / 59	262	188	220	670	52.0
50 / 54	247	198	217	662	47.5
45 / 49	230	188	212	630	42.9
40 / 44	239	195	213	647	38.5
35 / 39	269	236	255	760	33.9
30 / 34	283	214	250	747	29.6
25 / 29	196	141	168	506	24.8
20 / 24	130	99	110	339	20.2
15 / 19	89	67	70	226	15.6
10 / 14	55	39	45	139	10.9
5 / 9	36	19	24	79	6.2
0 / 4	24	8	11	43	1.5
-5 / -1	10	2	4	16	-2.9
-10 / -6	4	2	2	8	-7.1
-15 / -11	2	1	1	4	-12.0
-20 / -16	1	0	0	1	-16.6
-25 / -21	0			0	-20.0

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

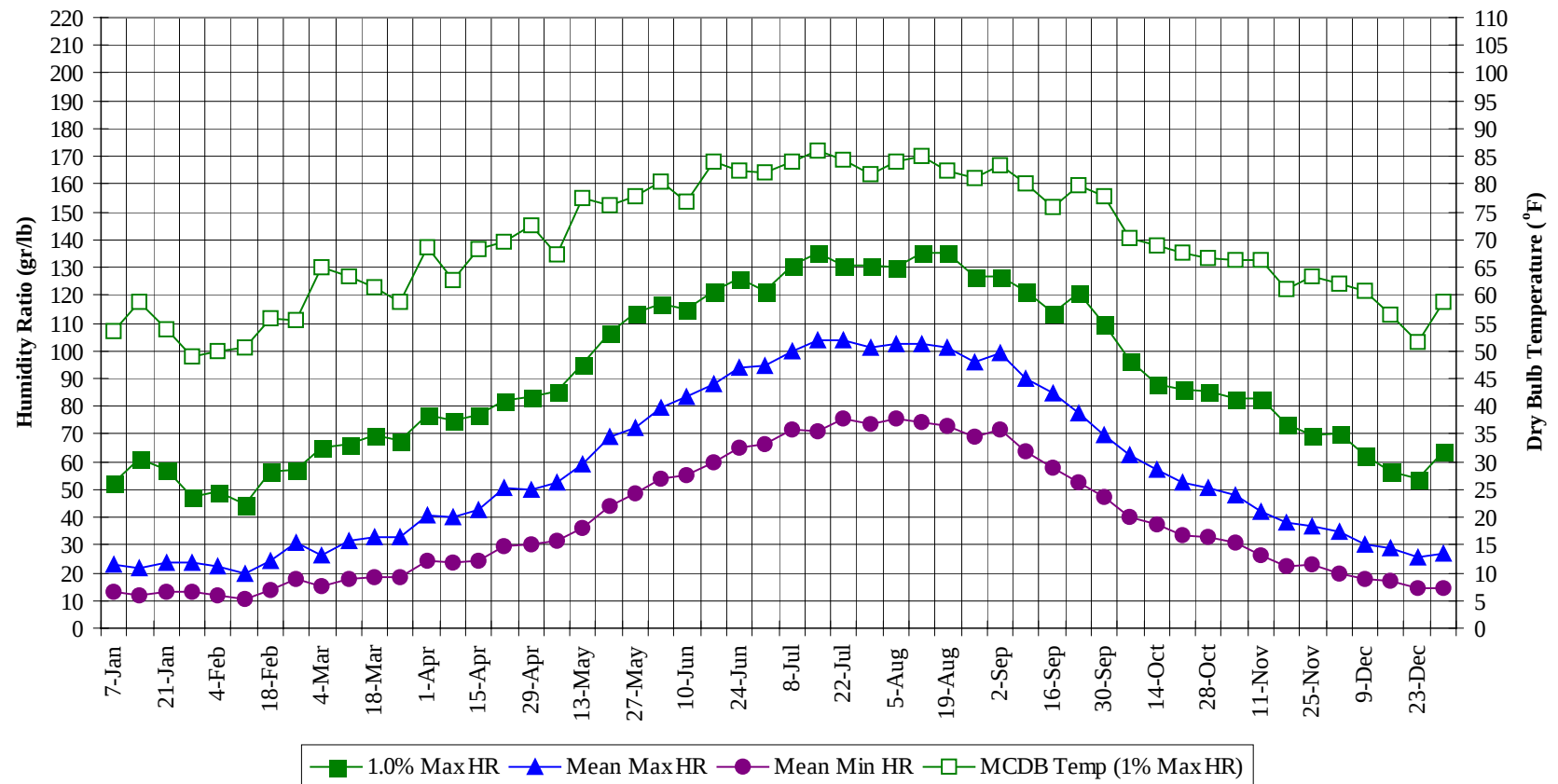


CLEVELAND/HOPKINS

OH

WMO No. 725240

Long Term Humidity and Dry Bulb Temperature Summary

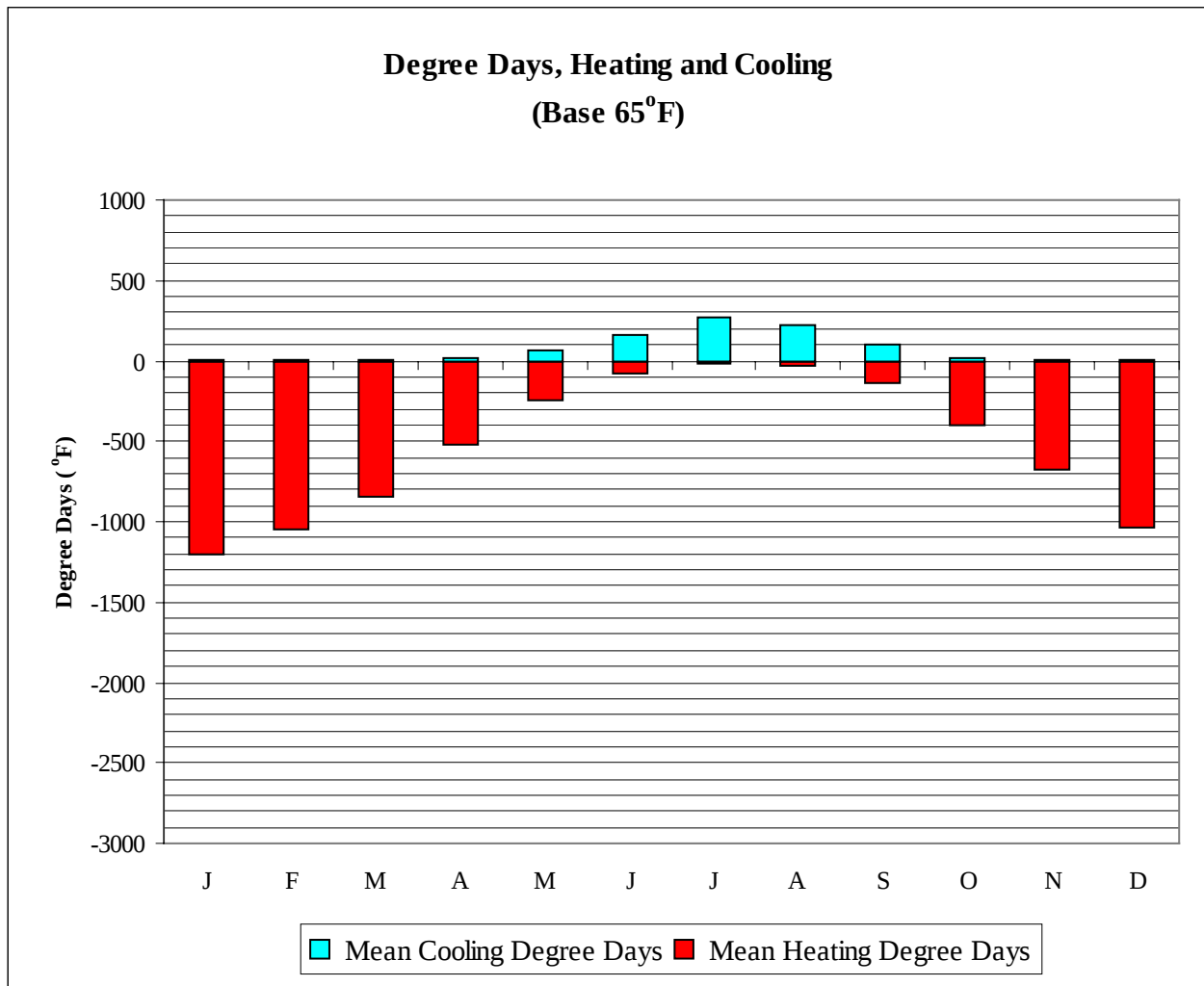


CLEVELAND/HOPKINS OH

WMO No. 725240

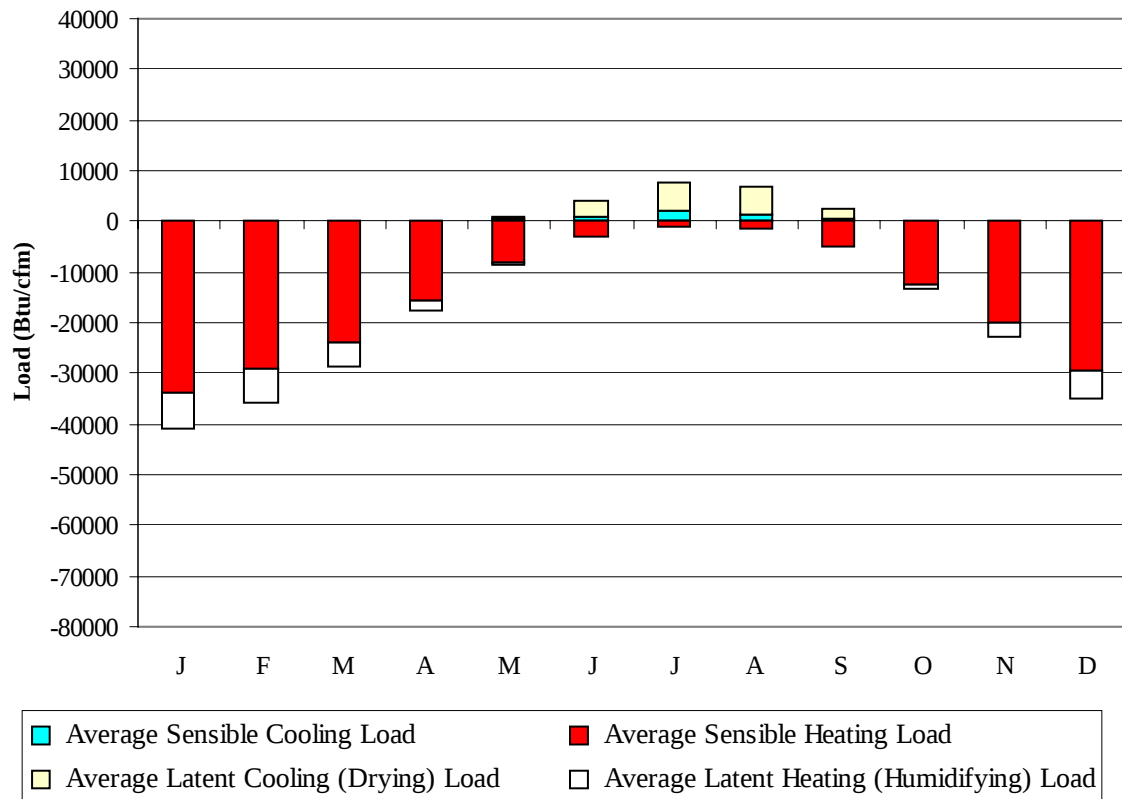
Long Term Dry Bulb Temperature and Humidity Summary

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	55.0	51.4	33.0	20.9	1.0	52.5	53.5	23.0	13.1
14-Jan	58.0	54.9	31.2	18.0	-4.0	60.9	58.6	21.9	11.7
21-Jan	57.0	53.5	32.1	18.1	-14.0	57.4	54.0	23.4	12.9
28-Jan	53.0	46.6	34.4	20.6	1.0	47.6	48.9	23.5	13.1
4-Feb	55.0	47.7	32.4	19.1	-1.0	49.0	49.8	22.1	12.1
11-Feb	51.0	46.5	30.4	16.0	-2.0	44.8	50.5	19.6	10.5
18-Feb	57.0	53.0	35.3	20.6	1.0	56.7	55.7	24.3	13.5
25-Feb	59.0	51.3	42.4	27.5	5.0	57.4	55.5	31.0	17.5
4-Mar	66.0	58.6	39.2	24.0	5.0	65.1	65.1	26.3	14.9
11-Mar	70.0	56.4	44.0	27.8	9.0	66.5	63.4	31.5	17.6
18-Mar	70.0	58.1	45.6	29.7	14.0	69.3	61.5	32.8	18.3
25-Mar	70.0	55.8	47.0	30.3	16.0	67.9	58.9	33.1	18.3
1-Apr	76.0	59.9	52.4	35.2	22.0	77.0	68.6	40.9	24.2
8-Apr	73.0	58.3	51.8	35.4	23.0	74.9	62.6	40.0	23.4
15-Apr	77.0	63.0	55.5	37.1	26.0	77.0	68.3	42.5	24.1
22-Apr	81.0	65.2	60.4	41.3	30.0	81.9	69.7	50.4	29.4
29-Apr	82.0	64.1	62.1	42.6	32.0	83.3	72.7	50.2	30.4
6-May	78.0	63.1	62.6	43.8	35.0	85.4	67.3	52.5	31.3
13-May	83.0	66.1	66.6	46.6	34.0	95.2	77.6	58.8	36.3
20-May	85.0	68.3	69.3	50.0	38.0	106.4	76.2	69.1	44.3
27-May	84.0	69.9	70.9	52.2	41.0	113.4	77.8	72.4	48.8
3-Jun	87.0	69.9	73.3	54.7	43.0	116.9	80.5	79.6	53.7
10-Jun	86.0	70.6	75.6	56.3	45.0	114.8	76.7	83.7	55.4
17-Jun	90.0	72.7	78.3	58.6	46.0	121.8	84.2	87.7	60.1
24-Jun	90.0	71.8	78.4	60.2	49.0	126.0	82.4	93.9	65.3
1-Jul	89.0	73.0	78.9	60.3	50.0	121.8	82.2	94.6	66.2
8-Jul	92.0	73.7	81.8	62.5	51.0	130.9	84.1	99.7	71.4
15-Jul	93.0	76.3	81.9	63.6	54.0	135.1	86.1	103.6	71.2
22-Jul	92.0	76.3	82.7	64.5	55.0	130.9	84.4	103.8	75.7
29-Jul	89.0	73.4	81.8	63.7	55.0	130.9	81.8	101.5	73.5
5-Aug	91.0	75.9	81.2	63.4	54.0	130.2	84.0	102.2	75.5
12-Aug	90.0	76.6	79.8	62.8	53.0	135.1	84.9	102.4	74.3
19-Aug	90.0	75.9	80.0	62.3	52.0	135.1	82.3	101.4	73.2
26-Aug	87.0	74.5	78.8	61.1	51.0	126.7	81.2	96.2	69.1
2-Sep	89.0	75.7	79.1	61.8	50.0	126.7	83.3	99.4	71.9
9-Sep	88.0	72.8	76.4	58.4	46.0	121.8	80.1	89.9	64.0
16-Sep	87.0	72.8	73.8	56.6	45.0	113.4	75.8	84.6	57.8
23-Sep	83.0	72.3	70.0	53.4	42.0	121.1	79.8	77.8	52.7
30-Sep	82.0	69.7	68.4	49.6	39.0	109.9	77.7	69.3	47.3
7-Oct	78.0	65.0	65.1	47.5	37.0	96.6	70.2	62.5	40.2
14-Oct	76.0	62.2	62.5	45.5	34.0	88.2	68.8	57.3	37.7
21-Oct	75.0	61.6	59.7	43.6	34.0	86.1	67.6	52.7	33.3
28-Oct	74.0	61.6	59.3	41.8	30.0	85.4	66.6	50.7	32.7
4-Nov	72.0	60.7	57.5	41.3	26.0	82.6	66.2	47.7	31.2
11-Nov	69.0	61.9	51.1	37.5	25.0	82.6	66.2	42.0	26.3
18-Nov	66.0	59.2	49.0	34.1	21.0	73.5	61.2	38.0	22.5
25-Nov	63.0	56.6	47.3	34.0	23.0	69.3	63.5	37.1	23.0
2-Dec	65.0	56.0	44.7	31.5	15.0	70.0	62.0	35.1	19.7
9-Dec	62.0	52.0	40.6	28.2	7.0	62.3	60.9	30.2	17.9
16-Dec	59.0	52.3	38.7	26.6	5.0	56.7	56.6	28.7	17.0
23-Dec	55.0	50.9	35.2	23.1	-1.0	53.9	51.6	25.5	14.7
31-Dec	62.0	55.2	34.9	22.0	-6.0	63.7	58.7	26.6	14.8



	Mean Cooling Degree Days (°F)	Mean Heating Degree Days (°F)
JAN	0	1205
FEB	0	1042
MAR	5	841
APR	20	518
MAY	69	251
JUN	167	72
JUL	270	22
AUG	223	31
SEP	98	136
OCT	17	400
NOV	3	678
DEC	0	1038
ANN	871	6234

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	-33633	0	-7436
FEB	0	-29205	0	-6484
MAR	7	-24144	3	-4606
APR	69	-15541	19	-2021
MAY	354	-8304	725	-332
JUN	985	-2834	2962	-7
JUL	1918	-1087	5769	0
AUG	1313	-1462	5505	0
SEP	435	-4929	2177	-29
OCT	26	-12560	112	-697
NOV	0	-19856	11	-2895
DEC	0	-29315	0	-5809
ANN	5107	-182870	17283	-30316

Average Annual Solar Radiation – Nearest Available Site

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

City: CLEVELAND
 State: OH
 WBAN No: 14820
 Lat(N): 41.4
 Long(W): 81.85
 Elev(ft): 804

Stn Type: Secondary
 SHADING GEOMETRY IN DIMENSIONLESS UNITS
 Window: 1
 Overhang: 0.574
 Vert Gap: 0.326

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	510	760	1060	1460	1770	1950	1930	1670	1300	900	530	410	1190
	Std Dev	38	61	70	105	122	123	103	113	96	77	53	32	28
	Minimum	440	660	920	1190	1520	1700	1740	1420	1120	770	430	370	1130
	Maximum	600	960	1280	1650	2040	2300	2180	1910	1460	1150	660	480	1250
	Diffuse	360	480	620	730	830	870	860	770	620	470	350	310	610
Clear Day	Global	820	1170	1660	2160	2480	2600	2520	2220	1780	1270	870	710	1690
NORTH	Global	190	270	350	430	540	610	590	480	380	280	200	170	370
	Diffuse	190	270	350	430	500	540	530	460	380	280	200	170	360
Clear Day	Global	180	250	330	430	580	680	630	470	360	270	190	160	380
EAST	Global	320	460	620	830	970	1060	1060	940	770	560	330	250	680
	Diffuse	230	320	420	520	600	640	630	570	460	340	230	190	430
Clear Day	Global	620	830	1080	1310	1420	1450	1420	1310	1120	870	640	550	1050
SOUTH	Global	670	850	910	930	860	820	860	950	1030	980	670	530	840
	Diffuse	340	420	490	540	570	590	590	570	520	430	320	280	470
Clear Day	Global	1770	1890	1790	1460	1150	990	1050	1280	1610	1790	1740	1680	1520
WEST	Global	320	470	640	850	990	1080	1080	970	790	560	330	260	690
	Diffuse	230	320	420	520	600	640	640	570	470	340	230	200	430
Clear Day	Global	620	830	1080	1310	1420	1450	1420	1310	1120	870	640	550	1050

Average Annual Solar Heat and Illumination – Nearest Available Site

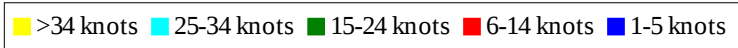
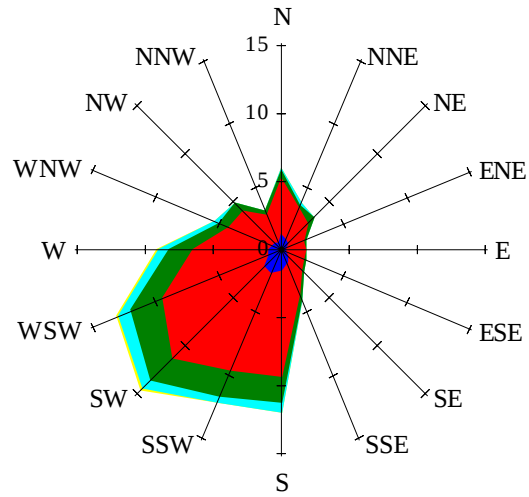
(Source: National Renewable Energy Laboratory, Golden CO, 1995)

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	340	520	740	1050	1280	1420	1400	1200	930	620	360	270	850
NORTH	Unshaded	130	180	240	300	360	400	390	320	260	190	140	120	250
	Shaded	110	160	210	260	310	350	340	290	230	170	120	95	220
EAST	Unshaded	220	320	440	590	690	760	750	670	540	390	230	170	480
	Shaded	190	280	370	500	580	630	630	570	460	340	200	150	410
SOUTH	Unshaded	500	620	630	620	540	500	530	610	700	710	490	400	570
	Shaded	470	560	500	400	350	360	360	380	500	610	460	370	440
WEST	Unshaded	220	330	450	600	700	770	770	690	560	390	230	180	490
	Shaded	190	280	380	510	590	640	640	590	480	340	200	150	420

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	28	64	78	66	33	39	77	97	97	75
	M.Cloudy	16	37	45	39	19	25	50	68	68	50
NORTH	M.Clear	8	13	15	14	9	20	16	17	17	16
	M.Cloudy	7	14	17	15	8	13	16	19	19	16
EAST	M.Clear	63	61	18	14	9	70	76	41	17	16
	M.Cloudy	18	27	18	15	8	30	42	32	19	16
SOUTH	M.Clear	29	67	83	70	34	11	29	48	48	28
	M.Cloudy	11	29	37	31	14	10	22	36	35	22
WEST	M.Clear	8	13	15	58	67	11	16	17	43	76
	M.Cloudy	7	14	17	27	21	10	16	19	33	44
M.Clear	(% hrs)	21	20	21	22	22	37	37	33	34	36
		Sept					Dec				
		9am	11am	1pm	3pm	5pm	9am	11am	1pm	3pm	5pm
HORIZ.	M.Clear	18	57	79	78	52	6	32	42	29	4
	M.Cloudy	11	33	52	51	33	4	18	23	17	3
NORTH	M.Clear	7	13	16	16	13	3	9	10	8	2
	M.Cloudy	5	13	17	17	12	2	8	10	8	1
EAST	M.Clear	47	70	38	16	13	20	39	10	8	2
	M.Cloudy	15	31	26	17	12	4	13	10	8	1
SOUTH	M.Clear	13	50	73	71	45	16	66	83	62	10
	M.Cloudy	6	24	41	42	24	4	17	23	17	3
WEST	M.Clear	7	13	16	43	71	3	9	13	41	13
	M.Cloudy	5	13	17	29	33	2	8	11	13	3
M.Clear	(% hrs)	37	35	31	33	35	12	14	12	12	13

Wind Summary - December, January, and February

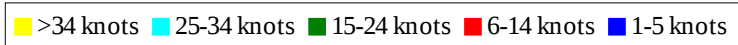
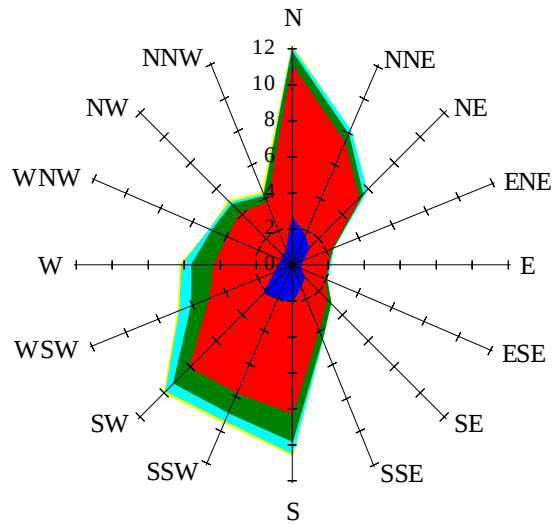
Labels of Percent Frequency on North Axis



Percent Calm = 1.99

Wind Summary - March, April, and May

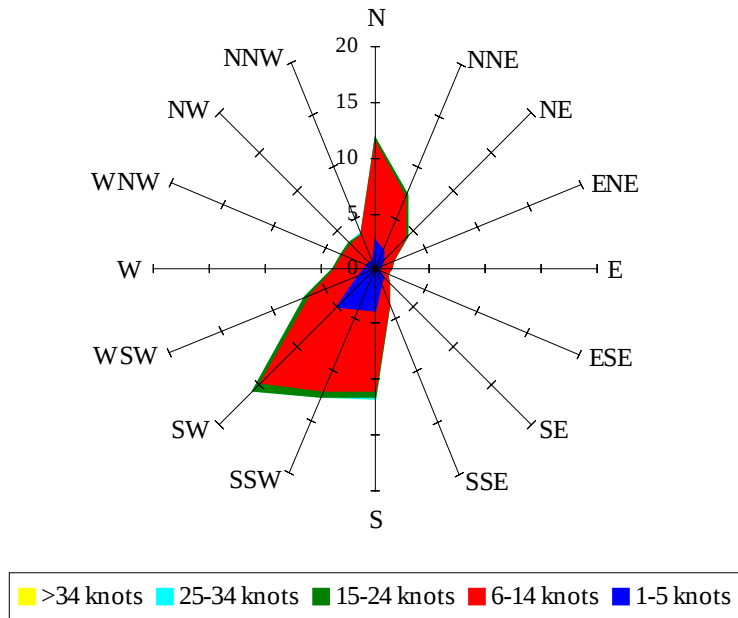
Labels of Percent Frequency on North Axis



Percent Calm = 3.56

Wind Summary - June, July, and August

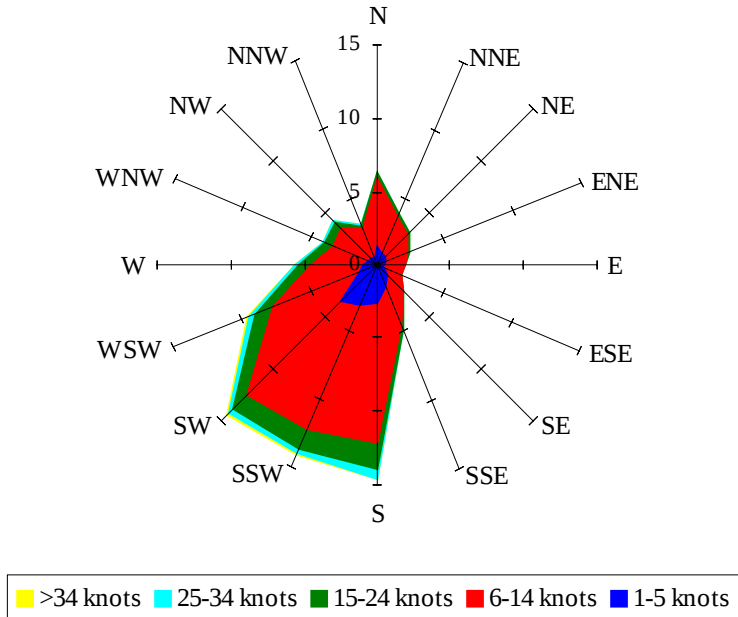
Labels of Percent Frequency on North Axis



Percent Calm = 6.25

Wind Summary - September, October, and November

Labels of Percent Frequency on North Axis



Percent Calm = 4.15